PLACE: Marriner S. Eccles Federal Reserve Board Building, C Street entrance between 20th and 21st Streets, NW., Washington, D.C. 20551.

STATUS: Closed.

MATTERS TO BE CONSIDERED:

1. Proposed purchase of computers within the Federal Reserve System.
2. Personnel actions (appointments, promotions, assignments, reassignments, and salary actions) involving individual Federal Reserve System employees.
3. Any items carried forward from a previously announced meeting.

CONTACT PERSON FOR MORE INFORMATION: Mr. Joseph R. Coyne, Assistant to the Board: (202) 452-3204. You may call (202) 452-3207, beginning at approximately 5 p.m. two business days before this meeting, for a recorded announcement of bank and bank holding company applications scheduled for the meeting.

Dated: March 12, 1985.

James McAfee,

Associate Secretary of the Board.

[FR Doc. 85-6284 Filed 3-13-85; 10:48 am]

BILLING CODE 6210-01-M

6

NATIONAL SCIENCE BOARD

DATE AND TIME: March 22, 1985.

9:00 a.m.—Closed Session
9:30 a.m.—Open Session

PLACE: National Science Foundation Washington, D.C.

STATUS: Most of this meeting will be open to the public. Part of the meeting will be closed to the public.

MATTERS TO BE CONSIDERED AT THE OPEN SESSION:

6. Minutes—February 1985 Meeting
7. Chairman's Report
8. Director's Report
9. International Science and Engineering
10. Other Business

MATTERS TO BE CONSIDERED AT THE CLOSED SESSION:

1. Minutes—February 1985 Meeting
2. NSB and NSF Staff Nominees
3. Vannevar Bush Award
4. Alan T. Waterman Award
5. Grants, Contracts, and Programs

Margaret L. Windus,

Executive Officer.

[FR Doc. 85-6357 Filed 3-13-85; 3:03 pm]

BILLING CODE 7555-01-M

7

TENNESSEE VALLEY AUTHORITY

Tennessee Valley Authority (Meeting No. 1346).

TIME AND DATE: 10:15 a.m. (e.s.t.), Tuesday, March 19, 1985.

PLACE: TVA West Tower Auditorium, 400 West Summit Hill Drive, Knoxville, Tennessee.

STATUS: Open.

Agenda

Status: Open.

Agenda

Approval of minutes of meeting held on February 26, 1985.

Discussion Items

1. Review of the Land and Water 201 Program—regional soil and water conservation effort involving all agricultural agencies

Action Items

A—Budget and Financing

A1. Adoption of Supplemental Resolution Authorizing 1985 Series B Power Bonds.

A2. Resolution Authorizing the Chairman and Other Executive Officers to take Further Action Relating to Issuance and Sale of 1985 Series B Power Bonds.

B—Purchase Awards

B1. Negotiation 6-121043—Rebuild Four 500-kV Power Transformers from Two Winding Step Up Units to Three Winding Transmission Units for Use at Maury, Tennessee, Substation.

B2. Amendment to Contract 71C62-54114-2 with Babcock & Wilcox Company for the Nuclear Steam Supply Systems for Bellefonte Nuclear Plant Units 1 and 2.

C—Power Items

C1. Renewal Power Contract with City of Hickman, Kentucky.

D—Personnel Items

D1. Personal Services Contracts with Datronics, Inc. (New York, New York); Consultants & Designers Inc. (McLean, Virginia); American Computer Professionals, Inc. (Charlotte, North Carolina); and Genasys Corporation (Rockville, Maryland) for Computer Systems Services. Requested by the Office of Corporate Services.

D2. Contract with Coopers & Lybrand, Philadelphia, Pennsylvania, for Professional Accounting Services. Requested by the Comptroller.

E—Real Property Transactions

E1. Grant of Permanent Easement to Seward B. Norris for the Construction of a Restaurant, Shopping Area, and Associated Parking Facilities, Affecting Approximately 5.8 acres of Melton Hill Reservoir Land in Anderson County, Tennessee—Tract No. XMHR-48CDE.

E2. Proposed Abandonment of Easement Rights Affecting Approximately 0.83 Acre of Chatuge Reservoir Land in Clay County, North Carolina—Tract No. CHR-92F.

F—Unclassified

F1. Supplement to Interagency Agreement with the Federal Emergency Management Agency to Provide Additional Funding to TVA for the Inclusion of 10 Additional Communities in the Evaluation of the Effectiveness of Floodplain Management Programs.

F2. Revised TVA Code Relating to Flood Control an Flood Damage Reduction.

CONTACT PERSON FOR MORE INFORMATION: Craven H. Crowell, Jr., Director of Information, or a member of his staff can respond to requests for information about this meeting. Call (615) 632-8000, Knoxville, Tennessee. Information is also available at TVA's Washington Office, (202) 245-0101.

Dated: March 12, 1985.

W.F. Willis,

General Manager.

[FR Doc. 85-6316 Filed 3-13-85; 12:16 pm]

BILLING CODE 8120-01-M

federal register

Friday
March 15, 1985

Part II

Department of Labor

Employment Standards Administration, Wage and Hour Division

Minimum Wages for Federal and Federally Assisted Construction; General Wage Determination Decisions; Notice

DEPARTMENT OF LABOR

Employment Standards Administration, Wage and Hour Division

Minimum Wages for Federal and Federally Assisted Construction; General Wage Determination Decisions

General wage determination decisions of the Secretary of Labor specify, in accordance with applicable law and on the basis of information available to the Department of Labor from its study of local wage conditions and from other sources, the basic hourly wage rates and fringe benefit payments which are determined to be prevailing for the described classes of laborers and mechanics employed on construction projects of the character and in the localities specified therein.

The determinations in these decisions of such prevailing rates and fringe benefits have been made by authority of the Secretary of Labor pursuant to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Stat. 1494, as amended 40 U.S.C. 276a) and of other Federal statutes referred to in 29 CFR 5.1 (including the statutes listed at 36 FR 306 (1970) following Secretary of Labor's Order No. 24–70) containing provisions for the payment of wages which are dependent upon determination by the Secretary of Labor under the Davis-Bacon Act; and pursuant to the provisions of part 1 of subtitle A of title 29 of Code of Federal Regulations. Procedure for Predetermination of Wage Rates, 48 FR 19533 (1983) and of Secretary of Labor's Orders 9–83, 48 FR 35736 (1983), and 6–84, 49 FR 32473 (1984). The prevailing rates and fringe benefits determined in these decisions shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

Good cause is hereby found for not utilizing notice and public procedure thereon prior to the issuance of these determinations as prescribed in 5 U.S.C. 553 and not providing for delay in the effective date as prescribed in that section, because the necessity to issue construction industry wage determination frequently and in large volume causes procedures to be impractical and contrary to the public interest.

General wage determination decisions are effective from their date of publication in the **Federal Register** without limitation as to time and are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision together with any modifications issued subsequent to its publication date shall be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable Federal prevailing wage law and 29 CFR, Part 5. The wage rates contained therein shall be the minimum paid under such contract by contractors and subcontractors on the work.

Modifications and Supersedeas Decisions to General Wage Determination Decisions

Modifications and supersedeas decisions to general wage determination decisions are based upon information obtained concerning changes in prevailing hourly wage rates and fringe benefit payments since the decisions were issued.

The determinations of prevailing rates and fringe benefits made in the modifications and supersedeas decisions have been made by authority of the Secretary of Labor pursuant to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Stat. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in 29 CFR 5.1 (including the statutes listed at 36 FR 306 (1970) following Secretary of Labor's Order No. 24–70) containing provisions for the payment of wages which are dependent upon determination by the Secretary of Labor under the Davis-Bacon Act; and pursuant to the provisions of Part 1 of Subtitle A of Title 29 of Code of Federal Regulations. Procedure for Predetermination of Wage Rates, 48 FR 19533 (1983) and of Secretary of Labor's Orders 6–84, 49 FR 32473 (1984). The prevailing rates and fringe benefits determined in foregoing general wage determination decisions, as hereby modified, and/or superseded shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged in contract work of the character and in the localities described therein.

Modifications and supersedeas decisions are effective from their date of publication in the **Federal Register** without limitation as to time and are to be used in accordance with the provisions of 29 CFR Parts 1 and 5.

Any person, organization, or governmental agency having an interest in the wages determined as prevailing is encouraged to submit wage rate information for consideration by the Department. Further information and self-explanatory forms for the purpose of submitting this data may be obtained by writing to the U.S. Department of Labor, Employment Standards Administration, Wage and Hour Division, Office of Program Operations, Division of Wage Determinations, Washington, D.C. 20210. The cause for not utilizing the rulemaking procedures prescribed in 5 U.S.C. 553 has been set forth in the original General Determination Decision.

Modifications to General Wage Determination Decisions

The numbers of the decisions being modified and their dates of publication in the **Federal Register** are listed with each State.

California: CA84–5022	Oct. 5, 1984.
Idaho:	
ID85–5013	Mar.1, 1985.
ID85–5014	Mar. 1, 1985.
Illinois: IL85–5008	Feb. 8, 1985.
Kentucky:	
KY84[1007	Mar. 16, 1984.
KY84–1011	Mar. 23, 1984.
KY84–1003	Jan. 9, 1984.
KY94–1006	Mar. 16, 1984.
KY84–1010	Mar. 30, 1984.
KY84–1009	Mar. 23, 1984.
Minnesota: MN85–5006	Feb. 1, 1985.
New York:	
NY81–3039	June 12, 1981.
NY83–3027	July 22, 1983.
NY84–3044	Dec. 7, 1984.
Oklahoma: OK84–4049	Sept. 7, 1984.
Virginia: VA82–3033	Dec. 3, 1982.
Wisconsin:	
WI84–5038	Oct. 19, 1984.
WI84–5029	Oct. 12, 1984.
WI84–5036	Oct. 19, 1984.
WI84–5034	Nov. 2, 1984.
WI84–5039	Oct. 19, 1984.

Supersedeas Decisions to General Wage Determination Decisions

The numbers of the decisions being superseded and their dates of publication in the **Federal Register** are listed with each State. Supersedeas decision numbers are in parentheses following the number of the decisions being superseded.

Colorado: CO83–5113(CO85–5015)	July 15, 1984.
Massachusetts:	
MA84–3010(MA85–3013)	Apr. 6, 1984.
MA84–3008(MA85–3014)	Mar. 30, 1984.
MA84–3007(MA85–3015)	Apr. 6, 1984.

Signed at Washington, D.C. this 8th day of March 1985.

James L. Valin,

Assistant Administrator.

BILLING CODE 4510-27-M

MODIFICATIONS P. 1

DECISION NO. CA84-5022-MOD #5
(49 FR 39416-(10/5/84)

Alameda, Alpine, Amador Counties, etc., California

Change:
"Footnote a," published on February 15, 1985, to read: "Footnote b."

Add:
Glaziers:
Area 7 — Basic Hourly Rates: $20.95 — Fringe Benefits: $6.31
Definition of Area 7: Lake, Marin, Mendocino, San Francisco, San Mateo and Sonoma Counties

DECISION NUMBER MN85-5006 - MOD. #3
(50 FR 483) - February 1, 1985)
Anoka, Benton, Carlton, Carver, Cook, Dakota, Hennepin, Itasca, Koochiching, Lake, Ramsey, St. Louis, Scott, Sherburne, Stearns, & Washington Counties, Minnesota

Add:
Painters:
Area 1:

	Basic Hourly Rates	Fringe Benefits
Drywall Tapers	$17.01	$1.72
Sanders	12.76	1.72

DECISION NO. ID85-5013 - Mod#1
(50 FR 8567 - March 1, 1985)
Adams, Bannock, Bear Lake, Bingham, Blaine, Boise, Bonneville, Butte, Camas, Caribou, Cassia, Clark, Custer, Elmore, Franklin, Fremont, Gem, Gooding, Idaho (South of the 46th Parallel), Jefferson, Jerome, Lemhi, Lincoln, Madison, Minidoka, Oneida, Owyhee, Payette, Power, Teton, Twin Falls, Valley, and Washington Counties, Idaho

CHANGE:

	Basic Hourly Rates	Fringe Benefits
CARPENTERS:		
Area 1	$10.17	$1.03
PLUMBERS:		
Area 2	12.39	3.41
SHEET METAL WORKERS:		
Area 1	10.00	1.24

DECISION NO. ID85-5014 - Mod#1
(50 FR 8567 - March 1, 1985)
Ada and Canyon Counties, Idaho

CHANGE:

	Basic Hourly Rates	Fringe Benefits
DRYWALL HANGERS & FINISHERS:		
Area 1:		
Finishers	$12.25	$1.68
PLUMBERS:		
Area 1	14.17	3.86
Area 2	14.05	3.49
SOFT FLOOR LAYERS:		
Area 1	10.94	
TRUCK DRIVERS:		
Area 1	9.69	
ROOFERS:		
Area 2	12.00	1.63

MODIFICATIONS P. 2

DECISION #KY84-1007-Mod#6
(49 FR 9999-March 16, 1984)
Hardin, Jefferson and Meade Cos., Kentucky

CHANGE:

	Basic Hourly Rates	Fringe Benefits
POWER EQUIPMENT OPERATORS:		
CLASS A	14.92	2.75
CLASS B	12.18	2.75
CLASS C	11.41	2.75

DECISION #KY84-1011-Mod#3
(49 FR 11066-March 23, 1984)
Fayette and Franklin Cos., Kentucky

CHANGE:

	Basic Hourly Rates	Fringe Benefits
POWER EQUIPMENT OPERATORS:		
CLASS A	14.92	2.75
CLASS B	12.18	2.75
CLASS C	11.41	2.75

DECISION #KY84-1003-Mod#7
(49 FR 9057-January 9, 1984)
McCracken Co., Kentucky

CHANGE

	Basic Hourly Rates	Fringe Benefits
POWER EQUIPMENT OPERATORS:		
CLASS A	14.92	2.75
CLASS B	12.18	2.75
CLASS C	11.41	2.75

DECISION #KY84-1006-Mod#5
(49 FR 9997-March 16, 1984)
Warren Co., Kentucky

CHANGE:

	Basic Hourly Rates	Fringe Benefits
POWER EQUIPMENT OPERATORS:		
CLASS A	14.92	2.75
CLASS B	12.18	2.75
CLASS C	11.41	2.75

DECISION #KY84-1010-Mod#3
(49 FR 12888-March 30, 1984)
Fort Campbell (Christian County, Kentucky & Montgomery County, Tennessee)

CHANGE:

	Basic Hourly Rates	Fringe Benefits
POWER EQUIPMENT OPERATORS:		
Kentucky portion:		
CLASS A	14.92	2.75
CLASS B	12.18	2.75
CLASS C	11.41	2.75

DECISION #KY84-1009-Mod#1
(49 FR 11065-March 23, 1984)
Boyd Co., Kentucky

CHANGE:

	Basic Hourly Rates	Fringe Benefits
ASBESTOS WORKERS	19.15	2.78
POWER EQUIPMENT OPERATORS:		
CLASS A	14.94	2.75
CLASS B	12.20	2.75
CLASS C	11.43	2.75

DECISION NO. IL85-5008 - Mod #1
(50 FR 5486 - February 8, 1985)
Adams, Bond, Boone, Brown, Bureau, Calhoun, Carroll, Cass, Clinton, DeKalb, Fulton, Greene Hancock, Henderson, Henry, Jersey, JoDaviess, Knox, LaSalle, Lee, Livingston, Logan, McDonough, McLean, Macoupin, Marshall, Mason, Menard, Mercer Monroe, Montgomery, Morgan, Ogle Pike, Putnam, Randolph, Rock-Island, Schuyler, Scott, Stark, Stephenson, Warren, Washington, Whiteside, Winnebago & Woodford Counties, Illinois

ADD:
AREA DESCRIPTIONS:
Carpenters:
Area 17: JoDaviess County
Electricians:
Area 8: Rock Island and Whiteside Counties

CHANGE:

	Basic Hourly Rates	Fringe Benefits
BRICKLAYERS; CAULKERS; CLEANERS & STONEMASONS:		
Area 6	$17.22	$1.88

DECISION NO. NY81-3039 - MOD. #12
(46 FR 31189 - June 12, 1981)
MONROE COUNTY, NEW YORK

CHANGE:

Federal Register citation on MODS. 6 through 11, published on April 15, 1983, July 8, 1983, February 17, 1984, May 25, 1984, June 22, 1984 and December 21, 1984, respectively, to read: "(46 FR 31189 - June 12, 1981)"

	Basic Hourly Rates	Fringe Benefits
PAINTERS:		
Brush; Roller; Taper	13.77	4.01
Drywall wiper	13.97	4.01
Walloovering: Stilts	14.02	4.01
Swing scaffold, window brackets or other hanged scaffold, cherry pickers, mechanical lifts & mechanical aerial ladders on or in buildings or structures 2 or more stories in height: Structural steel or iron up to 40ft.	14.27	4.01
Spray painting, water hydroblasting & metal blasting: Mechanical taper	14.37	4.01
Structural steel and iron 40 ft. and over	14.47	4.01
Sandblasting (from ground or solid platform)	14.52	4.01
Sandblasting (from any hanging platform	14.77	4.01
Steeplejack:		
Brush & Roll	15.27	4.01
Spray painting	15.87	4.01
Sandblasting	16.27	4.01
Bridges:		
Brush & Roll	15.27	4.01
Spray	15.87	4.01
Sandblasting	16.27	4.01

DECISION NO. NY83-3027 - MOD. #7
(48 FR 33622 - July 22, 1983
NASSAU & SUFFOLK COUNTIES, NEW YORK

ADD:

	Basic Hourly Rates	Fringe Benefits
LINE CONSTRUCTION	20.30	.25+ 38.5%

CHANGE:

	Basic Hourly Rates	Fringe Benefits
ELECTRICIANS:		
Building	20.30	.75+ 35.5%
Wiring of single or multiple family dwellings and apartments up to and including 2 stories	14.00	35.7%
Installation of television receivers, radio receivers, record players and associated apparatus and antenna and home appliances and closed circuit TV and multiple outlet distribution systems, sound and intercommunication systems and commercial electromechanical devices and appliances where such is not part of an electrical contract	11.075	a
PAINTERS		
Nassau County (Remainder of County) & Suffolk Co.		
Painters & Drywall finishers	16.98	5.28
Spraying: scaffold or rolling scaffold over 18 ft.		
Sandblasting: structural steel	20.24	5.28
Repaint of hospitals, schools and apartment houses	13.55	5.28

DECISION NO. NY84-3044 - MOD. #2
(49 FR 47964 - December 7, 1984)
ST. LAWRENCE, LEWIS & JEFFERSON COUNTIES, NEW YORK

CHANGE:

The heading on the modification published on March 1, 1985 to cite "NY84-3044" and to read "MOD. #1"

DECISION # OK84-4049
MOD. No. 6
(49 FR 35473 - September 7, 1984
Adair, Atoka, Bryan, Coal, Cherokee, Craig, Creek, Delaware, Haskell, Hughes, Leflore, Latimer, McIntosh, Mayes, Muskogee, Nowata, Okfuskee, Okmulgee, Osage, Ottawa, Pawnee, Pittsburg, Pushmataha, rogers, Tulsa, Sequoyah, Wagoner, and Washington Cos., Oklahoma

CHANGE:

CLASSIFICATION DEFINITION

Carpenters, Millwrights and Piledrivermen:

Area IV

Tulsa, Rogers, Mayes, Creek, Craig, Delaware and that part of Osage County, South of Hwy. #20, including all of the town of Hominy and that part of Pawnee County east of State Highway #99.

DECISION NO. VA82-3033-MOD. #9
(47 FR 54744-December 3, 1982)
HENRICO COUNTY & THE INDEPENDENT CITY OF RICHMOND

OMIT:

	Basic Hourly Rates	Fringe Benefits
ELECTRICIANS:		
ZONE I-within a 12 air mile radius of Staples Mills Road and Broad Street in the City of Richmond	13.85	15½%
ZONE II-remainder of city of Richmond and Henrico County	14.60	15½%

ADD:

	Basic Hourly Rates	Fringe Benefits
ELECTRICIANS	14.35	13½%

MODIFICATIONS P. 5

DECISION NO. WI84-5038-
MOD. #2
(49 FR 41149
October 19, 1984)
Milwaukee, Ozaukee,
Waukesha and Washington
Counties

	Basic Hourly Rates	Fringe Benefits
OMIT:		
Forklift from Group 3 and Group 4 Power Equipment Operators		
ADD:		
Forklift to Group 5 Power Equipment Operators		
Plasterers Laborers	12.73	3.82
CHANGE:		
Bricklayers	15.63	3.75
Electricians	16.67	2.24+ 13½%
Ironworkers:		
Structural, Ornamental and Reinforcing	14.81	5.75
Roofers	14.35	3.44
Sheet Metal Workers	15.78	4.86
Residential	11.54	4.86
Laborers:		
Group 1	12.62	3.83
Group 2	12.73	3.83
Group 3	12.84	3.83
Group 4	12.93	3.83
Group 5	13.13	3.83
Group 6	13.23	3.83
Group 7	13.28	3.83
Group 8	13.48	3.83

DECISION NO. WI84-5029 -
MOD. #1
(49 FR 40151 -
October 12, 1984)
Barron, Dunn, Polk and
St Croix Counties,
Wisconsin

	Basic Hourly Rates	Fringe Benefits
CHANGE:		
Asbestos Workers	$18.32	$3.65
Bricklayers	15.35	2.09
Ironworkers:		
Structural, Ornamental and reinforcing	17.10	3.64
Plasterers	15.35	2.09

DECISION NUMBER WI-840036-
MOD. No. 1
(49 FR 41147 -
October 19, 1984)
Juneau County, Wisconsin

	Basic Hourly Rates	Fringe Benefits
CHANGE:		
Asbestos Workers	$17.10	$2.88
Bricklayers	14.30	2.35
Carpenters:		
South of Hwy. 321 and East of County Trunk #80:		
Carpenters & Soft floor layers	13.61	2.21
Millwrights & Piledrivermen	14.01	2.21
Electricians	15.51	.90+ 10-1/8%
Glaziers	16.27	.93
Lathers	12.66	3.16
Sheet Metal Workers	14.48	2.00+ 3%
Tile Setters	14.05	2.35

MODIFICATIONS P. 6

DECISION NO. WI84-5039 -
MOD. #1
49 FR 41149 -
October 19, 1984
Racine County Wisconsin

	Basic Hourly Rates	Fringe Benefits
OMIT:		
Fork lift Operators from Group 3 and Group 4 Power Equipment Operators		
ADD:		
Fork lift Operators to Group 5, Power Equipment Operators		
CHANGE:		
Carpenters:		
(West of Highway #75		
Millwrights	16.29	2.51
Piledrivermen	15.74	2.51
Carpenters:		
(Remainder of County:)		
Carpenters & Soft Floor Layers	15.11	1.96
Millwrights	15.40	1.96
Piledrivermen	15.20	1.96
Cement Masons	13.32	1.95
Ironworkers	14.81	5.75

DECISION WI84-5034 -
MOD #2
(49 FR 44191 -
November 2, 1984)
Green and Rock Counties
Wisconsin

	Basic Hourly Rates	Fringe Benefits
CHANGE:		
Electricians	$15.92	5.87+ 13-1/8%
Glaziers:		
Northern 2/3 of Cos.	16.23	.93
Plumbers & Steamfitters	17.37	2.50
Tile Setters:		
Contract over $850,000	14.08	2.55
Contract $850,000 or less	10.78	2.55

SUPERSEDEAS DECISION

STATE: COLORADO

COUNTIES: Adams, Arapahoe, Boulder, Clear Creek, Denver, Douglas, Eagle, Elbert, Gilpin, Grand, Jefferson, Lake, Larimer, Morgan, Park, Summit, and Weld

DECISION NUMBER CO85-5015

DATE: Date of Publication

Supersedes Decision No. CO83-5113 dated July 15, 1983, in 48 FR 32451

DESCRIPTION OF WORK: Building Projects (does not include single family homes and apartments up to and including 4 stories)

	Basic Hourly Rates	Fringe Benefits
ASBESTOS WORKERS	$10.75	$3.04
BOILERMAKERS	14.97	2.575
BRICKLAYERS: Stonemasons:		
Area 1	14.49	2.01
Area 2	14.35	2.00
Area 3	14.05	1.96
Area 4	12.29	2.00
Area 5	14.49	2.01
CARPENTERS:		
Adams, Arapahoe, Boulder, Denver and Jefferson Counties:		
Projects under $2,500,000	10.38	3.12
Projects $2,500,000 and over	12.63	3.12
Remaining Counties	10.38	3.12
CEMENT MASONS:		
Cement Masons	13.79	2.32
Working with composition materials and color	14.29	2.32
Working on scaffold, swing stage, or temporary platform over 25'	14.04	2.32
DRYWALL INSTALLERS	14.87	2.32
ELECTRICIANS:		
Elbert, Park Counties:		
Electrician, Technicians	16.12	2.31 +3%
Remaining Counties: Electrical work - total cost $150,000.00 or more:		
Electricians, Technicians	16.70	2.60 3+3/10%
Electricial work total cost $150,000.00 or less		
Electricians, Technicians	15.20	2.60+ 3-3/10%

	Basic Hourly Rates	Fringe Benefits
ELEVATOR CONSTRUCTORS		
Mechanics	$17.97	a+2.69
Helpers	12.58	a+2.69
Probationary Helpers	8.985	
GLAZIERS	13.89	b+1.52
IRONWORKERS:		
Structural, Ornamental, and Reinforcing	15.50	3.53
LABORERS:		
Zone 1:		
Group 1	5.20	.15
Group 2	8.65	2.04
Group 3	8.90	2.04
Zone 2:		
Group 1	5.20	.15
Group 2	7.65	2.04
Group 3	7.90	2.04
LATHERS	13.44	.01
MARBLE SETTERS:		
Area 1	13.31	1.55
Area 2	15.53	2.79
MILLWRIGHTS	14.66	2.39
PAINTERS:		
Area 1:		
Brush and Roll; Hardwood Finishers: Sandblast, Pot Tenders	12.19	1.88
Drywall Finishers (hand)	12.44	1.88
Spray: Swing Stage and Chair: Sandblast (exterior): Hazardous Work: Paperhangers: Drywall Finishers (tool)	12.79	1.88
Sandblast (interior): Steeplejack	14.11	1.88
Area 2:		
Brush and Roll; Hardwood Finishers: Sandblast, Pot Tenders	15.89	2.33
Drywall Finishers (hand)	16.14	2.33
Spray: Swing Stage and Chair: Sandblast (exterior): Hazardous work: Paperhanger: Drywall Finishers (tool)	16.49	2.33
Sandblast (interior): Steeplejack	17.81	2.33

DECISION NO. CO85-5015

Page 2

	Basic Hourly Rates	Fringe Benefits
PLASTERERS	$13.44	$ .01
PLUMBERS: Steamfitters:		
Area 1	12.90	3.60
Area 2	15.15	3.65
Area 3	17.27	3.13
ROOFERS	13.32	3.13
SHEET METAL WORKERS	16.03	3%+3.53
SOFT FLOOR LAYERS	13.14	3.23
SPRINKLER FITTERS	16.67	2.83
TERRAZZO WORKERS	15.53	2.79
TILE LAYERS:		
Area 1	13.31	1.55
Area 2	15.53	2.54
TILE, MARBLE AND TERRAZZO FINISHERS:		
Finishers	9.55	3.00
Floor Grinders	9.70	3.00
Base Grinders	10.25	3.00
POWER EQUIPMENT OPERATORS: (Other than for work in Tunnels, Shafts, and Raises):	ZONE 1	ZONE 2
Group 1	11.26	11.93
Group 2	11.61	12.28
Group 3	11.96	12.63
Group 4	12.11	12.78
Group 5	12.26	12.93
Group 6	13.41	13.08
(For work in Tunnels, Shafts, and Raises):		
Group 1	13.41	14.08
Group 2	13.76	14.43
Group 3	13.86	14.53
Group 4	14.11	14.78
Group 5	14.26	15.33
Group 6	14.66	15.33
Group 7	14.41	15.08
FRINGE BENEFITS: $3.20		

	Basic Hourly Rates	Fringe Benefits
TRUCK DRIVERS:	ZONE 1	ZONE 2
Group 1	$12.91	$11.65
Group 2	13.01	11.78
Group 3	13.11	11.91
Group 4	13.21	12.03
Group 5	14.81	11.91
Group 6	14.86	11.98
Group 7	14.91	11.91
Group 8	14.96	12.16
Group 9	15.01	12.15
Group 10	15.06	12.22
Group 11	15.16	12.30
Group 12	15.21	12.41
Group 13	15.31	12.53
Group 14	15.46	12.73
Group 15	15.51	12.78
Group 16	15.61	12.90
Group 17	15.71	13.28
Group 18	15.81	13.16
Group 19	15.91	13.28
Group 20	16.11	13.54
FRINGE BENEFITS: $2.94		

WELDERS: Receive rate prescribed for craft performing operation to which welding is incidental

FOOTNOTES:

a. Employer contributes 8% basic hourly rate for over 5 years' service and 6% basic hourly rate for 6 months' to 5 years' service as Vacation Pay Credit. Seven Paid Holidays: New Year's Day; Memorial Day; Independence Day; Labor Day; Thanksgiving Day; Friday after Thanksgiving Day; and Christmas Day

b. 15 days Paid Vacation after 1600 hours

AREA DESCRIPTIONS

BRICKLAYERS: Stonemasons:
Area 1: Eagle County
Area 2: Boulder and Grand Counties
Area 3: Elbert, Lake and Park Counties
Area 4: Larimer County
Area 5: Remaining Counties

MARBLE SETTERS:
Area 1: Elbert, Lake, and Park Counties
Area 2: Remaining Counties

PAINTERS:
Area 1: Park County (southern half)
Area 2: Remaining Counties including northern half of Park County

PLUMBERS: Steamfitters:
Area 1: Southern portion of Douglas, Elbert, and Park Counties
Area 2: Boulder County
Area 3: Remaining Counties (including northern portions of Douglas, Elbert, and Park Counties)

Tile Layers:
Area 1: Elbert, Lake and Park Counties
Area 2: Remaining Counties

LABORERS:

LABORERS ZONE 1

Adams, Arapahoe, Boulder, Denver and Jefferson Counties.

Group 1: Final Cleanup Laborers
Group 2: General Laborers
Group 3: Mechanical, Air, Gas and Electric Power Tool Operator, Burners on Demolition, Gunnite Nozzlemen and Sand Blasters

LABORERS ZONE 2

Clear Creek, Douglas, Eagle, Elbert, Gilpin, Grand, Lake, Larimer, Morgan, Park, Summit and Weld Counties.

Group 1: Final Cleanup Laborers
Group 2: General Laborers
Group 3: Mechanical, Air, Gas and Electric Power Tool Operator; Burners on Demolition; Gunnite Nozzlemen; and Sand Blasters

POWER EQUIPMENT OPERATORS

A. Counties entirely within Zone 1:

Boulder	Denver	Douglas	Clear Creek
Gilpin	Jefferson	Larimer	Morgan
Weld			

B. Counties entirely within Zone 2:

Grand	Lake	Park	Summit

C. Legal description of the portions of Adams, Arapahoe, Eagle and Elbert Coutnies which are included within Zone 1, as follows:
All of Adams, Arapahoe, Elbert Counties lying west of the Township line between R59W and R60W of the 8th Guide Meridian West; and all of Eagle County lying West of the Township line between R81W of the 10th Guide Meridian West

D. Legal description of the portions of Adams, Arapahoe, Eagle and Elbert Counties which are included within Zone 2, as follows:
All of Adams, Arapahoe, Elbert Counties lying East to of the Township line between R59 and R60W of the 8th Guide Meridian West, and all of Eagle County lying East of the Township line between R80W & R81W of the 9th Guide Meridian West

(Other than for work in Tunnels, shafts and Raises)

Group 1: Air Compressor; Asphalt Screed; Oiler; Brakeman; Drill Operator - smaller than Williams MF and similar; Tender to Heavy Duty Mechanic and/or Welder; Operators of 5 or more light Plants, Welding Machines, Generators, single unit conveyor; Pumps: Vacuum Well Point System; Tractor, under 70 HP with or without attachments; Grade Checker; Compressors, 360 C.F.M. or less

Group 2: Conveyor, handling building materials; Ditch Witch and similar Trenching Machine; Fireman or Tank Heater, road; Forklift; Haulage Motor Man; Pugmill; Portable Screening Plant with or without a Spray Bar; Screening Plants, with Classifier; Self-propelled Roller, rubber-tired under 5 tons

Group 3: Asphalt Plant; Backfiller, Bituminous Spreader or Laydown Machine; Cableway Signalman; Caisson Drill: Williams MF, similar and larger; C.M.I. and similar; Concrete Batching Plants; Concrete Finish Machine: Concrete Gang Saws on concrete paving; Concrete Mixer, less than 1 yd.: Concrete Placement Pumps, under 8 inches: Distributors, Bituminous Surfaces; Drill, Diamond and Core; Drill Rigs, Rotary, Churn, or Cable Tool; Elevating Graders, Equipment Lubricating and Service Engineer; Engineer Fireman; Grout Machine: Gunnite Machine: Hoist, 1 drum: Hydraulic Backhoes, wheel mounted under 3/4 yd: Loader, Barber Green, etc.; Loader up to and including 6 cu. yds.; Machine Doctor: Mechanic; Motor Grader/Blade, rough: Road Stabilization Machine: Rollers, self-propelled, all types over 5 tons: Sandblasting Machine: single unit portable Crusher, with or without Washer; Tie Tamper, wheel mounted: tractor, 70 HP and over with or without attachments; Trenching Machine Operator: Welder; Winch on Truck

Group 4: Cable Operated Crane, Truck Mounted: Cable Operated Power Shovels, Draglines, Clamshells, and Backhoes, 5 cu. yds. and under: Concrete Mixer over 1 cu. yd.: Concrete Paver 34E or similar: Concrete Placement Pumps, 8 inches and over: Crane, 50 tons and under; Hoist, 2 drums; Hydraulic Backhoe, 3/4 yd. and over: Loader, over 6 cu. yds.; Mechanic-welder, heavy duty: Mixer Mobile: Motor Grader/Blade, Finish; Multiple unit portable Crusher, with or without Washer; Piledriver; Scrapers, single bowl under 40 cu. yds.: Self-propelled Hydraulic Crane; Tractor with sideboom; Truck mounted Hydraulic Crane

POWER EQUIPMENT OPERATORS (CONT'D)

Group 5: Cable Operated Power Shovels, Draglines, Camshells and Backhoes over 5 cu. yds.; Crane over 50 tons carrier mounted; Derrick; Electric rail type Tower Crane; Hoist, 3 drum or more; Quad Mine and similar push unit; Scrapers single bowl including pups 40 cu. yds. and tandem bowls and over

Group 6: Cableway; Climbing Tower Crane; Crawler or truck mounted Tower Crane; Wheel Excavator, Tower Crane, truck type

(For work in Tunnels, Shafts and Raises)

Group 1: Brakeman

Group 2: Motorman

Group 3: Compressor (900 CFM and over) serving Tunnels, Shafts and Raises

Group 4: Air Tractors; Grout Machine; Gunnite Machine; Jumbo Form; Mechanic; Welder

Group 5: Concrete Placement Pumps, 8" and over discharge; Mucking Machines and Front End Loaders, underground, Slusher; Mine Hoist Operator

Group 6: Mole

Group 7: Mechanic - Welder, heavy duty

TRUCK DRIVERS

TRUCK DRIVERS ZONE DEFINITIONS

COUNTIES WITHIN ZONE 1:

Eagle, Grand, Lake, Morgan, Park, and Summit

COUNTIES WITHIN ZONE 2:

Adams, Arapahoe, Boulder, Clear Creek, Denver, Douglas, Elbert, Gilpin, Jefferson, Larimer and Weld.

TRUCK DRIVERS

Group 1: Pick Up, Truck Driver Tenders, Dumpmen, Washers, Greasemen

Group 2: Dump Truck Driver to including 6 cu. yds, Sweeper Truck, Flat rack single axle, and manhaul, shuttle truck or bus
Liquid and bulk tankers - single axle

Group 3: Flat rack tandem axle
Battery men, mechanics tenders

TRUCK DRIVERS (CONT'D)

Group 4: Fork Lift Driver

Group 5: Dump Truck Driver over 6 cu. yds., to and including 14 cu. yds.

Group 6: Straddle Truck Driver, lumber carrier, Liquid and bulk tankers-tandem axle

Group 7: Truck Drivers-fuel truck, grease truck, combination fuel and grease

Group 8: Cement Mixer- agitator truck to and including 10 cu. yds.,
Distributor truck driver
Liquid and bulk tankers - semi or combination

Group 9: Multi purpose truck-specialty and hoisting

Group 10: Dump truck driver over 14 cu. yds., to and including 29 cu. yds.
Highboy, lowboy, floats, semi
Cab operated distributor truck driver - semi
Liquid and bulk tankers - Euclid - Electric or similar
Truck Driver dumptor type, Youngbuggy, Jumbo and similar type equipment

Group 11: Truck Driver, snow plow

Group 12: Cement Mixer - agitator truck over 10 cu. yds, to and including 15 cu. yds.

Group 13: Dump Truck Driver over 29 cu. yds., to and including 30 cu. yds.

Group 14: Cement Mixer - agitator truck over 15 cu. yds.

Group 15: Tire man
Dump Truck Driver over 39 cu. yds., to and including 54 cu. yds.

Group 16: Mechanic

Group 17: Dump Truck Driver over 54 cy. yds., to and including 79 cu. yds.

Group 18: Heavy duty diesel mechanic, body men, welders or combination men

Group 19: Dump Truck Driver over 79 cu. yds., to and including 104 cu. yds.

Group 20: Dump Truck Driver over 104 cu. yds.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR, 5.5(a)(1)(ii))

SUPERSEDEAS DECISION

STATE: MASSACHUSETTS

COUNTIES: ESSEX, SUFFOLK, MIDDLESEX, NORFOLK, BRISTOL, PLYMOUTH, BARNSTABLE, DUKES, NANTUCKET

DECISION NUMBER: MA85-3013

DATE: DATE OF PUBLICATION

Supersedes Decision No. MA84-3010 dated, April 6, 1984, in 49 FR 13809.

DESCRIPTION OF WORK: Building Projects (including Residential), Heavy and Highway Project, and Marine Projects.

	Basic Hourly Rates	Fringe Benefits
ASBESTOS WORKERS		
Area 1	18.56	4.33
Area 2	17.63	4.13
BOILERMAKERS	18.93	3.765
BRICKLAYERS; CEMENT MASONS (except in areas 2,3,4,5,7&8); PLASTERERS; STONE MASONS; POINTERS; CAULKERS and CLEANERS:		
Areas 1, 2, &3	18.76	3.87
Area 4		
Except Plasterers	19.16	3.47
Plasterers	18.48	4.15
Area 5, 6, 7	19.26	3.37
Area 8 & 9	20.11	2.52
Area 10	18.21	4.42
Area 11	18.15	4.05
Area 12	18.21	4.42
Area 13	19.16	3.47
Area 14	18.41	4.22
CARPENTERS		
Area 1	16.56	4.57
Area 2	16.06	5.07
Area 3	16.51	4.57
Area 4	17.86	4.70
Area 5	15.73	3.47
Area 5A	15.43	3.47
CEMENT MASONS:		
Areas 1, 6, 9, 10, 11, 12, 13, 14, 15, & 16 - See BRICKLAYERS		
Area 2	19.25	3.53
Areas 3, 4 & 5	20.00	2.85
Areas 7 & 8:		
Projects $1 million and over	16.55	2.77
Projects $250,000 to $1 million	14.90	2.77
Projects less than $250,000	13.24	2.77
Residential	13.24	2.77
ELECTRICIANS:		
Area 1:		
Contracts over $40,000	17.35	3.15+3%
Contracts under $40,000	15.25	3.15+3%
Area 2	16.77	3.70+3%
Residential (Single Family Housing)	12.00	2.50+3%
Area 3	17.25	4.55+3%
Residential (Single Family Housing)	12.00	2.45+ 3%
Area 4	18.05	2.12+ 3%
Residential (Single Family Housing)	11.75	2.27+ 3%
Area 5	16.50	2.26+ 11%
Residential (Single Family Housing)	12.00	1.81+ 3%
Area 6	19.95	5.18+ 3%
Residential (Single Family Housing)	10.50	2.68+ 10%
Area 7	17.35	30%
Area 8	16.00	4.75+ 3½%
Residential	11.00	3.75+ 3½%
Area 9	15.75	2.60+ 18.5%
Residential	10.00	1.00+ 10%
Area 10	16.65	28%+ .10
Residential	1.85	21%
Area 11	19.23	17.5%
Residential (Single Family Housing)	10.50	2.60+ 3%
ELEVATOR CONSTRUCTORS	19.31	3.00+ a+b
ELEVATOR CONSTRUCTORS HELPERS	13.52	3.00+ a+b
ELEVATOR CONSTRUCTORS' PROBATIONARY HELPERS	9.655	
GLAZIERS:		
Area 1	18.45	3.65
Area 2	15.88	2.53

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	Basic Hourly Rates	Fringe Benefits
IRONWORKERS:		
Area 1	15.64	6.81
Area 2	18.75	5.25
Area 3	18.75	4.25
Area 4	16.03	5.70
LABORERS (BUILDING):		
Class I	13.95	3.00
Class II	14.20	3.00
Class III	14.45	3.00
Class IV	14.70	3.00
Class V	14.95	3.00
LABORERS (WRECKING):		
Area 1:		
Class I	10.70	3.00
Class II	13.80	3.00
Class III	13.90	3.00
Class IV	14.05	3.00
Class V	14.30	3.00
Class VI	14.55	3.00
Area 2	13.95	3.05
LABORERS (HEAVY & HIGHWAY):		
Class I	13.95	3.05
Class II	14.20	3.05
Class III	14.70	3.05
Class IV	14.95	3.05
Tunnels, caisson and Cylinder Work in Compressed Air:		
Class V-A	19.78	3.05
Class V-B	21.28	3.05
Class V-C	21.45	3.05
Class V-D	22.42	3.05
Class V-E	22.21	3.05
Free Air Operation:		
Shield driven and liner plate in free air:		
Class VI-A	15.25	3.05
Class VI-B	14.40	3.05
Cleaning concrete and caulking tunnel (both new and existing):		
Class VI-C	14.40	3.05
Class VI-D	14.725	3.05
Rock shaft, concrete lining of same and tunnel in free air:		
Class VI-E	14.15	3.05
Class VI-F	14.30	3.05
Class VI-G	14.40	3.05
Class VI-H	15.25	3.05
LABORERS (OPEN AIR CAISSONS, UNDERPINNING AND TEST BORING INDUSTRIES):		
Open Air Caisson, Underpinning Work and Boring Crew:		
Class I-A	13.95	3.05
Class I-B	14.70	3.05
Test Boring:		
Class II-A	13.95	3.05
Class II-B	14.82	3.05
LATHERS	11.90	1.58
LINE CONSTRUCTION:		
Lineman	18.05	2.70+c +4.375%
Equipment Operators & Cablemen	15.34	2.70+c +4.375%
Driver Groundmen	14.44	2.70+c +4.375%
Groundman	9.93	2.70+c +4.375%
MARBLE, TILE & TERRAZZO WORKERS	18.45	3.45
MILLWRIGHTS	17.10	4.85
PAINTERS:		
Sign Painters (Statewide)	13.44	2.05
Area 1:		
New Construction:		
Brush; Taper	18.20	5.27
Spray; Sandblast	19.20	5.27
Steel	21.32	5.27
Repaint:		
Brush; Taper	16.38	5.27
Spray; Sandblast	17.38	5.27
Steel	21.32	5.27
Area 2:		
Brush; Taper; Paperhanging	17.81	5.28
Sandblasting; swing stage	18.81	5.28
Spray; Steel	19.31	5.28
Repaint up to 3 stories (including basements and sub-basements) and new housing 2 stories and less:		
Brush; Taper; Paperhanging	15.14	5.28
Sandblasting; Swing stage	15.99	5.28
Spray; Sandblast Steel	16.41	5.28

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	Basic Hourly Rates	Fringe Benefits
Area 3:		
Brush	$16.08	3.55
Wall Coverings	16.33	3.55
Spray; Sandblast	17.08	3.55
Steel	18.20	3.55
Repaint	13.67	3.55
Residential	12.06	3.55
Area 4:		
New Construction:		
Brush	15.05	3.23
Spray; Sandblasting	16.05	3.23
Steel	16.30	3.23
Repaint & Residential:		
Brush	14.50	3.23
Spray; Sandblasting	15.50	3.23
Steel	15.75	3.23
Area 5:		
Brush; Roller	14.13	2.81
Taping	14.23	2.81
Paperhangers:		
Vinyl Installers	14.63	2.81
Spray	15.63	2.81
Sandblast; chipping; hammer; power brush	15.86	2.81
Steel	17.38	2.81
Steel spray	18.88	2.81
Steel: sandblast; chipping; hammers; power tools	19.13	2.81
Interior repaint (except power plants):		
Brush; Roller	12.72	2.81
Sprayers	14.07	2.81
Sandblasters; chipping; hammers; power tools	14.27	2.81
PILEDRIVERMEN	17.90	3.20
PLASTERERS-SEE BRICKLAYERS, ETC.		
PLASTERERS TENDERS	14.20	3.00
PLUMBERS, PIPEFITTERS & STEAMFITTERS:		
Area 1:		
Plumbers	18.98	5.75
Repairs: Replacing defective fixtures, appliances and defective piping, valves or fittings serving same (which means the fixtures and appliances in a single family house, one apartment, or not more than one group of fixtures in same building that tie into the same soil or waste stack. Replacing of piping limited to piping in the same immediate area of items served by the piping.)	18.03	5.75
Pipefitters	19.67	5.13
Area 2	18.73	4.42
Area 3	18.32	3.15
Area 4		
Plumbers & pipefitters	19.37	2.34
Area 5		
Plumbers & Pipefitters	12.91	1.85+ 4%
Area 6		
Plumbers & pipefitters	17.45	6.13
Area 7		
Plumbers & pipefitters	19.03	3.47
Area 8:		
Plumbers & steamfitters	16.64	3.45
Nursing homes and rest homes that do not exceed 4 stories; Repair or renovation in an existing building without change in exterior dimension by way of addition thereto:	12.83	3.13
Residential	12.83	3.13
POWER EQUIPMENT OPERATORS (BUILDING, HEAVY & HIGHWAY, & MARINE CONSTRUCTION)		
Class I	18.91	3.68+e
Hourly premium for boom lengths including jib:		
Over 150 ft. + .64		
Over 185 ft. + 1.14		
Over 210 ft. + 1.59		
Over 250 ft. + 2.43		
Over 295 ft. + 3.75		
Class II	18.79	3.68+e
Class III	15.79	3.68+e
Class IV	17.22	3.68+e
Class V	13.98	3.68+e
Class VI	14.85	3.68+e
ROOFERS:		
Roofers	17.76	4.82
Slaters	18.01	4.82
Hot pitch	18.76	4.82

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	Basic Hourly Rates	Fringe Benefits
SHEET METAL WORKERS		
Area 1	20.10	5.29
Residential	14.07	3.79
Area 2	14.38	3.65+ 3%
SPRINKLER FITTERS		
Area 1	18.30	2.41
Area 2	16.37	3.23
TILE & MARBLE FINISHERS	16.16	2.85
TERRAZZO FINISHERS	19.25	1.50
TRUCK DRIVERS (BUILDING, HEAVY & HIGHWAY CONSTRUCTION):		
Class I	12.86	3.00+ d+e
Class II	13.03	3.00+ d+e
Class III	13.10	3.00+ d+e
Class IV	13.22	3.00+ d+e
Class V	13.32	3.00+ d+e
Class VI	13.61	3.00+ d+e
Class VII	13.90	3.00+ d+e

WELDERS - Receive rate prescribed for craft to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5 (a)(1)(ii)).

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FOOTNOTES:

PAID HOLIDAYS: A-New Year's Day; B-Memorial Day; C-Independence Day; D-Labor Day; E-Thanksgiving Day F-Christmas Day.

a. Paid holidays: A through F and the day after Thanksgiving Day.

b. Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit.

c. Paid Holidays: A through F and Bunker Hill Day, provided the employee has been employed 5 working days prior to any one of the listed holidays.

d. Paid holidays: A through F, Washington's Birthday, Patriots Day, Columbus Day and Veterans Day.

e. Paid Vacation: 4 months to 1 year - ½ day's pay per month; 1-5 years - 1 week; 5-10 years - 2 weeks; 10 years or more - 3 weeks. Employee must have received pay for 120 days during last year of employment.

AREA DESCRIPTIONS

ASBESTOS WORKERS:

AREA 1: ESSEX; SUFFOLK; MIDDLESEX; BARNSTABLE (except Barnstable, Borne, Falmouth, Mashpee, Sandwich).

AREA 2: NORFOLK (Bellingham, Franklin, Plainville, Wrenham); BRISTOL (except Easton); PLYMOUTH (Lakeville, Mattapoisett, Middleboro, Rochester, Wareham); BARNSTABLE (Barnstable, Borno, Falmouth, Mashpee, Sandwich); DUKES: NATUCKET.

BRICKLAYERS; CEMENT MASONS; PLASTERERS; STONE MASONS; POINTER, CAULKERS AND CLEANERS:

AREA 1: ESSEX (Beverly, Manchester, Gloucester, Rockport, Wenham, Hamilton, Essex, Ipswich, Rowley, Newbury, Newburyport, Lynn, Lynnfield, Wakefield, Saugus, Swampscott, Nahant, Marblehead, Salem, Peabody, Danvers, Middleton, Topsfield).

AREA 2: ESSEX (Amesbury, Andover, Boxford, Georgetown, Groveland, Haverhill, Lawrence, Merrimac, Methuen, North Andover, Salisbury, West Newbury); MIDDLESEX (Reading, North Reading).

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BRICKLAYERS; CEMENT MASONS; PLASTERERS; STONE MASONS; POINTERS, CAULKERS AND CLEANERS: (CONTINUED)

AREA 3: MIDDLESEX (Wakefield).

AREA 4: SUFFOLK; MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Somerville); NORFOLK (Brookline, Milton).

AREA 5: MIDDLESEX (Stoneham, Winchester, Woburn).

AREA 6: MIDDLESEX (Belmont, Concord, Lexington, Lincoln, sudbury, Waltham, Watertown, Wayland, Weston).

AREA 7: MIDDLESEX (Burlington).

AREA 8: MIDDLESEX (Acton, Bedford, Billerica, Carlisle, Chemsford, Dracut, Dunstable, Littleton, Lowell, Tewksbury, Tyngsboro, Westford, Wilmington).

AREA 9: MIDDLESEX (Ashby, Ayer, Boxboro, Ft. Devens, Groton, North Acton, Pepperell, South Acton, Townsend, Shirley, West Acton).

AREA 10: MIDDLESEX (Ashland, Framingham, Holliston, Hopkinton, Hudson, Maynard, Natick, Sherborn, Stow); NORFOLK (Medfield, Medway, Millis).

AREA 11: MIDDLESEX (Newton only); NORFOLK (Dover, Needham, Wellesley).

AREA 12 NORFOLK (Bellingham, Canton, Dedham, Foxboro, Franklin, Norfolk Norwood, Plainville, Sharon, Walpole, Westwood, Wrentham); PLYMOUTH (Lakeville only); BRISTOL (Attleboro, North Attleboro, Mansfield, Raynham, Taunton, Berkley, Norton, Dighton, Rehoboth, Seekonk).

AREA 13: NORFOLK (Avon, Braintree, Cohasset, Holbrook, Quincy, Randolph, Soughton, Weymouth); PLYMOUTH (Abington, Bridgewater, Brockton, Carver, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull Kingston, Marshfield, Middleboro, Norwell, Pembroke, Plymouth, Rockland, Scituate, West Bridgewater, Whitman).

AREA 14: BRISTOL (Acushnet, Darmouth, Fairheven, Fall River, Freetown, New Bedford, Somerset, Swansea, Wesport); PLYMOUTH (Marion, Mattapoiserr, Rochester, Wareham); BARNSTABLE ,DUKES ,NANTUCKET.

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CARPENTERS:

AREA 1: ESSEX (Ipswich, Essex, Gloucester, Rockport, Topsfield, Hamilton, Wendham, Middleton, Danvers, Beverly, Manchester, Peabody, Salem, Marblehead).

AREA 2: ESSEX (Amesbury, Boxford, Georgetown, Groveland, Haverhill, Merrimack, Newbury, Newburyport, Rowley, Salisbury, West Newbury, Andover, Lawrence, Methuen, North Andover, West Andover); MIDDLESEX (Acton, Billerica, Boxboro, Carlisle, Chlemsford, Dracut, Dunstable, Littleton, Lowell, Tewksbury, Tyngsboro, Westford).

AREA 3: ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swampscoot); MIDDLESEX (Remainder of County); NORFOLK (except Brookline, Deham, Milton, Avon, Randolph, Holbrook, Staughton); PLYMOUTH (Duxbury, Hanover, Hingham, Hull, Marsfield, Norwell, Pembroke, Rockwell, Scituate); BRISTOL (Attleborough, North Attleborough).

AREA 4: SUFFOLK; MIDDLESEX (Belmont, Cambridge, Everett, Malden, Medford, Somerville); NORFOLK (Brookline, Deham, Miston).

AREA 5: NORFOLK (Avon Holbrook, Randolph, Stoughton); BRISTOL (Easton, North Easton, South Easton); PLYMOUTH (Remainder of County) BARNSTABLE.

AREA 5A: PLYMOUTH (Lakeville, Marion, Mattapoisett, Middleboro, Rochester); BRISTOL (Remainder of County) DUKES & NANTUCKET.

ELECTRICIANS:

AREA 1: ESSEX (Salem, Marblehead, Peabody, Danvers, Beverly, Hamilton, Wenham, Topsfield, Ipswich, Essex, Manchester, Gloucester, Rockport).

AREA 2: ESSEX (Andover, Lawrence, Methuen, North Andover, Salisbury, West Newbury, Amesbury, Boxford, Georgetown, Groveland, Haverhill, Merrimac, Newbury, Newburyport, Rowley).

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ELECTRICIANS: CONT'D

AREA 3: MIDDLESEX (Bedford, Billerica, Boxboro, Burlington, Carlisle, Chelmsford, Dracut, Dunstable, Littleton, Lowell, Tewksbury, Tyngsboro, Westford, Wilmington).

AREA 4: MIDDLESEX (Asby, Ayer, Ft. Devens, Groton, Pepperell, Shirley, Townsend).

AREA 5: MIDDLESEX (Ashland, Hopkinton, Hudson, Marlboro, Stow).

AREA 6: ESSEX (Lynn, Lynnfield, Nahant, Saugus, Swampscott); SUFFOLK; MIDDLESEX (Remainder of County); NORFOLK (except Avon, Holbrook, Randolph, Stoughton, Plainville); PLYMOUTH (Hingham, Hull).

AREA 7: NORFOLK (Plainville); BRISTOL (Attleboro, North Attleboro, Seekonk).

AREA 8: BRISTOL (Mansfield, Norton, Taunton, Raynham, Rehoboth, Dighton, Berkley); PLYMOUTH (Lakeville, Middleboro).

AREA 9: BRISTOL (Fall River, Freetown, Somerset, Sawnsea, Westport).

AREA 10: BRISTOL (Acushnet, Dartmouth, Fairhaven, New Bedford, North Dartmouth, South Dartmouth); PLYMOUTH (Mattapoisett, Rochester, Wareham); BARNSTABLE; DUKES; NANTUCKET.

AREA 11: NORFOLK (Avon, Holbrook, Randolph, Stoughton); BRISTOL (Easton); PLYMOUTH (Remainder of County).

GLAZIERS:

AREA 1: ESSEX; SUFFOLK; MIDDLESEX; NORFOLK; PLYMOUTH (except Carver, Lakeville, Middleboro, Marion, Mattapoisett, Rochester, Wareham); DUKES; NANTUCKET.

AREA 2: BRISTOL; PLYMOUTH (Carver, Lakeville, Middleboro, Marion, Mattapoisett, Rochester, Wareham); BARNSTABLE.

IRONWORKERS:

AREA 1: ESSEX (Lawrence, Methuen, North Andover, Andover, Haverhill, Boxford, Danvers, Georgetown, West Newbury, Merrimac, Rowley, Topsfield, Gloucester, Newburyport, Salisbury, Amesbury, Hamilton, Ipswich, Newbury, Wenham, Essex, Rockport); MIDDLESEX (Groveland, Lowell, Tewksbuty, Dracut, Billerica, Chlemsford, Dunstable, Tyngsboro, North Reading, Wilmington, Middleton, Acton, Groton, Pepperell, Carlisle, Littleton, Townsend, Westford).

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IRONWORKERS: CONT'D

AREA 2: ESSEX (Beverly, Swampscott, Lynn, Lynnfield, Manchester, Marblehead, Nahant, Salem, Saugus, Swampscott); SUFFOLK; MIDDLESEX (Arlington, Bedford, Belmont, Burlington, Cambridge, Concord, Everett, Framingham, Lexington, Lincoln, Malden, Maynard, Medford, Melrose, Natick, Newton, Reading, Sherborn, Somerville, Stoneham, Sudbury, Wakefield, Waltham, Watertown, Wayland, Weston, Winchester, Woburn); NORFOLK (Avon, Braintree, Brookline, Canton, Cohassett, Dedham, Dover, Foxboro, Holbrook, Medfield, Millis, Milton, Needham, Norfolk, Norwood, Quincy, Randolph, Sharon, Stoughton, Walpole, Wellesley, Westwood, Weymouth); BRISTOL (Easton); PLYMOUTH (Abington, Bridgewater, Brockton, Duxbury, East Bridgewater, Halifax, Hanover, Hanson, Hingham, Hull, Kingston, Marshfield, Norwell, Pembroke, Plymouth, Plympton, Rockland, Scituate, West Bridgewater, Whitman).

AREA 3: MIDDLESEX (Ashby, Shirley, Ayer, Boxboro, Stow, Hudson, Marlborough, Ashland, Hopkinton, Holliston, Medway).

AREA 4: NORFOLK (Billingham, Franklin, Plainville, Wrentham); BRISTOL (Acushnet, Attleboro, Berkley, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, Mansfield, New Bedford, North Attleboro, Norton, Raynham, Rehoboth, Seekonk, Somerset, Swansea, Taunton, Westport); PLYMOUTH (Lakeville, Marion, Mattapoisett, Middleboro, Rochester, Wareham); BARNSTABLE; DUKES; NANTUCKET.

LABORERS (WRECKING):

AREA 1: ESSEX; SUSSEX; MIDDLESEX; NORFOLK; PLYMOUTH.

AREA 2: BRISTOL; BARNSTABLE; DUKES; NANTUCKET.

PAINTERS:

AREA 1: ESSEX: SUFFOLK; MIDDLESEX (Arlington, Belmont, Cambridge, Everett, Malden, Medford, Melrose, North Reading, Reading, Somerville, Stoneham, Wakefield, Winchester, Woburn); NORFOLK (Except Dover, Medfield, Medway, Millis, Needham, Wellesley); BRISTOL (except Acushnet, Dartmouth, Fairhaven, New Bedford); PLYMOUTH (except Marion, Mattapoisett, Rochester, Wareham).

AREA 2: MIDDLESEX (Bedford, Billerica, Burlington, Carlisle, Chlemsford, Dracut, Dunstable, Littleton, Lowell, Tewksbury, Tyngsboro, Westford, Wilmington).

AREA 3: MIDDLESEX (Ashby, Townsend, Pepperell, Groton, Shirley, Ayer).

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PAINTERS: CONT'D

AREA 4: MIDDLESEX (Boxboro, Acton, Concord, Stow, Manyard, Lincoln, Lexington, Hudson, Sudbury, Wayland, Weston, Waltham, Watertown, Newton, Marlboro, Framingham, Natick, Ashland, Sherborn, Hopkinton, Holliston); NORFOLK (Dover, Medfield, Medway, Millis, Needham, Wellesley).

AREA 5: BRISTOL (Acushnet, Dartmouth, Fairhaven, New Bedford); PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham); BARNSTABLE; DUKES; NANTUCKET.

PLUMBERS, PIPEFITTERS & STEAMFITTERS:

AREA 1: ESSEX (Lynn, Lynnfield, Nanhant, Saugus, Swampscott); SUFFOLK; MIDDLESEX (Arlington, Cambridge, Everett, Malden, Medford, Melrose, Newton, North Reading, Reading, Somerville, Stoneham, Wakefield, Watertown, Winchester, Woburn); NORFOLK (Bellingham, Braintree, Brookline, Canton, Cohasset, Dedham, Foxboro, Franklin, Millis, Milton, Needham, Norfolk, Norwood, Plainville, Quincy, Sharon, Walpole, Westwood, Weymouth, Wrenthram); PLYMOUTH (Hingham, Hull, Scituate).

AREA 2: ESSEX (Methuen, Lawrence, Groveland, Georgetown, Andover, North Andover).

AREA 3: ESSEX (Remainder of County).

AREA 4: MIDDLESEX (Acton, Ayer - except West of Greenville branch of the Boston and Maine Railroad, Bedford, Billerica, Boxboro, Burlington, Carlisle, Chelmsford, Dracut, Dunstable, Littleton, Lowell, Pepperell, Tewksbury, Tyngsboro, Westford, Wilmington).

AREA 5: MIDDLESEX (Ashby, Townsend, Groton, Shirley, Ft. Devens, Ayer - West of Greenville branch of the Boston and Maine Railroad).

AREA 6: MIDDLESEX (Ashland, Belmont, Concord, Framington, Holliston, Hopkington, Lexington, Lincoln, Marlboro, Maynard, Natick, Sherborn, Sudbury, Stow, Waltham, Wayland, Weston, Hudson); NORFOLK (Medway, Medfield, Dover, Wellesley).

AREA 7: NORFOLK (Avon, Holbrook, Randolph, Stoughton); BRISTOL (Attleboro, Berkley, Dighton, Easton, Mansfield, North Attleboro, Norton, Raynham, Rehoboth, Taunton; PLYMOUTH (except Marion, Mattapoisett, Rochester, Wareham).

AREA 8: BRISTOL (Acushnet, Dartmouth, Fairhaven, Fall River, Freetown, New Bedford, Somerset, Swansea, Westport, Seekonk); PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham); BARNSTABLE; DUKES; NANTUCKET.

SHEET METAL WORKERS:

AREA 1: ESSEX; SUFFOLK; MIDDLESEX: NORFOLK; BRISTOL (Attleboro, North Attleboro, Mansfield, Easton, Norton, Taunton, Raynham Berkley); PLYMOUTH (except Marion, Mattapoisett, Rochester, Wareham).

AREA 2: BRISTOL (Acushnet, Dartmouth, Dighton, Fairhaven, Fall River, Freetown, Rehoboth, Seekonk, Somerset, Swansea, Westport, New Bedford); PLYMOUTH (Marion, Mattapoisett, Rochester, Wareham); BARNSTABLE; DUKES; NANTUCKET.

SPRINKLER FITTERS:

AREA 1: ESSEX; SUFFOLK; MIDDLESEX (except Ashby, Townsend, and portions of Pepperell and Shirley beyond 35 mile radius from Boston City Hall); NORFOLK; BRISTOL (portion within 35 mile radius of Boston City Hall); PLYMOUTH (portion within 35 mile radius of Boston City Hall).

AREA 2: MIDDLESEX (Ashby, Townsend, portions of Pepperell and Shirley beyond 35 mile radius of Boston City Hall); NORFOLK (beyond 35 mile radius of Boston City Hall); PLYMOUTH (beyond 35 mile radius of Boston City Hall); BARNSTABLE; DUKES; NANTUCKET.

LABORERS (BUILDING):

CLASS I: Laborers, carpenters tenders.
CLASS II: Jackhammer operator, pavement breakers, asphalt rakers, carbide core drilling machine, chain saw operator, pipelayer, barco type jumping tampers, laser beam, concrete pump, mason tenders, motorized mixers, ride-on motorized buggy, fence and beam rail erectors.
CLASS III: Air track, block pavers, rammers, curb setter.
CLASS IV: Blasters, powdermen.
CLASS V: Pre-cast floor and roof plank erectors.

LABORERS (WRECKING - AREA 1):

CLASS I: Yardmen laborers.
CLASS II: Yardmen burners, sawyers.
CLASS III: Wrecking laborers.
CLASS IV: Adreman.
CLASS V: Burners, Jackhammers.
CLASS VI: Asbestos removers, small front loaders on tracks and bobcat operators.

LABORERS (HEAVY & HIGHWAY):

CLASS I: Laborers, carpenter tenders, cement finisher tenders.
CLASS II: Asphalt rakers, fence and guard rail erector, laser beam operator, mason tender, pipelayer, pneumatic drill operator, pneumatic drill operator, pneumatic tool operator, wagon drill operator.
CLASS III: Air track operator, block pavers, rammer, curb setters.
CLASS IV: Blasters, powdermen.

Tunnels, Caisson and Cylinder Work in Compressed Air:

CLASS V-A: Powder watchmen, top men on iron bolt, change house attendant.
CLASS V-B: Brakeman, trackman, groutman, laborerer, outside lock tender, lock tender, guage tenders.
CLASS V-C: Motormen.
CLASS V-D: Blaster.
CLASS V-E: Mucking machine operator.

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LABORERS (HEAVY & HIGHWAY):

Free Air Operation:

Shield driven and liner plate tunnel in free air:
CLASS VI-A: Miners, miner welder, conveyor operator, motormen, mucking machine operator, nozzle men, grout men, shaft and tunnel steel and rodmen, shield and erector arm operators.
CLASS VI-B: Brakemen, trackmen.
Cleaning concrete and caulking tunnel (both new and existing):
CLASS VI-C: Concrete workers, strippers and form movers (wood & steel).
Rock shaft, concrete lining of same and tunnel in free air:
CLASS VI-E: Change house attendants.
CLASS VI-F: Laborers, topside.
CLASS VI-G: Brakeman, trackman, tunnel laborers, shaft laborers.
CLASS VI-H: Miner, cage tender, bellman.

LABORERS (OPEN AIR CAISSONS, UNDERPINNING AND TEST BORING INDUSTRIES)
Includes installation and performance of caissons of all types, underpinning, soil test borings, core borings, diamond drill soundings, wash borings, auger borings, shot drilling, grouting (cement, chemical, etc.), installation of earth and rock anchors, tiebacks, ground water observation wells and monitoring wells, installation of instrumentation, drilling and installation of horizontal drains, lagging (carrying of bands and settling bands in place), installation and extraction of grout pipes, pit work, hand excavation and labor required in pile driving and related work, welding of caissons not driven by pile driving equipment, pouring of concrete piles and caissons of all types, cutting-off concrete piles and clean-up:

Open Air Caisson, Underpinning Work and Boring Crew:

CLASS I-A: Laborers, top man.
CLASS I-B: Bottom man.

Test Boring:

CLASS II-A: Laborer.
CLASS II-B: Driller.

POWER EQUIPMENT OPERATORS (BUILDING CONSTRUCTION):

CLASS I: Cranes, shovels, truck cranes, cherry pickers, dragline, trench hoes, backhoes, three drum machines, derricks, pile drivers, elevator towers, hoists, gradalls, shovel dozers, front end loaders, fork lifts, augers, bor-

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POWER EQUIPMENT OPERATORS (BUILDING CONSTRUCTION): CONT'D

CLASS I: (CONT'D) ing machines, rotary drills, post hole hammers, post hole diggers, pumpcrete machines, asphalt plant (on site), concrete batching and/or mixing plant (on site), crusher plant (on site), paving concrete mixers, timber jacks.
CLASS II: Sonic or vibratory hammers, graders, tandem scrapers, concrete pumps, bulldozers, tractors, york rakes, mulching machines, portable steam boiler, portable steam generators, rollers, spreaders, tampers (self propelled or tractor drawn), asphalt pavers, mechanics maintenance, paving screed machines, stationary steam boilers, paving concrete finishing machines, cal trucks, ballast regulators, switch tampers, rail anchor machinery, tire trucks (when operated by the employer on the job site).
CLASS III: Pumps (1-3 grouped), compressors, welding machines (1-3 grouped), generators, concrete vibrators, lighting plants, heaters (power driven 1-5), well-point systems (operating and installing), syphones-pullsometers, concrete mixers, values controlling permanent plant air or steam, conveyors, Jackson type tampers, single diaphragm pump, lighting plants.
CLASS IV: Assistant engineers (firemen).
CLASS V: Assistant engineers (other than truck cranes and gradalls).
CLASS VI: Assistant engineers (on truck cranes and gradalls).

POWER EQUIPMENT OPERATORS (HEAVY & HIGHWAY CONSTRUCTION):

CLASS I: Power shovels, cranes, truck cranes, derricks, pile drivers, trenching machines, mechanical hoist pavement breakers, cement concrete pavers, draglines, hoisting engines, three drum machines, pumpcrete machines, uke loaders, shovel dozers, front end loaders, mucking machines, shaft hoists, steam engines, backhoe, gradalls, cable ways fork lifts, cherry pickers, boring machines, rotary drills, post hole hammers, port hole diggers, asphalt plant on job site, concrete batching and/or mixing plant on job site, crusher plant on job site, paving concrete mixers, timber jacks.
CLASS II: Sonic or vibratory hammers, graders; scrapers; tandem scrapers, bulldozer, tractors, mechanic maintenance, York rakes, mulching machines paving screed machines, stationary steam boilers, paving concrete finishing machines, grout pumps, potable steam boilers, portable steam generators, rollers, spreaders, asphalt pavers, locomotives or machines used in place thereof, tampers, self propelled or tractor drawn, cal tracks, ballast regulators, rail anchor machines, switch tampers.
CLASS III: Pump (1-3 grouped), compressors; welding machine (1-3 grouped), generators, lighting plants, heaters (power driven) (1-5), syphons-plulsometers, concrete mixers, valves controlling permanent plant air steam, conveyors, wellpoint system (operating and installing).

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POWER EQUIPMENT OPERATORS (HEAVY & HIGHWAY CONSTRUCTION): CONT'D

CLASS IV: Assistant engineers (firemen).
CLASS V: Assistant engineers (other than truck cranes and gradalls).
CLASS VI: Assistant engineers (on truck cranes and gradalls).

POWER EQUIPMENT OPERATOR (MARINE CONSTRUCTION):

CLASS I: Shovels, Cranes, Truck Cranes, Cherry Pickers, Derricks, Pile Drivers two or more Drum Machines, Lighterns, Derrick Boats, Trenching, Mechanic Hoists Pavement Breakers, Cement Concrete Paveers, Draglines, Hoisting Engines, Pumpcrete Machines, Elevating Graders, Shovels, Dozers, Frontend Loaders, Backhoe, Gradalls, Cable Way, Boring Machines, Rotary Drills, Post Hole Hammer, Post Hole Diggers, Fork Lifts, Timber Jacks, Asphalt Plant (on site), Concrete Batching &/or Mixing Plant (on site), Crusher Plant, (on site), Paving Concrete Mixers.
CLASS II: Portable Steam Boilers, Portable Steam Generators, Sonic or Vibratory Hammer, Graders, Scrapers, Tandem Scrapers, Concrete Pumps, Bulldozers, Tractors, York Rakes, Mulching Machines, Rollers, Spreader, Tamper self-propelled or Tractor Drawn, Asphalt Pavers, Concrete Mixers with side Loaders, Mechanics - Maintenance, Cal Truck, Ballast, Regulator, Switch Tampers, Rail Anchor Machines, Tire Trucks.
CLASS III: Pumps, Compressors, Welding Machines, Heaters (Power Driven), Valves controlling Permanent Plan Air or Steam, Well Point Systems, Augers - Powered by Independence Engines & Attached to Pile Drivers, Hydraulic Saws, Generators, Lighting Plants, Syphons-Pulsometers, Concrete Mixers, Conveyors.
CLASS IV: Assistant engineers (firemen).
CLASS V: Assistant engineers (other than truck cranes and gradalls).
CLASS VI: Assistant engineers (on truck cranes and gradalls).

TRUCK DRIVERS (HEAVY & HIGHWAY CONSTRUCTION):

CLASS I: Station wagons, panel trucks and pickup trucks.
CLASS II: Two axle equipment; helpers on low bed when assigned at the discretion of the employer, warehousemen, forklift operators.
CLASS III: Three axle equipment and tiremen.
CLASS IV: Four and five axle equipment.
CLASS V: Specialized earth moving equipment under 35 tons other than conventional type trucks, low bed, vacuum, mechanics, paving restoration equipment, mechanics.
CLASS VI: Specialized earth moving equipment over 35 tons.
CLASS VII: Trailers for earth moving equipment (double hookup).

SUPERSEDEAS DECISION

STATE: Massachusetts COUNTY: Worcester
DECISION NUMBER: MA85-3014 DATE: Date of Publication
Supersedes Decision Number MA84-3008 dated March 30, 1984, in 49 FR 12889.
DESCRIPTION OF WORK: Building construction Projects (including Residential Projects) Heavy and Highway construction Projects

	Basic Hourly Rates	Fringe Benefits
ASBESTOS WORKERS	17.98	2.92 +a
BOILERMAKERS	18.93	3.765
BRICKLAYERS; CEMENT MASONS; PLASTERERS; and STONEMASONS:		
Area 1	14.75	4.54
Area 2	17.46	4.42
Area 3	18.06	2.52
Area 4	17.40	3.90
CARPENTERS; LATHERS; SOFT FLOOR LAYERS:		
Area 1	15.10	4.07
Area 2	16.56	4.57
ELECTRICIANS:		
Area 1	16.33	3.78+ 3%
Residential (Single Family Housing)	12.00	2.03+ 3%
Area 2	16.40	4.30+ 3%
Residential (Single Family Housing)	11.75	2.23+ 3%
Area 3	16.50	2.20+ 11%
Residential (Single Family Housing)	12.00	1.84+ 3%
ELEVATOR CONSTRUCTORS:		
Mechanics	16.71	3.00+ b+c
Helpers	11.70	3.00+ b+c
Probationary Helpers	8.355	
GLAZIERS:		
Area 1	14.12	3.32
Area 2	18.45	3.65
IRONWORKERS	18.75	4.25
LABORERS:		
BUILDING CONSTRUCTION:		
Group 1	13.95	3.00
Group 2	14.20	3.00
Group 3	14.45	3.00
Group 4	14.70	3.00
Group 5	14.95	3.00

	Basic Hourly Rates	Fringe Benefits
WRECKING:		
Group 1	10.70	3.00
Group 2	13.80	3.00
Group 3	13.90	3.00
Group 4	14.05	3.00
Group 5	14.30	3.00
Group 6	14.55	3.00
HEAVY & HIGHWAY CONSTRUCTION:		
Group 1	13.95	3.05
Group 2	14.20	3.05
Group 3	14.70	3.05
Group 4	14.95	3.05
Tunnels, Caisson and Cylinder Work in Compressed Air:		
Group 5-A	19.78	3.05
Group 5-B	21.28	3.05
Group 5-C	21.45	3.05
Group 5-D	22.42	3.05
Group 5-E	22.21	3.05
Free Air Operation: Shield driven and Liner Plate in Free Air:		
Group 6-A	15.25	3.05
Group 6-B	14.40	3.05
Cleaning Concrete and Caulking Tunnel (both new and existing):		
Group 6-C	14.40	3.05
Group 6-D	14.725	3.05
Rock shaft, Concrete Lining of same and Tunnel in Free Air:		
Group 6-E	14.15	3.05
Group 6-F	14.30	3.05
Group 6-G	14.40	3.05
Group 6-H	15.25	3.05
OPEN AIR CAISSON, UNDERPINNING and TEST BORING INDUSTRIES:		
Open Air Caisson, Underpinning Work and Boring Crew:		
Group 1-A	13.95	3.05
Group 1-B	14.70	3.05
Test Boring:		
Group 2-A	13.95	3.05
Group 2-B	14.82	3.05

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	Basic Hourly Rates	Fringe Benefits
LINE CONSTRUCTION		
Line	18.00	2.60+ 4.375% +d
Equipment Operator	15.30	2.60 4.375% +d
Driver Groundman	14.40	2.60+ 4.375% +d
Groundman	9.90	2.60+ 4.375% +d
MARBLE, TILE and TERRAZZO WORKERS:		
Area 1	18.45	3.45
MARBLE & TILE FINISHERS	16.81	2.85
TERRAZZO FINISHERS	19.25	1.50
MILLWRIGHTS	17.10	4.85
PAINTERS:		
Areas 1, 2, and 3:		
Sign Painters, Erectors and Fabricators	13.00	2.05
Area 1:		
Brush and Tapers	14.16	3.29
Spray and Sandblasting	17.43	3.29
Swing and chair work and steel riding under 40 feet	14.35	3.29
Swing and chair work and steel riding 40 feet and over	14.66	3.29
Area 2:		
New Commercial Work		
Brush	15.05	3.23
Spray and Sandblast	16.05	3.23
Steel	16.30	3.23
Repaints & Residential:		
Brush	14.50	3.23
Spray and Sandblast	15.50	3.23
Steel	15.75	3.23
Area 3:		
Brush	16.08	3.55
Wall Coverings	16.33	3.55
Spray: Sandblasting	18.08	3.55
Steel	18.08	3.55
Repaint	13.67	3.55
Residential	12.06	3.55
PILEDRIVERMEN	17.90	3.20
PLUMBERS and PIPEFITTERS:		
Area 1	17.54	6.13
Area 2	15.08	3.70
Area 3		
Plumbers	17.63	3.55
Pipefitters	15.98	2.45

	Basic Hourly Rates	Fringe Benefits
ROOFERS	17.76	4.82
SHEET METAL WORKERS:		
Area 1	20.10	5.29
Residential	14.07	3.79
Area 2	15.66	5.09
SPRINKLER FITTERS	16.37	3.23
POWER EQUIPMENT OPERATORS		
Area 1:		
BUILDING CONSTRUCTION:		
Group 1	16.33	2.60+e
Group 2	16.13	2.60+e
Group 3	15.93	2.60+e
Group 3-A	15.56	2.60+e
Group 4	14.03	2.60+e
Group 5	13.33	2.60+e
Group 6	12.18	2.60+e
Group 7	17.08	2.60+e
Group 8	13.36	2.60+e
Group 9	16.91	2.60+e
Group 10	16.83	2.60+e
Group 11	17.33	2.60+e
HEAVY and HIGHWAY CONSTRUCTION:		
Group 1	16.33	2.60+f
Group 2	16.13	2.60+f
Group 3	15.93	2.60+f
Group 3-A	15.56	2.60+f
Group 4	14.03	2.60+f
Group 5	13.33	2.60+f
Group 6	12.18	2.60+f
Group 7	17.08	2.60+f
Group 8	13.36	2.60+f
Group 9	16.91	2.60+f
Group 10	16.83	2.60+f
Group 11	17.33	2.60+f
Area 2:		
BUILDING, HEAVY, HIGHWAY and MARINE CONSTRUCTION:		
Group 1:	18.91	3.68+f
Hourly Premium for boom lengths including jib:		
Over 150 ft.: + 0.64		
Over 185 ft.: + 1.14		
Over 210 ft.: + 1.59		
Over 250 ft.: + 2.41		
Over 295 ft.: + 3.35		
Group 2	18.79	3.68+f
Group 3	15.79	3.68+f
Group 4	17.22	3.68+f
Group 5	13.98	3.68+f
Group 6	14.85	3.68+f

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	Basic Hourly Rates	Fringe Benefits
TRUCK DRIVERS:		
Group 1	12.86	3.00+ g+h
Group 2	13.03	3.00+ g+h
Group 3	13.10	3.00+ g+h
Group 4	13.22	3.00+ g+h
Group 5	13.32	3.00+ g+h
Group 6	13.61	3.00+ g+h
Group 7	13.90	3.00+ g+h

WELDERS: Receive rate for craft to which welding is incidental

PAID HOLIDAYS:
A-New Year's Day; B-Memorial Day; C-Independence Day;
D-Labor Day; E-Thanksgiving Day; F-Christmas Day

FOOTNOTES:
a. Paid Holiday: Day before Christmas, providing the employee works the three days prior to the holiday
b. Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% of basic hourly rate for 6 months to 5 years of service as vacation pay credit
c. Paid Holidays: A through F and the Friday after Thanksgiving
d. Paid Holidays: A through F and Bunker Hill Day, provided the employee has worked 10 days prior to the holiday
e. Paid Holidays: A through F, Washington's Birthday and Veterans Day
f. Paid Holidays: A through F, Washington's Birthday, Columbus Day and Veterans Day
g. Paid Holidays: A through F, Washington's Birthday, Patriots Day, Columbus Day and Veterans Day
h. Paid Vacation: 4 months to 1 year - half (1/2) day's pay per month; 1-5 years - 1 week; 5-10 years - 2 weeks; 10 years or more - 3 weeks. Employee must have received pay for 120 days during last year of employment

AREA DESCRIPTIONS

BRICKLAYERS; CEMENT MASONS; PLASTERERS; and STONEMASONS:
Area 1: Warren Township
Area 2: Hopedale, Milford, and Southboro Townships
Area 3: Ashburnham, Athol, Fitchburg, Gardner, Harvard, Hubbardston, Lancaster, Leominster, Lunenburg, Petersham, Phillipston, Princeton, Royalston, Sterling, Templeton, Wesminister and Winchendon Townships
Area 4: Remainder of County

CARPENTERS, LATHERS, and SOFT FLOOR LAYERS:
Area 1: Hardwick, Warren, and West Brookfield, Gilbertville Twps.
Area 2: Remainder of County

ELECTRICIANS:
Area 1: Warren, and West Warren Townships
Area 2: Ashburnham, Athol, Bolton, Fitchburg, Gardner, Harvard, Hubbardston, Lancaster, Leominster, Lunenburg, Phillipston, Wesminister, and Winchendon Townships
Area 3: Remainder of County

GLAZIERS:
Area 1: Warren, and West Warren Townships
Area 2: Remainder of County

AREA DESCRIPTIONS (Cont'd)

MARBLE, TILE, and TERRAZZO WORKERS:
Area 1: Ashburnham, Fitchburg, Harvard, Lancaster, Leominster, Lunenburg, Princeton, Sterling, and Westminister Townships

PAINTERS:
Area 1: Warren and West Warren Townships
Area 2: Hopedale, Mendon, Milford, Southboro, Upton, and Westboro Townships
Area 3: Remainder of County

PLUMBERS and PIPEFITTERS:
Area 1: Hopedale and Southboro
Area 2: Ashburnham, Athol, Bolton, Fitchburg, Gardner, Harvard, Hubbardston, Lancaster, Leominster, Lunenburg, Petersham, Phillipston, Royalston, Templeton, Westminister, and Windendon Townships
Area 3: Remainder of County

SHEET METAL WORKERS:
Area 1: Harvard and Lancaster Townships
Area 2: Remainder of County

POWER EQUIPMENT OPERATORS:
Area 1: Royalston, Phillipston, Athol, Petersham, Hardwick, New Braintree, Brookfield, East Brookfield, North Brookfield, Oakham, Barre, Templeton, Winchendon, Strubridge, West Brookfield, and Warren Townships
Area 2: Remainder of County

LABORERS CLASSIFICATONS
BUILDING CONSTRUCTION

Group 1: Laborers, Carpenters Tenders

Group 2: Jackhammer Operator; Pavement Breakers; Asphalt Rakers; Carbide Core Drilling Machine; Chain Saw Operator; Pipelayer; Barco Type Jumping Tampers; Laser Beam; Concrete Pump; Mason Tenders; Motorized Mixers; Ride-on Motorized Buggy; Fence and Beam Rail Erectors

Group 3: Air Track; Block Pavers; Rammers; Curb Setter

Group 4: Blasters, Powdermen

Group 5: Pre-cast Floor and Roof Plank Erectors

WRECKING CONSTRUCTION

Group 1: Yardmen Laborers

Group 2: Yardmen Burners; Sawyers

Group 3: Wrecking Laborers

Group 4: Adzeman

LABORERS CLASSIFICATIONS (Cont'd)

WRECKING CONSTRUCTION (Cont'd)

Group 5: Burners; Jackhammers

Group 6: Asbestos Removers; Small Front Loaders on Tracks and Bobcat Operators

HEAVY and HIGHWAY CONSTRUCTION

Group 1: Laborers; Carpenter Tenders; Cement Finisher Tenders

Group 2: Asphalt Rakers; Fence and Guard Rail Erector; Laser Beam Operator; Mason Tender; Pipelayer; Pneumatic Drill Operator; Pneumatic Tool Operator, Wagom Drill Operator

Group 3: Air Track Operator; Block Pavers; Rammer; Curb Setters

Group 4: Blasters, Powdermen

Tunnel, Caisson and Cylinder Work in Compressed Air:

Group 5-A: Powder Watchmen; Top Men on Iron Bolt; Change House Attendant

Group 5-B: Brakeman; Trackman; Groutman; Laborer; Outside Lock Tender; Lock Tender; Guage Tenders

Group 5-C: Motormen

Group 5-D: Blaster

Group 5-E: Mucking Machine Operator

Free Air Operation - Shield Driven and Liner Plate Tunnel in Free Air:

Group 6-A: Miners; Miner Welder; Conveyor Operator; Motormen; Mucking Machine Operator; Nozzle Men; Grout Men; Shaft and Tunnel Steel and Rodmen; Shield and Erector Arm Operators

Group 6-B: Brakemen, Trackmen

Cleaning Concrete and Caulking Tunnel (both new and existing):

Group 6-C: Concrete Workers; Strippers and Form Movers (wood and steel)

Rock Shaft, Concrete Lining of Same and Tunnel in Free Air:

Group 6-E: Change House Attendants

Group 6-F: Laborers; Topside

Group 6-G: Brakeman; Trackman; Tunnel Laborers; Shaft Laborees

Group 6-H: Miner, Cage Tender; Bellman

LABORERS CLASSIFICATIONS (Cont'd)

OPEN AIR CAISSONS, UNDERPINNING And TEST BORING INDUSTRIES:

Includes installation and performance of caissons of all types, underpinning, soil test borings, core borings, diamond drill soundings, wash borings, auger borings, shot drilling, grouting (cement, chemical, etc.), installation of earth and rock anchors, tiebacks, ground water observation wells and monitoring wells, installation of instrumentation, drilling and installation of horizontal drains, lagging (carrying of bands and settling bands in place), installation and extraction of grout pipes, pit work, hand excavation and labor required in piledriving and related work, welding of caissons not driven by pile driving equipment, pouring of concrete piles and caissons of all types, cutting-off concrete piles and clean-up:

Air Air Caisson, Underpinning Work and Boring Crew:

Group 1-A: Laborers; Top Man

Group 1-B: Bottom Man

Test Boring:

Group 2-A: Laborers

Group 2-B: Driller

POWER EQUIPMENT OPERATORS CLASSIFICATIONS
AREA 1

BUILDING CONSTRUCTION

Group 1: Shovels; Cranes (including all Tower, Climbing and Bridge Cranes, as used in Building Construction); Hydraulic Cranes, 10 ton capacity or over; Draglines; Derricks; Elevators with Chicago Boom; Backhoes; Gradalls; Elevating Graders; Pile Driving Rigs; Concrete Road Pavers; all three Drum Hoisting and Trenching Machines; Belt-type Loaders; Front End Loaders, 5½ yds. or over; Dual Drum Paver; Automatic Grader (i.e. C.M.I.); Combination Backhoe/Loader, 3/4 yd. or over; Jet Engine Dryer; Tree Shredder; Post Hole Digger; Post Hole Hammer; Post Extractor; Truck-mounted Concrete Pump with Boom; Roto-mill

Group 2: Rotary Drill (with mounted Compressor); Compressor House (3 to 6 Compressors); Rock and Earth Boring Machines (excluding McCarthy and similar Drills); Graders; Front End Loaders, 4 yds. to 5½ yds.; two Drum Hoists; High Fork Lifts with capacity of 15 ft. and over; Scraper, 21 yds. and over (struck load); Sonic Hammer Console; Road Planer; Cal Tracks; Ballast Regulators; Rail Anchor Machines; Switch Tampers

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (Cont'd)
AREA 1 (Cont'd)

BUILDING CONSTRUCTION (Cont'd)

Group 3: Combination Backhoe/Loader, up to 3/4 yd. Hoe; Bulldozers; Push Cats; Scrapers, up to 21 yds. (struck load) (self-propelled or tractor drawn); Tireman; Front End Loaders, up to 4 yds.; Asphalt Paver; Well Drillers; Mechanics; Welder; Pumpcrete Machines; Concrete Pumps and similar type Pumps; Engineer or Fireman on High Pressure Boiler (on job); Self-loading Batch Plant; Well Point Operators (including installing); Electric Pumps used in Well Point System; Pumps, 12 inches and over (total discharge); Compressor, one or two 900 cu. ft. and over; Engineers in charge of Powered Grease Truck; all Automatic Elevators (permanent or temporary)(operated manually or remote control) (not to be confused with elevators operating from conventional hoist, 1, 2, or 3 drum); Grout Pumps; Boom Truck; Hydraulic Cranes, under 10 ton

Group 3-A: Asphalt Rollers; Self-powered Rollers and Compactors; Tractor without blade drawing Sheepsfoot Roller; Rubber Tire Roller; Vibratory Roller, or other type of Compactors including Machines for pulverizing and aerating Soil

Group 4: Single Drum Hoist; Power Pavement Breakers; Concrete Pavement Finishing Machines; Two Bag Mixers with Skip; McCarthy and similar Drills; Batch Plants (not self-loading); Bulk Cement Plants; Self-propelled Material Spreaders; A-Frame Trucks; Fork Lifts, up to 15 ft.; 3 or more 10 KW Light Plants; 30 KW or more Generators

Group 5: Compressors (one or two)(315 cu. ft. to 900 cu. ft.); Pumps, 4 inches to 12 inches (total discharge)

Group 6: Compressors, up to 315 cu. ft.; Small Mixers; Pumps, up to 4 inches; Power Heaters, except when 3 or more Heaters are used on one job, classification 4 rate shall be paid; Welding Machines, except when 3 or more Welding Machines are used on one job, classification 4 rate will be paid; Conveyors; Oiler; Helpers on Grease Trucks with hand greasing equipment

Group 7: Truck Crane Crews

Group 8: Oiler

Group 9: Master Mechanic

Group 10: Boom lengths over 184 ft. including Jib

Group 11: Boom lengths over 225 ft., including Jib

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (Cont'd)
AREA 1 (Cont'd)

HEAVY and HIGHWAY CONSTRUCTION

Group 1: Shovels; Crawler and Truck Cranes; Derricks; Backhoes; Trenching Machines; Elevator Graders; Belt-type Loaders; Gradalls; Pile Drivers; Concrete Pavers, On-site Processing Plant (Engineer in charge); Dragline; Clamshell; Cableways; Shaft Hoists; Mucking Machines; Front End Loader, 5½ yds. and over Tower Cranes; Self-propelled Hydraulic Cranes, 10 tons and over; Dual Pavers; Automatic Grader, Excavator (C.M.I. or equal); Scrapers towing Pan or Wagon; Tandem Dozers or Push Cats (2 units in Tandem); Welder using Semi-automatic Welding Machine; Shotcrete Machine; Tunnel Boring Machine; Combination Back Hoe/Loader, 3/4 yd. Hoe or over; Jet Engine Dryer; Tree Shredder; Post Hole Digger; Post Hole Hammer; Post Extractor; Truck mounted Concrete Pumps with boom; Roto-mill

Group 2: Rotary Drill, with mounted Compressor; Compressor House, 3 to 6 Compressors; Rock and Earth Boring Machines, excluding McCarthy and similar Drills; Grader; Front End Loaders, 4 yds. to 5½ yds.; Scraper, 21 yds. and over (struck load); Forklifts, 7 ft. lift and over or 3 ton capacity and over; Sonic Hammer Console; Road Planer; Cal Tracks; Ballast Regulators; Rail Anchor Machines; Switch Tampers

Group 3: Bulldozer; Push Cats; Scrapers, up to 21 yds., struck load, self-propelled or Tractor Drawn; Self-powered Asphalt Paver; Front End Loaders, up to 4 yds.; Mechanics, Welders; Well Driller; Pumpcrete Machine; Engineer or Fireman on High Pressure Boiler (on job); Self-loading Batch Plant (on job); Well Point Operators; Electric Pumps used in Well Point System; Tireman; Pumps, 16 in. or over total discharge; Compressors (1 or 2) 900 cu. ft. and over; Powered Grease Truck; Tunnel Locomotives and Dinkeys; Grout Pumps; Hydraulic Jacks (jacking pipe, slip forms, etc.); Boom Truck, self-propelled Hydraulic Cranes, up to 10 ton; Combination Backhoe Hoe/Loader, up to 3/4 yd. Hoe

Group 3A: Asphalt Rollers; Self-powered Rollers and Compactors; Tractor without blade drawing Sheeps Foot Roller; Rubber Tire Roller; Vibratory Roller or other type of Compactors including Machines for pulverizing and aerating soil

Group 4: Hoists; Conveyors; Power Pavement Breaker; Self-propelled Material Spreader; Self-powered Concrete Finishing Machine; Two bag Mixer with Skip; McCarthy and similar Drills; Batch Plant (not self-loading); Bulk Cement Plant; 3 or more 10 KW Light Plants; 30 KW or more Generators

Group 5: Compressor, 315 cu. ft. to 900 cu. ft., 1 or 2; Pumps, 4" to 16" total discharge

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (Cont'd)
AREA 1 - HEAVY and HIGHWAY CONSTRUCTION (Cont'd)

Group 6: Compressor, up to 315 cu. ft.; Small Mixers with Skip; Oiler; Pumps up to 4"; Grease Truck; Helper on powered Grease Trucks; Power Heaters; Welding Machines, when 3 or more Welding Machines are used, Classification 4 rate shall be paid; A-Frame Trucks; Forklifts, up to 7 ft. Lift and up to 3 ton capacity; Hydro Boom; Power Safety Boat

Group 7: Truck Crane Crews

Group 8: Oiler

Group 9: Master Mechanic

Group 10: Boom Lengths over 184 feet, including Jib

Group 11: Boom Lenghts over 225 feet, including Jib

AREA 2

BUILDING CONSTRUCTION

Group 1: Cranes; Shovels; Truck Cranes; Cherry Pickers; Dragline; Trench Hoes; Backhoes; Three Drum Machines; Derricks; Pile Drivers; Elevator Towers; Hoists; Gradalls; Shovel Dozers; Front End Loaders; Fork Lifts; Augers; Boring Machines; Rotary Drills; Post Hole Hammers; Post Hole Diggers; Pumpcrete Machines; Asphalt Plant, on site; Concrete Batching and/or Mixing Plant, on site; Crusher Plant, on site; Paving Concrete Mixers; Timber Jacks

Group 2: Sonic or Vibratory Hammers; Graders; Tandem Scrapers; Concrete Pumps; Bulldozers; Tractors; York Rakers; Mulching Machines; Portable Steam Boiler; Portable Steam Generators; Rollers; Spreaders; Tampers (self-propelled or tractor drawn); Asphalt Pavers; Mechanics Maintenance; Paving Screed Machines; Stationary Steam Boilers; Paving Concrete Finishing Machines; Cal track; Ballast Regulators; Switch Tampers; Rail Anchor Machinery; Tire Trucks (when operated by the employer on the job site)

Group 3: Pumps, 1-3 grouped; Compressors; Welding Machines, 1-3 grouped; Generators; Concrete Vibrators; Lighting Plants; Heaters (power driven, 1-5); Well-point Systems, operating and installing; Syphones/Pulsometers; Concrete Mixers; Valves controlling Permanent Plant, air or steam; Conveyors; Jackson type Tampers; Single Diaphragm Pump; Lighting Plants

Group 4: Assistant Engineers (Fireman)

Group 5: Assistant Engineers (other than Truck Cranes and Gradalls)

Group 6: Assistant Engineers (on Truck Cranes and Gradalls)

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (Cont'd)
AREA 2 (Cont'd)

HEAVY and HIGHWAY CONSTRUCTION

Group 1: Power Shovels; Cranes; Truck Cranes; Derricks; Pile Drivers; Trenching Machines; Mechaniclal Hoist Pavement Breakers; Cement Concrete Pavers; Draglines; Hoisting Engines; Three Drum Machines; Pumpcrete Machines; Uke Loaders; Shovel Dozers; Front End Loaders; Mulching Machines; Shaft Hoists; Steam Engine; Backhoe; Gradalls; Cable Ways Fork Lifts; Cherry Pickers; Boring Machines; Rotary Drills; Post Hole Hammer; Post Hole Diggers; Asphalt Plant on job site, Concrete Batching and/or Mixing Plant on job site; Crusher Plant on job site; Paving Concrete Mixers; Timber Jacks

Group 2: Sonic or Vibratory Hammers; Graders; Scrapers; Tandem Scrapers; Bulldozer; Tractors; Mechanic Maintenance; York Rakes; Mulching Machines Paving Screed Machines; Stationary Steam Boilers; Paving Concrete Finishing Machines; Grout Pumps; Potable Steam Boilers; Portable Steam Generators; Rollers; Spreaders; Asphalt Pavers; Locomotives or Machines used in place thereof; Tampers, self-propelled or tractor drawn; Cal Tracks; Ballast Regulators; Rail Anchor Machines; Switch Tampers

Group 3: Pump, 1-3 grouped; Compressors; Welding Machine, 1-3 grouped; Generators; Lighting Plants; Heaters, power driven, 1-5; Syphons/Pulsometers; Concrete Mixers; Valves controlling Permanent Plant, air or steam; Conveyors; Wellpoint System, operating and installing

Group 4: Assistant Engineers (Firemen)

Group 5: Assistant Engineers (other than Truck Cranes and Gradalls)

Group 6: Assistant Engineers (on Truck Cranes and Gradalls)

MARINE CONSTRUCTION

Group 1: Shovels; Cranes; Truck Cranes; Cherry Pickers; Derricks; Pile Drivers two or more Drum Machines; Lighterns; Derrick Boats; Trenching; Mechanic Hoists; Pavement Breakers; Cement Concrete Pavers; Draglines; Hoisting Engines; Pumpcrete Machines; Elevating Graders; Shovels; Dozers; Front End Loaders; Backhoe; Gradalls; Cable Way; Boring Machines; Rotary Drills; Post Hole Hammer; Post Hole Diggers; Fork Lifts; Timber Jacks; Asphalt Plant (on site); Concrete Batching and/or Mixing Plant (on site); Crusher Plant (on site); Paving Concrete Mixers

Group 2: Portable Steam Boilers; Portable Steam Generators; Sonic or Vibratory Hammer; Graders; Scrapers; Tandem Scrapers; Concrete Pumps; Bulldozers; Tractors; York Rakers; Mulching Machines; Rollers; Spreader; Tamper, self-propelled or tractor drawn; Asphalt Pavers; Concrete Mixers with side Loaders; Mechanics, maintenance; Cal Track; Ballast Regulator; Switch Tampers; Rail Anchor Machines; Tire Trucks

POWER EQUIPMENT OPERATORS CLASSIFICATIONS (Cont'd)
AREA 2 - MARINE CONSTRUCTION (Cont'd)

Group 3: Pumps; Compressors; Welding Machines; Heaters (power driven); Valves controlling Permanent Plant, air or steam; Well Point Systems; Augers, powered by Independence Engines and attached to Pile Drivers; Hydraulic Saws; Generators; Lighting Plants; Syphons-Pulsometers; Concrete Mixers; Conveyors

Group 4: Assistant Engineers (Firemen)

Group 5: Assistant Engineers (other than Truck Cranes and Gradalls)

Group 6: Assistant Engineers (on Truck Cranes and Gradalls)

TRUCK DRIVERS

Group 1: Station Wagons; Panel Trucks and Pickup Trucks

Group 2: Two Axle Equipment; Helpers on Low Bed when assigned at the discretion of the employer; Warehousemen; Forklift Operators

Group 3: Three axle equipment and Tiremen

Group 4: Four and five axle equipment

Group 5: Specialized earth moving equipment, under 35 tons other than conventional type trucks; Low Bed; Vac-haul; Paving Restoration equipment; Mechanics

Group 6: Specialized earth moving equipment over 35 tons

Group 7: Trailers for earth moving equipment (double hookup)

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR, 5.5(a)(1)(ii))

SUPERSEDEAS DECISION

STATE: MASSACHUSETTS COUNTIES: BERKSHIRE, FRANKLIN, HAMPDEN AND HAMPSHIRE

DECISION NO.: MA85-3015 DATE: DATE OF PUBLICATION

Supersedes Decision No. MA84-3007, dated April 6, 1984, in 49 FR 13804.

DESCRIPTION OF WORK: Building, Heavy, Highway and Residential Construction

	Basic Hourly Rates	Fringe Benefits
ASBESTOS WORKERS	18.23	4.53
BOILERMAKERS	18.93	3.765
BRICKLAYERS; CEMENT MASONS; PLASTERERS; STONE MASONS; MARBLE, TILE & TERRAZZO WORKERS; POINTERS; CLEANERS; CAULKERS:		
Area 1	14.75	4.54
Area 2	18.38	
Area 3	16.00	2.13
CARPENTERS; SOFT FLOOR LAYERS; DRYWALL CARPENTERS; LATHERS:		
Area 1	14.79	2.99
Area 2	16.18	4.90
Area 3	15.10	4.07
Area 4	16.03	2.92
ELECTRICIANS:		
Area 1	15.54	1.96+ 3%
Area 2:		
Electrical Contracts $125,000 and over	15.41	3.92+ 3%
Electrical Contracts under $125,000	13.41	3.92+ 3%
Residential Single Family housing	12.00	2.22+ 3%
Area 3:	16.33	3.78+ 3%
ELEVATOR CONSTRUCTORS	16.56	3.29+ a+b
ELEVATOR CONSTRUCTORS HELPERS	11.59	3.29+ a+b
ELEVATORS CONSTRUCTORS' PROBATIONARY HELPERS	8.28	
GLAZIERS	14.12	3.32
IRONWORKERS:		
Area 1	15.75	6.32
Area 2:		
Building, Heavy and Highway	14.90	3.99
Residential (4 stories or less)	11.18	3.99
LABORERS (BUILDING):		
Group 1	13.25	3.05
Group 2	13.50	3.05
Group 3	14.00	3.05
Group 4	15.00	3.05
Group 5	14.25	3.05
HEAVY & HIGHWAY		
Area 1		
Class I	13.25	3.05
Class II	13.50	3.05
Class III	15.00	3.05
Class IV	14.25	3.05
Area 2:		
Class I	13.95	3.05
Class II	14.20	3.05
Class III	14.70	3.05
Class IV	14.95	3.05
LINE CONSTRUCTION		
Area 1		
Lineman, cable splicer dynamite man	15.97	2.90+ 4.75%
Heavy equipment operator	14.37	2.90+ 4.75%
Equipment operator, tractor trailer dirver, field mechanic	13.57	2.90+ 4.75%
Driver groundman	11.98	2.90+ 4.75%
Groundman	8.78	2.90+ 4.75%
Area 2:		
Lineman, cable splicer dynamite man	16.23	2.90+ 4.75%
Heavy equipment operator	14.61	2.90+ 4.75%
Equipment operator, tractor trailer driver, field mechanic	13.80	2.90+ 4.75%

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DECISION NO. MA85-3015	Basic Hourly Rates	Fringe Benefits
Driver Groundman	12.17	2.90+ 4.75%
Groundman	8.93	2.90+ 4.75%
Area 3:		
Lineman, cable splicer, dynamite man	17.00	2.30+ 4.75%
Heavy equipment operator	15.30	2.30+ 4.75%
Equipment operator, tracTor, trailer, driver field mechanic	14.45	2.30+ 4.75%
Driver groundman	12.75	2.30+ 4.75%
Groundman	9.35	2.30+ 4.75%
Areas 1, 2 & 3:		
Traffic Control, Illumination & Maintenance:		
Linemen, technicians & cable splicers	17.20	2.90+ 4.75%
Equipment operator	14.62	2.90+ 4.75%
Driver groundman	12.90	2.90+ 4.75%
Groundman	12.04	2.90+ 4.75%
Railroad Construction (including electrical distribution, transmission lines, substation and signal construction:		
Linemen, cable splicers & dynamite man	17.95	2.90+ 4.75%
Heavy equipment operator	16.16	2.90+ 4.75%
Equipment operator, tractor trailer driver, & field mechanic	15.26	2.90+ 4.75%
Driver groundman	13.46	2.90+ 4.75%
Groundman	9.87	2.90+ 4.75%
MARBLE, TILE & TERRAZZO FINISHERS	11.45	
MILLWRIGHTS	17.10	4.85

	Basic Hourly Rates	Fringe Benefits
PAINTERS:		
Brush and Taper	14.16	3.29
Spray and Sandblasting	17.43	3.29
Swing stage and steel riding under 40'	14.35	3.29
Swing stage and steel riding over 40'	14.66	3.29
Sign Painters	13.44	2.05
PILEDRIVERMEN	17.90	3.20
PLUMBERS & STEAMFITTERS:		
Area 1	16.28	1.85+ 4%
Area 2	18.10	3.59
Area 3	16.82	4.29+ c
POWER EQUIPMENT OPERATORS BUILDING CONSTRUCTION		
Class I	16.33	2.60+d
Class II	16.13	2.60+d
Class III	15.93	2.60+d
Class IIIA	15.56	2.60+d
Class IV	14.03	2.60+d
Class V	13.33	2.60+d
Class VI	12.18	2.60+d
Class VII	17.08	2.60+d
Class VIII	13.36	2.60+d
Class IX	16.91	2.60+d
Class X	16.83	2.60+d
Class XI	17.33	2.60+d
POWER EQUIPMENT OPERATORS HEAVY AND HIGHWAY CONSTRUCTION:		
Class I	16.33	2.60+e
Class II	16.13	2.60+e
Class III	15.93	2.60+e
Class IIIA	15.56	2.60+e
Class IV	14.03	2.60+e
Class V	13.33	2.60+e
Class VI	12.18	2.60+e
Class VII	17.08	2.60+e
Class VIII	13.36	2.60+e
Class IX	16.91	2.60+e
Class X	16.83	2.60+e
Class XI	17.33	2.60+e
ROOFERS:		
Composition, Damp Waterproof	10.565	3.13
Slate, Tile, Precast Concrete	11.065	3.13
SHEET METAL WORKERS	15.66	5.09
SPRINKLER FITTERS	18.95	4.23

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DECISION NO. MA85-3015	Basic Hourly Rates	Fringe Benefits
TRUCK DRIVERS		
Class I	12.86	3.00+ f+g
Class II	13.03	3.00+ f+g
Class III	13.10	3.00+ f+g
Class IV	13.22	3.00+ f+g
Class V	13.32	3.00+ f+g
Class VI	13.61	3.00+ f+g
Class VII	13.90	3.00+ f+g

AREA DESCRIPTIONS

Bricklayers; Cement Masons; Plasterers; Stonemasons; Marble; Tile & Terrazzo Workers; Painters; Cleaners & Caulkers:

Area 1: HAMPDEN; HAMPSHIRE; FRANKLIN; BERKSHIRE (Becket, Otis, Standisfield)

Area 2: BERKSHIRE (Adams, North Adams, Cheshire, Florida, Savoy, Clarksbury, Williamstown)

Area 3: BERKSHIRE (Remainder of County)

Carpenters; Soft Floor Layers; Drywall Carpenters:

Area 1: BERKSHIRE; FRANKLIN (Monroe, Monroe Bridge)

Area 2: FRANKLIN (Erving, Warwick, Orange, North Orange)

Area 3: HAMPDEN; HAMPSHIRE; (South Hadley, Granby, Belchertown, Huntington, Pelham, Amherst, Ware) FRANKLIN (Leverett, Shutesbury, Sunderland)

Area 4: HAMPSHIRE (Remainder of County); FRANKLIN (Remainder of County)

AREA DESCRIPTIONS CONTINUED

Electricians & Line Construction:

Area 1: BERKSHIRE; FRANKLIN (Hawley, Monroe, Rowe); HAMPSHIRE: (Middlefield, Cummington, Plainfield)

Area 2: FRANKLIN (Remainder of County); HAMPSHIRE (Remainder of County); HAMPDEN (Chester, Holyoke and North Portion of Chicopee - North of Mckinstry Avenue from the connecticut River to Grattan Street, Lafayette Street to York Street, McKinstry to Granby Road, and projected to the Westover Air Force Base fence, continuing northeastly along this boundary to the county line).

Area 3: HAMPDEN (Remainder of County - including Westover Air Force Base); HAMPSHIRE (Belchertown, ware).

Ironworkers:

Area 1: HAMPSHIRE; HAMPDEN; FRANKLIN; BERKSHIRE Becket, Washington, Lee, Sandisfield, New Marlboro, Hinsdale, Peru, Savoy, Monterey, Sheffield, Windsor, Otis, N. & E. Otis

Area 2: BERKSHIRE (Remainder of County);

Laborers: Heavy & Highway:

Area 1: Except Twps. of Warrick and Orange in FRANKLIN

Area 2: FRANKLIN (Orange, Warrick):

Line Construction: (See Electricians & Line Construction)

Plumbers & Steam fitters:

Area 1: FRANKLIN (Orange)

Area 2: BERKSHIRE (Except Otis, Becket, Sandisfield); FRANKLIN (Monroe, Towe, and Western part of Charlemont)

Area 3: HAMPDEN; HAMPSHIRE; BERKSHIRE (Otis, Becket, Sandisfield; FRANKLIN (Remainder of County)

Welders - Receive rate prescribed for craft performing operation to which welding is incidental.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29 CFR 5.5(a)(1)(ii)).

FOOTNOTES:

Paid Holidays: A-New Year's Day; B-Memorial Day; C-Independence Day; D-Labor Day; E-Thanksgiving Day; F-Christmas Day

a. Employer contributes 8% of basic hourly rate for 5 years or more of service or 6% basic hourly rate for 6 months to 5 years of service as Vacation Pay Credit.

b. 6 paid holidays: A through F providing employee has worked 5 consecutive days before and the working day after the holiday.

c. 2 paid holidays: C & D, provided the employee has been employed seven days prior to the holiday by the same employer.

d. 8 paid holidays: A through F, Washington's Birthday and Veterans Day.

e. 9 paid holidays: A through F, Washington's Birthday, Columbus Day and Veterans Day.

f. 10 paid holidays: A through F, Washington's Birthday, Patriot's Day, Columbus Day, and Veterans Day.

g. Paid Vacation: 4 months to 1 year - ½ day's pay per month; 1-5 years - 1 week; 5-10 years - 2 weeks; 10 years or more - 3 weeks. Employee must have received pay for 120 days during last year of employment.

DECISION NO. MA85-3014

CLASSIFICATIONS

LABORERS BUILDING

GROUP 1 - Laborers, carpenter tenders and wrecking laborers

GROUP 2 - Asphalt Rakers, Carbide Core Driller Operators, Chain Saw Operators, Pipelayers, Jackhammer and Paving Breaker Operators, Barco-type Jumping Tampers, Laser Beam Operators, Concrete Pump Operators, Mason-Tenders, Mortar Mixers, Ride-on Motorized Buggy Operators and Wagon Drill Operators

GROUP 3 - Pre-cast Floor and Roof Plank Erectors and Asbestos Removers

GROUP 4 - Air Track Operators, Block Pavers, Rammers and Curb Setters

GROUP 5 - Powdermen and Blasters

LABORERS HEAVY & HIGHWAY

CLASS I - Carpenter Tenders, Cement Finisher Tenders, Laborers, Wrecking Laborers

CLASS II - Asphalt Rakers, Fence and Guard Rail Erectors, Laser Beam Op., Mason Tender, Pipelayer, Pneumatic Drill Op., Pneumatic Tool Op., Wagon Drill Op.

CLASS III - Air Track Op., Block Pavers, Rammers, Curb Setters

CLASS IV - Blasterers, Powdermen

DECISION NO. MA85-3015

POWER EQUIPMENT OPERATORS: BUILDING

CLASS I - Shovels, Cranes (including all tower, climbing and bridge cranes, as used in Building Construction as defined in Scope of Employment), Hydraulic Cranes--10 ton capacity or over, Draglines, Derricks, Elevators with Chicago Boom, Backhoes, Gradalls, Elevating Graders, Pile Driving Rigs, Concrete Road Pavers, all three Drum Hoisting and Trenching Machines, Belt-type Loaders, Foreman Mechanics, Front End Loaders--5½ yards or over, Dual Drum Paver, Automatic Grader (i.e. C.M.I.), Combination Backhoe-Loader--3/4 yard or over, Jet Engine Dryer, Tree Shredder, Post Hole Digger, Post Hole Hammer, Post Extractor, Truck Mounted Concrete Pump with boom, Roto-Mill.

CLASS II - Rotary Drill (with mounted compressor), Compressor House (3 to 6 compressors), rock and earth boring machines (excluding McCarthy and similar drills), Graders, Front End Loaders-4 yards to 5½ yards, two Drum Hoists, High Fork Lifts with capacity of 15 ft. and over, Scraper--21 yards and over (struck load), Sonic Hammer Console, Road Planer, Cal Tracks, Ballast Regulators, Rail Anchor Machines, Switch Tampers.

CLASS III - Combination Backhoe-Loader--up to 3/4 yard hoe, Bulldozers, Push Cats, Scrapers--up to 21 yards (struck load) selfpropelled or tractor drawn, Tireman, Front End Loaders--up to 4 yards, Asphalt Paver, Well Drillers, Mechanics, Welders, Pumpcrete Machines, Concrete pumps, and similar type pumps, Engineer or Fireman on High Pressure Boiler (on job), Self-Loading Batch Plant, Well Point Operators (including installing), Electric pumps used in Well Point System, Pumps--12 inches and over (total discharge), Compressor (one or two 900 cu. ft. and over, Engineers in charge of Powered Grease Truck, all automatic elevators (permanent or temporary) operated manually or remote control (not to be confused with elevators operating from conventional hoist--1, 2 or 3 Drum), Grout pumps, Boom Truck, Hydraulic Cranes--under 10 ton.

CLASS IIIA - Asphalt Rollers, Self-powered Rollers and Compactors, Tractor without blade drawing sheepsfoot roller, rubber tire roller, vibratory roller, or other type of compactors including machines for pulverizing and aerating soil.

CLASS IV - Single Drum Hoist, Power Pavement Breakers, Concrete Pavement Finishing Machines, Two Bag Mixers with Skip, McCarthy and similar drills, Batch Plants (not self-loading), Bulk Cement Plants, Self-propelled material spreaders, A-Frame Trucks, Fork Lifts--up to 15 ft., 3 or more 10KW Light Plants, 30 KW or more Generators.

CLASS V - Compressors (one or two) 315 cu. ft. to 900 cu. ft., Pumps--4 inches to 12 inches (total discharge).

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POWER EQUIPMENT OPERATORS: BUILDING CONT'D

CLASS VI - Compressors (up to 315 cu. ft.), small mixers, pumps (up to 4 inches), power heaters, welding mahines, (when 3 or more heaters or welding machines are used on one job, classification 4 rate will be paid), Conveyors, Oiler, helpers on grease trucks with hand greasing equipment.

CLASS VII - Truck Crane Crews

CLASS VIII - Oiler

CLASS IX - Master Mechanic

CLASS X - Boom lengths over 184 feet (including jib)

CLASS XI - Boom lengths over 225 feet (including jib)

POWER EQUIPMENT OPERATORS: HEAVY & HIGHWAY

CLASS I - Shovels, Crawler and Truck Cranes, Derricks, Backhoes, Trenching Machines, Elevating Graders, Belt-type Loaders, Gradalls, Pile Drivers, Concrete Pavers, on site Processing Plant (Engineer in charge),Dragline,Clam Shell,Cableways, Shaft Hoists, Mucking Machines, Front End Loader--5½ yards and over Tower Cranes, Self-propelled Hydraulic Cranes--10 tons and over, Dual Pavers,Automatic Grader--Excavator (C.M.I. or equal), Scrapers towing pan or wagon, Tandem Dozers or Posh Cats (2 units in tandem), Welder using semi-automatic Welding Machine, Shotcrete Machine, Tunnel Boring Machine, Combination Back Hoe-Loader--3/4 yard hoe or over, Jet Engine Dryer, Tree Shredder, Post Hole Digger, Post Hole Hammer, Post Extractor, Truck Mounted Concrete Pumps with boom, Roto-Mill.

CLASS II - Rotary Drill (with mounted Compressor), Compressor House (3 to 6 Compressors), Rock and Earth Boring Machines (excluding McCarthy and similar drills), Grader, Front End Loaders-- 4 yards to 5½ yards, Scraper--21 yards and over (struck load), Forklifts--7 ft. lift and over or 3 ton capacity and over, Sonic Hammer Concole, Road Planer, Cal Tracks, Ballast Regulators, Rail Anchor Machines, Switch Tampers.

CLASS III - Bulldozer, Push Cats, Scrapers--up to 21 yards (struck load) self-propelled or Tractor Drawn, Self-powered Asphalt Paver, Front End Loaders--up to 4 yards, Mechanics, Welders, Well Driller, Pumpcrete Machine, Engineer or Fireman on High Pressure Boiler (on job), Self-loading Batch Plantion job),Well Point Operators, Electric Pumps used in Well point system, Tireman, Pumps--16 inches or over total discharge, Compressors (1 or 2) 900 cu. ft. and over, Powered Grease Truck, Tunnel Locomotives and Dinkeys, Grout pumps, Hydraulic Jacks (jacking pipe, slip forms, etc.), Boom Truck, self-propelled Hydraulic Cranes--up to 10 ton, Combination Back Hoe-Loader--up to 3/4 yard hoe.

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POWER EQUIPMENT OPERATORS: HEAVY & HIGHWAY CONT'D

CLASS IIIA - Asphalt Rollers, Self-Powered Rollers and Compactors, Tractor without blade drawing sheeps foot roller, Rubber tire roller, Vibratory roller, or other type of compactors including machines for pulverizing and aerating soil.

CLASS IV - Hoists, Conveyors, Power Pavement Breaker, Self-propelled Material Spreader, Self-powered Concrete Finishing Machine, Two Bag Mixer with skip, McCarthy and similar Drills, Batch Plant (not self-loading), Bulk Cement Plant, 3 or more 10KW Light Plants, 30 KW or more Generators.

CLASS V - Compressor (315 cu. ft. to 900 cu. dt., 1 or 2), Pumps-4" to 16" total discharge.

CLASS VI - Compressor (up to 315 cu. ft.), Small Mixers with skip, Oiler, Pumps up to 4", Grease Truck, Helper on powered Grease Trucks, Power Heaters, Welding Machines (when 3 or more welding machines are used, Classification 4 rate shall be paid), A-Frame Trucks, Forklifts--up to 7 ft. lift and up to 3 ton capacity, Hydro Boom, Power Safety Boat.

CLASS VII - Truck Crane Crews

CLASS VIII - Oiler

CLASS IX - Master Mechanic

CLASS X - Boom lengths over 184 feet (including jib)

CLASS XI - Boom lengths over 225 feet (including jib)

TRUCK DRIVERS

CLASS I - Station Wagons, Panel Trucks and Pickup Trucks

CLASS II - Two axle Equipment; Helpers on Low Bed When Assigned at the Discretion of the Employer, Warehousemen, Forklift Operators

CLASS III _ Three Axle Equipment and Tiremen

CLASS IV - Four and Five Axle Equipment

CLASS V - Specialized Earth Moving Equipment under 35 tons other than Convential type trucks, Low Bed, Vachual, Mechanics, Paving Restoration Equipment, Mechanic

CLASS VI - Specialized Earth Moving Equipment over 35 Tons

CLASS II - Trailers for Earth Moving Equipment (Double Hookup)

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Friday
March 15, 1985

Part III

Environmental Protection Agency

40 CFR Parts 86 and 600

Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines; Gaseous Emission and Particulate Emission Regulations

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 86 and 600

[AMS-FRL-2780-7]

Control of Air Pollution From New Motor Vehicles and New Motor Vehicle Engines; Gaseous Emission Regulations for 1987 and Later Model Year Light-Duty Vehicles, and for 1988 and Later Model Year Light-Duty Trucks and Heavy-Duty Engines; Particulate Emission Regulations for 1988 and Later Model Year Heavy-Duty Diesel Engines

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: Today's notice announces EPA's decisions on new standards for emissions of oxides of nitrogen from light-duty trucks and heavy-duty engines, and of particulate matter from heavy-duty diesel engines. The new oxides of nitrogen emission standards are: For 1988 and later model year light-duty trucks, 1.2 or 1.7 grams per mile, depending on vehicle test weight; for 1988 and later model year heavy-duty engines, 6.0 grams per brake horsepower-hour; and for 1991 and later model year heavy-duty engines, 5.0 grams per brake horsepower-hour. The new particulate emission standards, which apply only to heavy-duty diesel engines, are: 0.60 grams per brake horsepower-hour for 1988 and later model years, 0.25 grams per brake horsepower-hour (0.10 grams per brake horsepower-hour for urban buses) for 1991 and later model years, and 0.10 grams per brake horsepower-hour for 1994 and later model years. Emissions averaging, of both particulate and oxides of nitrogen emissions from heavy-duty engines, is allowed beginning with the 1991 model year. Averaging of NO_x emissions from light-duty trucks is allowed beginning in 1988. High-altitude standards for oxides of nitrogen, particulate, and idle carbon monoxide emissions which are equal to the corresponding low-altitude standards are promulgated for 1988 and later model year light-duty trucks. Revisions to the allowable maintenance regulations, and extension of their scope to include light-duty vehicles, are also promulgated by today's notice. Certain revisions to the heavy-duty engine test procedures are included.

The oxides of nitrogen emission standards contained in today's notice will prevent significant growth in national emission inventories of nitrogen dioxide, and resulting health and welfare effects, including violations of the National Ambient Air Quality Standard, through at least the middle of the next decade. The particulate emission standards included here will reduce the exposure of the population to inhalable particulate and will have beneficial impacts on visibility and soiling.

DATES: These regulations except for §§ 86.088-23 and 86.091-23 take effect on April 15, 1985.

The information collection requirements as they apply to particulate emissions contained in 40 CFR 86.088-23 and 86.091-23 have not been approved by the Office of Management and Budget and are not effective until approved and published in the **Federal Register.**

Note.—Under section 307(b)(1) of the Clean Air Act, EPA hereby finds that these regulations are of national applicability. Accordingly, judicial review of this action is available only by the filing of a petition for review in the United States Court of Appeals for the District of Columbia Circuit within 60 days of publication. Under section 307(b)(2) of the Act, the requirements which are the subject of today's notice may not be challenged later in judicial proceedings brought by EPA to enforce these requirements.

ADDRESSES: Material relevant to this final rule is contained in Public Docket No. A-80-18. The docket is located at the U.S. EPA Central Docket Section, in the West Tower Lobby, Gallery 1, 401 M Street SW, Washington, DC 20460; phone (202) 382-7548. The docket may be inspected between 8 a.m. and 4 p.m. on weekdays. As provided in 40 CFR Part 2, a reasonable fee may be charged for photocopying. In addition, single copies of the Regulatory Impact Analysis (containing analyses of environmental and economic impacts and technological feasibility, and including the NO_x Pollutant Specific Study required by section 202(a)(3)(E) of the Clean Air Act) may be obtained by request from: Director, Emission Control Technology Division, U.S. EPA, 2565 Plymouth Road, Ann Arbor, MI 48105, Attention: Heavy-Duty Section.

FOR FURTHER INFORMATION CONTACT: Mr. Terry P. Newell, U.S. EPA (SDSB-12), Emission Control Technology Division, 2565 Plymouth Road, Ann Arbor, MI 48105. Telephone: (313) 668-4462.

SUPPLEMENTARY INFORMATION:

I. Introduction

Today's final rule is the completion of several previous actions initiated by EPA in response to the requirements of section 202(a)(3) of the Clean Air Act as amended in 1977. Section 202(a)(3) includes requirements for reducing emissions of oxides of nitrogen (NO_x) from heavy-duty engines, and for controlling emissions of particulate matter (PM) from heavy-duty engines. In addition to the statutory provisions, EPA's projections of future emissions growth and the resulting impacts on national air quality show a strong need for significant reductions in heavy-duty diesel engine PM emissions. While the environmental need for reductions in NO_x emissions is not as immediate, action is also required, particularly in the case of heavy-duty engines.

The statutory provisions for reductions in particulate and NO_x emissions from heavy-duty engines have been the subject of several proposals by EPA, and of considerable comment by the affected industry, environmental organizations, state and local governments, and private citizens. EPA published a proposal for heavy-duty diesel particulate control on January 7, 1981 (46 FR 1910), and an advance notice of EPA's intent to promulgate revised NO_x standards for heavy-duty engines and light-duty trucks on January 19, 1981 (46 FR 5838).

In 1982 and 1983, while not taking any formal regulatory action, EPA remained active in the effort to resolve the complex issues associated with NO_x and particulate control. A public hearing was held in Ann Arbor, Michigan, in July 1982 on both the particulate proposal and the NO_x advance notice. After the hearing, EPA engaged in an information-gathering effort to gain a more thorough understanding of the potential for current and foreseeable technology to reduce NO_x and particulate emissions. As part of this effort, EPA representatives met with all of the major heavy-duty manufacturers, giving them additional opportunity to demonstrate the progress being made and the major difficulties remaining in the development of significantly less polluting heavy-duty engines.

Section 202(a)(3) of the Act, in addition to giving EPA specific instructions as to the degree of control of heavy-duty engine NO_x and particulate emissions, set dates for the implementation of these controls. Section 202(a)(3)(A)(iii) directs that particulate control regulations, requiring "the greatest degree of emission reduction achievable through the application of technology which the Administrator determines will be available * * * giving appropriate consideration to the cost * * * and to noise, energy, and safety factors," were to have been applicable to 1981 and later model year production. Section

202(a)(3)(A)(ii) requires that heavy-duty engine NO_x emission standards, requiring a reduction of at least 75 percent from the baseline emissions of gasoline-fueled engines, be in place for 1985 and later model year production. There are provisions for revising the level of the NO_x standard, but they do not affect the initial deadlines for implementation of the standards.

The Natural Resources Defense Council (NRDC) filed suit against EPA in 1984, challenging the Agency's failure to promulgate the NO_x and particulate regulations described above. NRDC was granted summary judgment on September 14, 1984, by the U.S. District Court for the District of Columbia, which found that EPA had failed to fulfill non-discretionary statutory duties under the Clean Air Act Amendments of 1977. The court ordered EPA to publish proposed heavy-duty engine NO_x and particulate standards no later than October 15, 1984, and the corresponding final regulations no later than March 15, 1985. In accordance with the court's order, EPA published a notice of proposed rulemaking on October 15, 1984 (49 FR 40258). Today's final rule completes action on the proposed NO_x and particulate standards for heavy-duty engines and light-duty trucks.

As noted above, a combined NO_x and particulate proposal was published on October 15, 1984. Two public hearings were held one month later, one in Ann Arbor, Michigan, on November 13 and 14, and another in Denver, Colorado, on November 15, 1984. Attendance was high at the hearings. Following these hearings, the official public comment period remained open through December 17, 1984. The volume of written comments received was also heavy, with more than 150 different manufacturers, environmental groups, state and local governmental units, and individual citizens submitting material to the public docket.

The remaining sections of this preamble describe EPA's resolution of the issues raised during the rulemaking process. Section II sets forth a brief description of the contents of this final rule. Section III, titled "Public Participation," reviews the comments received and EPA's analysis of these comments. It examines the issues of environmental impacts and the need for control, the proposed emission standards, and comments on the other aspects of the proposal. Lastly, Section IV discusses the economic impacts and cost-effectiveness of today's action.

II. Description of the Action

The following discussion describes each provision of the final rule. In most cases, changes from the October 15, 1984 proposal were made in response to public comments.

A. Emission Standards for 1988 and Later Model Year Light-Duty Trucks

Today's action promulgates revised standards for emissions of oxides of nitrogen (NO_x) from 1988 and later model year light-duty trucks. Except for their effective dates, the standards promulgated are the same as those proposed: 1.2 grams per mile (g/mi) for the lighter portion of the fleet and 1.7 g/mi for the heavier portion. An emissions averaging program is included for determining compliance with these standards. The separation of light-duty trucks into two subclasses is based on loaded vehicle weight (LVW), with those light-duty trucks up to and including 3,750 lbs LVW (LDT_1s) required to meet the 1.2 g/mi standard, and those light-duty trucks of 3,751 lbs and greater LVW (LDT_2s) required to meet the 1.7 g/mi standard. This distinction between LDT_1s and LDT_2s is effectively the same as that used by the State of California.

B. NO_x Emission Standards for 1988 and Later Model Year Heavy-Duty Engines

Revised standards for oxides of nitrogen (NO_x) emissions from heavy-duty engines are also promulgated by today's notice. The standards are 6.0 grams per brake horsepower-hour (g/BHP-hr) for 1988 through 1990 model year heavy-duty engines, and 5.0 g/BHP-hr for 1991 and later model year engines. These standards are applicable to both gasoline-fueled and diesel heavy-duty engines. An averaging program for heavy-duty engine NO_x emissions is also being promulgated, to be effective with the 5.0 g/BHP-hr standard in 1991 (discussed further in paragraph E of this section).

C. Particulate Emission Standards for 1988 and Later Model Year Heavy-Duty Diesel Engines

Today's notice promulgates the first particulate control regulations applicable to heavy-duty diesel engines. Several different standards are included: 0.60 g/BHP-hr for 1988 and later model year engines, 0.25 g/BHP-hr for 1991 and later model year engines, and 0.10 g/BHP-hr for 1994 and later model year engines. In addition, a separate 0.10 g/BHP-hr standard for heavy-duty diesel engines used in urban bus applications is promulgated for model years 1991–93. No separate standards for those heavy-duty diesel engines used in "line-haul" applications are being promulgated. As in the case of NO_x standards, an averaging program for particulate emissions is promulgated, to be effective beginning with the 1991 model year (see paragraph E of this section). This program will not include urban buses.

D. High-Altitude Emission Standards

For reasons discussed in the "Public Participation" section, EPA is withdrawing its proposal to issue high-altitude standards for heavy-duty diesel engine particulate emissions. The high-altitude emission standards that were proposed for light-duty trucks are promulgated today, to be effective for 1988 and later model years. These standards, which are all equal to the corresponding low-altitude standards, are: NO_x 1.2 grams per mile (g/mi) for LDT_1s (those light-duty trucks up to and including 3,750 lbs loaded vehicle weight), and 1.7 g/mi for LDT_2s (those light-duty trucks over 3,750 lbs loaded vehicle weight); particulate (diesel light-duty trucks only), 0.26 g/mi; and idle carbon monoxide (gasoline-fueled light-duty trucks only), 0.50 percent of exhaust gas flow at idle.

E. Emissions Averaging

A program allowing the averaging of particulate emissions from heavy-duty diesel engines, beginning with the 1991 model year, is promulgated by today's notice. This program is being implemented in the same form as was presented in the proposal. In addition, EPA has included a similar program for the averaging of NO_x emissions from heavy-duty engines, also beginning in model year 1991, as well as from light-duty trucks beginning in 1988. The particulate and NO_x programs are the same in most aspects, but differ in a few specific provisions as noted in the following discussion. Additional information on the background and development of these provisions may be found in the proposal, and in the averaging discussion in the "Public Participation" section of today's notice.

The new programs are largely patterned after the particulate averaging program for light-duty vehicles and trucks, implemented by a final rule published July 21, 1983 (48 FR 33456). They are most clearly presented in terms of the two aspects of compliance which will exist: Compliance by engine families with their individual emission limits, and compliance by the manufacturer with the applicable emission standards.

Compliance with family emission limits. Manufacturers electing to participate in an averaging program will determine, prior to production, emission limits for each engine family to be

produced in a given model year. Each limit will have the same relationship to a particular engine family as emission standards currently have to all engine families taken as a whole. The criteria used to distinguish engine families are the same as those currently in effect.

The engine family emission limits are to be set by the manufacturer at levels not greater than a ceiling, above which no engine family will be certified. The particulate ceiling is 0.60 g/BHP-hr, and the NO_x ceilings are 6.0 g/BHP-hr for heavy-duty engines and 2.3 g/mi for light-duty trucks.

As in the light-duty particulate averaging program, it is the engine family emission limit determined by the manufacturer that will be enforced by EPA. These limits will be averaged in determining compliance with the applicable standards, as explained below; certification or other test data will not be used in the averaging calculations.

$$\text{Weighted particulate or NOx emission level} = \frac{\sum_{i=1}^{n} \left(PROD_i \times HP_i \times FEL_i \right)}{\sum_{i=1}^{n} \left(PROD_i \times HP_i \right)}$$

Where:

i = subscript, denoting individual engine families,

$PROD_i$ = model year production of family i (units),

HP_i = production-weighted rated power of family i (horsepower), and

FEL_i = family i emission limit (g/BHP-hr).

The production-weighted rated power for each heavy-duty engine family is defined as the production-weighted average of the rated power of all of the configuration included within the family. The family emission limit for each family is determined by the manufacturer, is specified to 0.01 g/BHP-hr precision for particulate and to 0.1 g/BHP-hr for NO_x, and is required to be less than or equal to 0.60 g/BHP-hr for particulate or 6.0 g/BHP-hr for NO_x. In order to demonstrate compliance, the weighted emission level must be at or below the applicable standards of 0.25 g/BHP-hr for model years 1991–93 and 0.10 g/BHP-hr for 1994 and later model years (particulate), or 5.0 g/BHP-hr (NO_x).

In order to deal with the varying useful life periods for heavy-duty diesel engines, EPA is restricting the averaging of both NO_x and particulate emissions to within each of the three useful life subclasses established in the November 16, 1983 final rule setting hydrocarbon and carbon monoxide standards for heavy-duty engines (48 FR 52170). Family emission limits for all of the families in each of the subclasses (light, medium, and heavy) will be averaged to determine compliance by each subclass with the applicable emission standards. In addition to limiting averaging to vehicles having similar useful lives, averaging only within useful-life subclasses reduces the potential for adverse competitive impacts of the averaging programs, as discussed in Section III.F of today's notice.

Manufacturers will be required to label each engine, either on a new label or by an addition to an existing label, with the applicable emission limit for that engine's family at the time the engine was produced. In this way, EPA can ensure that every individual engine is associated with its proper emission limit throughout its life, even if the manufacturer changes an emission limit applicable to that family part way through the model year (as discussed below).

Compliance with the emission standards. Compliance with the applicable standard for heavy-duty engines will be determined by calculating a production- and horsepower-weighted average emission level. This method weights the emission contribution from each engine family not only by production volume, but also by the useful work that the engines perform (the rated power). The weighting equation is:

Procedures for the averaging of light-duty truck NO_x emissions parallel those already established for averaging of light-duty diesel particulate emissions (48 FR 33456, July 21, 1983). The average emission level is based upon a production-weighted average of the family emission limits. Since two different standards apply to light-duty trucks, a composite NO_x standard will be required for comparison with the actual production weighted average. This composite standard will be computed by production weighting the applicable standard (either 1.2 g/mi or 1.7 g/mi) for each family. The precise formula for this calculation can be found in the regulations published today.

Participation in the averaging programs is completely voluntary. For manufacturers electing to use averaging, EPA will grant a certificate of conformity to each family that demonstrates compliance with its particulate or NO_x family emission limit. It will be a condition of each such certificate that the manufacturer's weighted emission levels, when averaged, meet the applicable emission standard(s) (particulate, NO_x, or both) at the end of the model year. The certificate(s) of conformity will be rendered void *ab initio* at the conclusion of the model year for those engines or vehicles causing any exceedance of the applicable standard. While some commenters felt this provision to be unwarranted and severe, EPA intends to apply it reasonably. For more details regarding conditional certification and EPA's intended handling of remedies and/or penalties in the event that the terms of such conditions are violated, see the light-duty particulate averaging final rule (July 21, 1983, 48 FR *at* 33459).

For those engine families in the averaging program, EPA will permit the creation of new family emission limits for particulate or NO_x during the model year without making any changes to the engine. A manufacturer may wish to revise family emission limits (generally by lowering them) during the model year in order to ensure that its year-end fleet average complies with the applicable standard(s). In changing a family emission limit, however, the manufacturer cannot establish a revised limit lower than can be demonstrated by the certification data. Any time that a family limit is changed, EPA will issue a new certificate applicable to subsequent production of engines or vehicles in that family, and each engine or vehicle produced thereafter will require a revised label recording this new family emission limit.

Restrictions on averaging. NO_x averaging is restricted by fuel type; gasoline-fueled and diesel engines must be averaged separately to establish compliance with the standards. No comparable restriction is required in the case of particulate emissions, since only diesel engines are regulated. As noted earlier, the particulate and NO_x averaging programs are also restricted by engine subclass (light, medium, heavy) for heavy-duty diesel engines, while no such subclass restriction applies to gasoline-fueled heavy-duty engines or to light-duty trucks. Finally, heavy-duty diesel engines used in urban buses are excluded from the particulate averaging program entirely. These engines may be averaged together with other heavy-duty diesel engines, however, in the NO_x averaging program.

The averaging programs are also restricted by geographic region. For the purposes of the heavy-duty averaging programs, there are two regions, California and the remaining 49 states. Averaging can be chosen by the manufacturer and applied in accordance with the provisions just described for one or both of these regions, to the extent not precluded by California's own regulations. However, heavy-duty engine families designated for sale and use in one region cannot be averaged together with families intended for sale and use in the other region. For light-duty trucks, there is the additional restriction that engine families

designated for sale in low-altitude areas cannot be averaged with engine families designated for sale in high-altitude areas.

F. Allowable Maintenance Provisions

EPA today is extending the basic structure of the existing light-duty truck and heavy-duty engine allowable maintenance regulations to cover light-duty vehicles as well. This basic structure includes the designation of maintenance as emission-related or non-emission-related, with minimum intervals specified for emission-related maintenance.

EPA is also adding maintenance on the following components to the list of emission-related maintenance for all types of vehicles: Electronic engine controls (EEC) and associated sensors and actuators, including oxygen sensors; evaporative emission canisters, air injection systems, turbochargers and carburetors for gasoline-fueled vehicles and engines; and particulate trap-oxidizers for diesel vehicles and engines.

Today's notice also establishes the new category of "critical emission-related" maintenance, as a subset of all emission-related maintenance for all vehicles. For maintenance on components designated as "critical emission-related," the manufacturer is required to show a "reasonable likelihood" that the specified maintenance will actually be performed in-use.

Maintenance on the following components is defined as critical emission-related maintenance: Catalytic converter, trap-oxidizer and related components, all components of the air injection system, EEC unit and associated sensors and actuators (including oxygen sensor, if installed), exhaust gas recirculation (EGR) system and associated sensors, positive crankcase ventilation (PCV) valve, and evaporative emission system (excluding the crankcase air filter) and associated sensors.

The "reasonable likelihood" requirement may be met in one of five ways: (1) By a showing that, as emissions increase due to a lack of maintenance, performance quickly deteriorates to a point unacceptable for normal driving, (2) for components that have accumulated in-use experience, by survey results showing, with 80 percent confidence, that the maintenance is performed at least 80 percent of the time, (3) for new items for which there is no in-use experience, by a random sampling of vehicles without signals installed showing that at least 80 percent of owners are performing required maintenance, (4) by a visible signal that indicates the need for maintenance and that cannot be easily defeated or reset without the maintenance being performed, or (5) by the manufacturer providing the maintenance at no cost to the consumer. Other methods may exist and could be used, if approved in advance by the Administrator.

Several clarifications to provisions of the existing allowable maintenance regulations are also promulgated here. As discussed in the proposal, these do not alter the regulatory requirements, but merely clarify existing language. Therefore, these clarifications are implemented beginning with the 1987 model year.

G. Heavy-Duty Engine Test Procedure Changes and Technical Amendments

A number of modifications to the heavy-duty engine test procedures contained in Subpart N of the regulations are being promulgated today. In addition to incorporating procedures for the measurement of particulate emissions from heavy-duty diesel engines, as proposed, some changes are being made in response to comments on the proposal.

In addition, on December 10, 1984, EPA published numerous minor amendments to 40 CFR Parts 86 and 600 (49 FR 48128). These amendments introduced several inadvertant errors. For example, the optional provisions for measuring smoke contained in §§ 86.082–1 and 86.082–23 were inadvertently omitted from the provisions of §§ 86.085.1 and 86.085.23. Technical amendments promulgated today correct this oversight and others. These test procedure revisions and technical amendments are summarized in a table which appears as the Appendix to today's notice.

III. Public Participation

As noted above, the proposed NO_x and particulate standards (and to a lesser extent, the other provisions of the proposal) drew a heavy response during the public comment period. Since the issues raised in the comments had a significant effect on the contents of today's final rule, EPA felt it important to make the connection between the comments and the development of this final rule as clear as possible. This section of today's notice serves that purpose.

There are separate discussions below for each part of the proposal that drew comments in which issues of major importance were raised. In order of presentation, these parts are: Environmental impacts, light-duty truck oxides of nitrogen (NO_x) emission standards, heavy-duty engine NO_x standards, heavy-duty diesel engine particulate standards, averaging of NO_x and particulate emissions, and allowable maintenance provisions.

Each discussion opens with a brief review of what was proposed. This is followed by a summary of the issues raised by the commenters. In the cases of environmental impacts and the various emission standards, the reader is referred to the appropriate chapter of the Regulatory Impact Analysis (RIA) for the complete summary and analysis of the comments, while in the other cases the following discussions serve that purpose.

A. Environmental Impacts

1. Nitrogen Oxides

Review of the Proposal. In the proposal, future projections of NO_x emissions were presented for eight non-California urban areas, selected because the 1980 ambient NO_2 concentration in each of the areas was within 25 percent of the National Ambient Air Quality Standard (NAAQS). Combined projections for those eight areas indicated a 20 percent increase in total NO_x emissions between 1980 and 1995, with the most significant growth occurring in heavy-duty diesel vehicle emissions, which were projected to double by 1995. Based on this, EPA concluded that a significant need existed to offset growth in other categories and attempt to keep total discounted emissions from increasing. Without such control, EPA projected that the level of growth in NO_x emissions would cause a deterioration in future urban air quality, causing some cities to fall into non-compliance with the NO_2 NAAQS.

Issues raised by the comments. A number of commenters (primarily vehicle and engine manufacturers) criticized the input information used to develop the NO_x emissions projections presented in the proposal. The key parameters focused on were: (1) Projected growth rates for vehicle miles travelled (VMT), (2) estimated future diesel sales penetrations, and (3) heavy-duty engine emission conversion factors.

In general, the manufacturers that commented believed that the VMT growth rates used in the original analysis were too high—particularly for the heavy-duty diesel class—and recommended the use of lower rates based on population and economic projections. They also suggested equal growth rates for light-duty vehicles and light-duty trucks, as opposed to the

higher light-duty truck rate used for the original projections. Manufacturers cited a second possible overestimation in the projections of future diesel penetration into the light-duty vehicle and light-duty truck markets. Based on recent cutbacks in diesel production, General Motors and other manufacturers recommended significantly lower penetration rates than those used in the proposal.

The manufacturers also commented that the factors used to convert heavy-duty engine NO_x emissions, computed in terms of grams per brake-horsepower-hour (g/BHP-hr), into grams per mile figures were excessive. They recommended the use of conversion factors significantly lower than those used in EPA's original analysis.

Comments were also received on the methodology and specific inputs used to convert the projected NO_x emissions inventories into estimates of future air quality. Several commenters (primarily Ford) expressed doubt about the validity of EPA's "rollback" approach to air quality modelling, where any change in emissions is assumed to translate proportionately into a change in ambient pollutant concentrations. Instead, based on dispersion model results, Ford suggested an adjustment factor of one-fifth to one-third be applied to the growth in NO_x emissions before projecting ambient NO_2 concentrations. Ford also recommended the use of average NO_2 concentrations over a 3-year period as the base-year "design values" for the cities being modelled, in order to minimize the effect of year-to-year fluctuations. This was in response to the use of 1980 NO_2 concentrations in the original analysis.

Other comments focused on various impacts of the NO_x emissions projections. A significant comment from manufacturers was that the NO_x projections presented in the proposal did not adequately demonstrate a need for further control of NO_x emissions. Overall, they argued that the projected 20 percent increase in total NO_x emissions between 1980 and 1995 did not justify the light-duty truck and heavy-duty engine standards proposed. In contrast, environmental interests, along with state and local governments, argued that the need for further NO_x control was much greater than acknowledged by EPA. They argued that EPA's apparent goal of holding future emissions to current levels was inappropriate (under the statute) because current levels of NO_x already represent significant environmental degradation.

State and local authorities also commented that the need for NO_x control is even greater in high-altitude and California cities than it is on average and, therefore, that projections for these areas should have been highlighted in the proposal. According to testimony from representatives of the Colorado Department of Health, high-altitude cities, such as Denver, are currently in only marginal attainment of the NAAQS and with projections of higher growth than the rest of the country, are in danger of non-attainment in the near future. The California Air Resources Board (CARB) commented that Federally-certified line-haul trucks frequently cross over the state boundary and contribute to NO_x emissions in California cities; of particular interest is the South Coast Air Basin, which includes Los Angeles—the only U.S. city currently not in compliance with the NO_2 ambient standard.

Comments were also received on other effects of NO_x control, including impacts on ambient ozone and sulfate concentrations, acid rain formation, visibility reduction, and short-term NO_2 levels. General Motors (GM) cited various studies as support for its position that reductions in NO_x emissions will result in increased ozone levels in urban areas and increased sulfate concentrations downwind of the areas of NO_x reductions. The Natural Resources Defense Council (NRDC), however, disagreed with GM's view on ozone formation, citing various sources who maintain that NO_x control (as well as HC control) is essential in the reduction of ozone levels. NRDC does suggest that an increase in urban NO_x emissions may lower ozone levels locally (as GM contends), but it will also result in increased ozone concentrations downwind of the higher NO_x emissions, merely delaying peak ozone formation. NRDC argued that EPA had failed to consider a significant environmental problem by neglecting to evaluate the role of NO_x in acid rain formation. Manufacturers commented on what they perceived to be the limited impact that NO_x control will have on the acid rain problem, estimating that sulphurous oxides (SO_x) emissions represent 70 percent of the precursors to acid rain, while light-duty truck and heavy-duty engine NO_x emissions represent less than 5 percent. NRDC also noted that NO_x emissions can play a substantial part in visibility degradation, indicating that 31 percent of the light extinction attributed to mobile sources in Denver in 1980 was due to motor vehicle NO_x emissions. Finally, NRDC expressed concern about the adverse health impacts that recent studies suggest are caused by short-term exposure to relatively low levels of NO_2.

EPA response to the comments. All of the comments discussed in the preceding paragraphs have been analyzed by EPA and were considered in the promulgation of the final NO_x standards. Brief responses to the various comments are provided below, beginning with those pertaining to the specific input parameters used to develop the NO_x emission projections.

The first key input parameters discussed are the VMT growth rates used to project future VMT and, thus, emissions. The growth rates used in the final rulemaking projections (published in Chapter 4 of the RIA) were developed using EPA's MOBILE3-based Fuel Consumption Model,* which estimates future nationwide and urban VMT for each of the gasoline and diesel vehicle classes. These revised growth rates are different from those used in the proposal and several interim analyses, which were based on projections made by Energy and Environmental Analysis, Inc. (EEA), under contract to the Department of Energy. Briefly, the improved VMT growth rates for both light-duty trucks and heavy-duty diesels are significantly lower than those estimates used in the original analysis. In addition, the rates for light-duty vehicles and light-duty trucks are now almost equal, as suggested by the manufacturers' comments. For further explanation of the changes EPA made to its VMT growth projections and the differences that still remain between EPA's and commenters' estimates, see Chapter 4 of the RIA.

The second basic input parameter addressed is projected diesel penetration of the light-duty markets. The diesel sales fractions used in the FRM analysis (presented in the final RIA) represent EPA's current best estimates, and for some model years are slightly different from those used in the original analysis. The estimates for 1985–94 model year light-duty vehicles and light-duty trucks are somewhat lower than before; however, the 1995 diesel sales fractions used in the proposal were retained as best estimates for the FRM analysis. These estimates are consistent with projections of future fuel economy improvements, which in turn suggest that demand for diesel vehicles will continue to increase in the future. Again, further explanation of EPA's changes to its diesel penetration projections and its

*MOBILE3 is EPA's current version of the MOBILE emission factor model, which has been updated periodically as new and improved information has become available. The recently developed Fuel Consumption Model utilizes fleet characterization data from the MOBILE3 data base.

remaining disagreements with commenters' projections are provided in Chapter 4 of the RIA.

However, given the difficulty inherent in predicting future diesel penetration of the light-duty vehicle and light-duty truck markets, a sensitivity analysis was performed wherein the 1990 penetrations were held constant through model year 2000; this low growth case represents a move toward the manufacturers' predictions for 1995, with the 5 percent penetration of the light-duty vehicle market in total agreement with GM's estimate. However, the impact of lower light-duty diesel penetration was negligible with respect to NO_x emissions due to the similarity in light-duty gas and diesel emission rates. (Of course, the impact on diesel particulate emissions is more significant and will be discussed in later sections.)

The final major input parameters addressed in the comments—heavy-duty engine emission conversion factors—were dealt with extensively by EPA in the course of developing the MOBILE3 emission factor model. The MOBILE3 conversion factors are significantly lower than those used in the original analysis which was based on the earlier MOBILE2.5 model. The contention by GM that even greater fuel economy improvements should have been accepted by EPA (thus lowering conversion factors and emissions) is in direct conflict with its own projections of lower diesel penetration in the future. EPA finds no basis for modifying the MOBILE3 conversion factors and has use those factors in the final analyses.

In response to the comments on the "rollback" approach to air quality modelling, EPA has analyzed Ford's dispersion analysis and uncovered several weaknesses in Ford's assumptions that appear to have biased the results of the study. (For more detail on this matter, see Chapter 4 of the RIA.) In view of the extensive use of the rollback model by EPA and others (including states in projecting compliance in their State Implementation Plans), it would be inappropriate to discard or significantly adjust the model based on one study. In addition, the model used does not play a critical role in this action, since the emphases is placed on emission increases with respect to existing levels. In other words, since today's action only offsets projected growth in NO_x emissions, and since a number of cities are only marginally in attainment, the precise year that these cities will likely become non-attainment is not of paramount importance. Therefore, the rollback approach has been used in the FRM analyses.

In response to those comments suggesting use of a 3-year average NO_2 concentration to represent baseline levels, EPA notes that such a change has already been incorporated into its analyses. Futher, the average design values have been updated for the FRM analysis, based on NO_2 concentrations for various cities measured between 1981 and 1983 (the most recent figures available).

In response to the question of environmental need based on the NO_x projections made in the proposal, EPA has not been persuaded that there is no need for new NO_x standards. As the revised projections (to be presented in a later section) will show, growth in NO_x emissions is still projected to occur in the absence of new standards. Although the growth is somewhat lower than that estimated in the proposal, due to revised input parameters, it is still significant and represents an environmental need for further NO_x control. With no control, the existing NO_2 problem can only worsen, leading to increased non-attainment of the NAAQS. Furthermore other impacts of NO_x emissions, which are discussed below, would continue even if no growth occurred.

Briefly,in response to the suggested inclusion of California cities and the separate treatment of high-altitude areas in the NO_x analysis, EPA is in agreement. Therefore, EPA has considered the effect of NO_x control on specific areas such as the South Coast Air Basin in California, and has examined growth in two high-altitude cities (Denver and Reno) in relation to low-altitude growth.

EPA's response to comments on the other effects of NO_x control begins by addressing the manufacturers' contention that significant reductions in ambient NO_2 levels will result in increased ozone and downwind sulfate concentrations. The relationships between NO_x and these other two pollutants are complex and rather controversial. For both ozone and sulfate, the relationship with NO_x is highly dependent upon the characteristics of the urban area being modeled; in the case of ozone, relevant characteristics include meteorology, topography, and existing ratios of HC and NO_x concentrations. Therefore, a general statement is difficult to make without individual evaluation of each of the urban areas. In addition, existing scientific studies of the NO_x/sulfate and NO_x/ozone relationships are limited, and their results have not yet been adequately reviewed or accepted by the scientific community. An EPA-sponsored study is currently underway, but has not yet been completed. Even if EPA later finds that NO_x emission reductions do adversely impact ozone and sulfate production, EPA will most likely address the need for further ozone and sulfate control in the context of HC control strategies and acid rain policy. In any event, as shown in the next section, no significant reductions in total NO_x emissions are projected under the standards promulgated today; rather, these standards will result in current levels staying fairly constant through the year 2000. Therefore, the effect of significant NO_x reductions on ozone and sulfate concentrations are not relevant here.

EPA agrees with those commenters who argued that NO_x emissions also play a role in acid rain formation. Some commenters asserted that NO_x contributes only about one-third of the precursors to acid precipitation, with truck emissions making up an even smaller fraction. EPA acknowledges that the dominant contributions to acid rain formation are sulfate emissions, and thus acid rain reduction is not the primary purpose behind today's promulgation of stricter truck NO_x standards. Indeed, the Agency is currently not in a position to make a quantitative assessment of the role that motor vehicle NO_x emissions play in acid rain formation. Nevertheless, EPA agrees that the Agency could not say that technologically feasible NO_x controls are not environmentally necessary (as the manufacturers suggest), since NO_x emissions do contribute to acid precipitation formation.

The effect of NO_x emissions on atmospheric visibility was reviewed in the formation of the NAAQS for NO_2, and EPA concluded that no quantitative assessment can currently be made with respect to the impact of motor vehicle NO_x on visibility. However, this potential added benefit was considered qualitatively in the determination of the need for the final NO_x standards.

Finally, in response to its comment on the need for a short-term NO_2 standard, NRDC is reminded that the NAAQS for NO_2 is currently under Agency review. The potential need for a short-term NO_2 standard is being analyzed, and EPA may choose to propose such a standard in the future as new information becomes available. However, suggestions of this type are more appropriately handled as part of the periodic NAAQS review process and cannot be dealt with effectively within this particular rulemaking.

Revised Emission Projections. Both in response to the above comments and as part of the ongoing process of re-evaluation and improvement of EPA's modeling efforts, EPA has revised its projections of future NO_x emissions. Several of the input parameters to EPA's NO_x emissions model were revised with the adoption of MOBILE 3, an update of earlier models used by EPA to generate mobile source emission factors. As mentioned earlier, the comments received on the model inputs were also given full consideration in the development of final estimates for each parameter. Finally, using EPA's best estimates for the various parameters, revised NO_x projections were made.

This final NO_x analysis also includes projections of nationwide NO_x emissions (not present in the proposal) as well as projections for key urban areas. Nationwide projections are especially useful in evaluating other effects of NO_x control, such as the impact on acid rain formation. The methodology for these nationwide projections differs somewhat from that used for individual urban areas in that no discount factor is included for stationary point sources, due to the larger scale regional concerns usually associated with nationwide emissions; also, nationwide VMT growth rates are used in these projections instead of urban growth rates (as outlined in Chapter 4 of the RIA).

Nationwide NO_x emission projections are presented in Figures 1a and 1b, which differ only in the future motor vehicle NO_x standards scenarios assumed. "Base case" (shown in Figure 1a) represents no further control of NO_x with a light-duty truck standard of 2.3 g/mi and a heavy-duty engine standard of 10.7 g/BHP-hr. The "controlled case" (in Figure 1b) refers to the NO_x standards promulgated in today's action: 1.2 and 1.7 g/mi for lighter light-duty trucks (LDT_1s) and heavier light-duty trucks (LDT_2s), respectively, and 6.0 g/BHP-hr in 1988, followed by 5.0 g/BHP-hr in 1991, for heavy-duty engines.

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Figure 1a

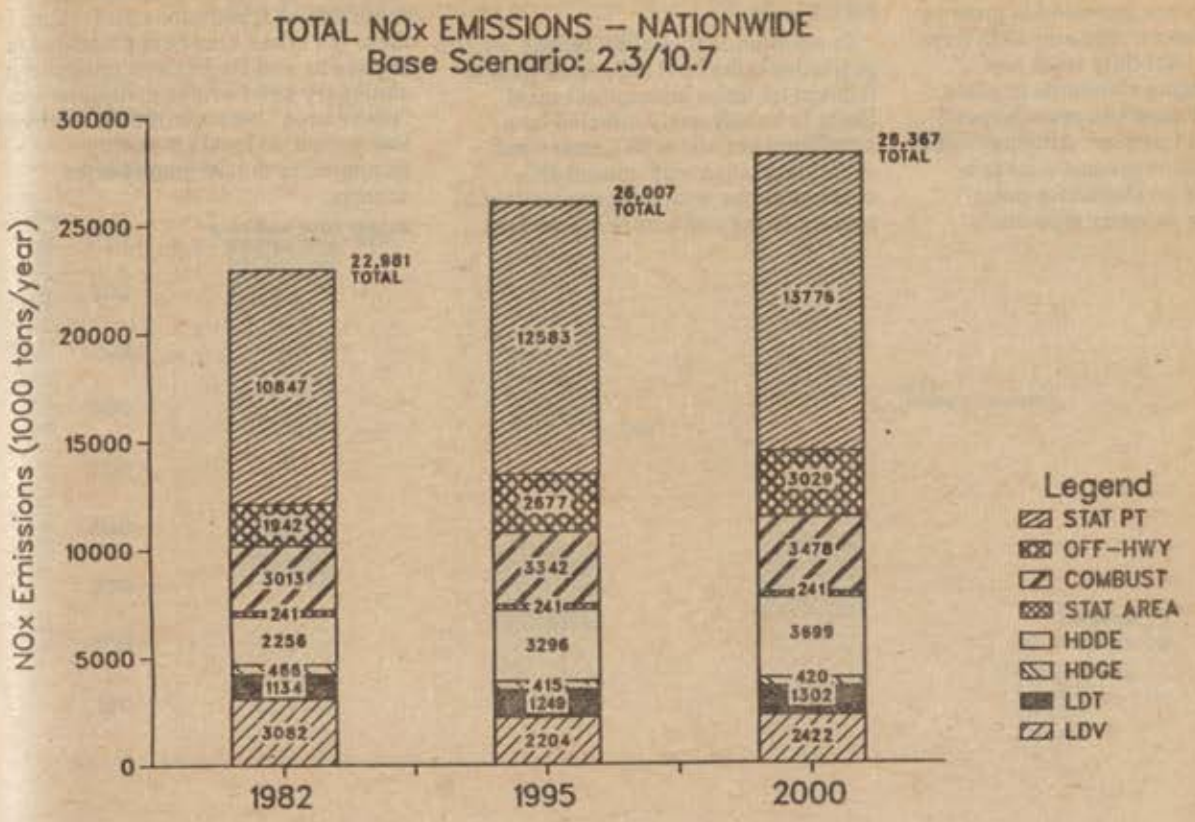
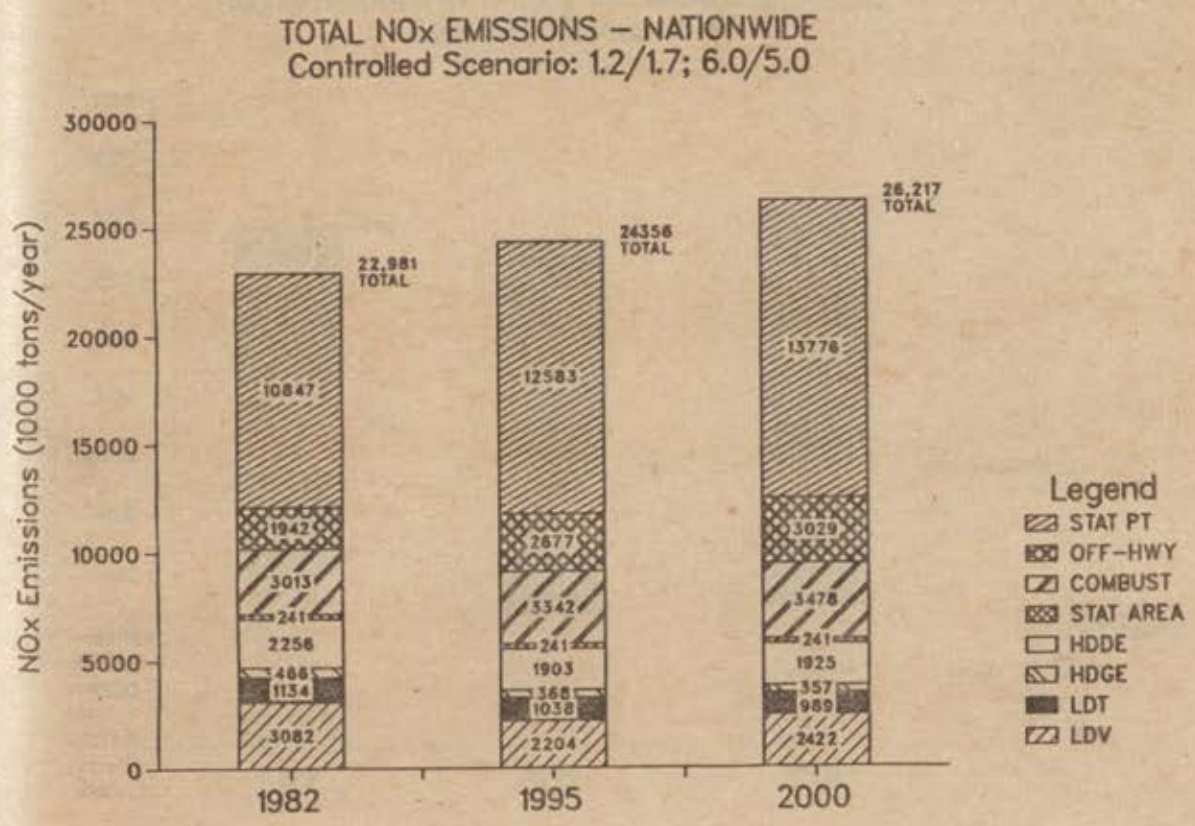


Figure 1b



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As shown in Figure 1a, representing no further NO_x control, total nationwide NO_x emissions are projected to grow by 23 percent between 1982 and 2000. Even with the final light-duty truck and heavy-duty engine standards in place (as shown in Figure 1b), growth is still significant at 14 percent. Although both sets of projections assume a certain level of control on stationary point emissions, this category represents approximately half of the total emissions projected for the year 2000 in both figures.

In addition to these nationwide projections, the final NO_x analysis also focused on those urban areas most likely to be adversely affected by a significant growth in NO_x emissions, evaluating cities with current NO_2 concentrations within approximately 35 percent of the ambient NO_2 standard (0.053 ppm). Eight low-altitude and two high-altitude areas were modelled; the combined NO_x emissions projections for these ten urban areas are presented in Figures 2a and 2b. In these projections, stationary point source emissions are "discounted" because of their relatively low impact on local air quality compared to that of ground-level sources.

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Figure 2a

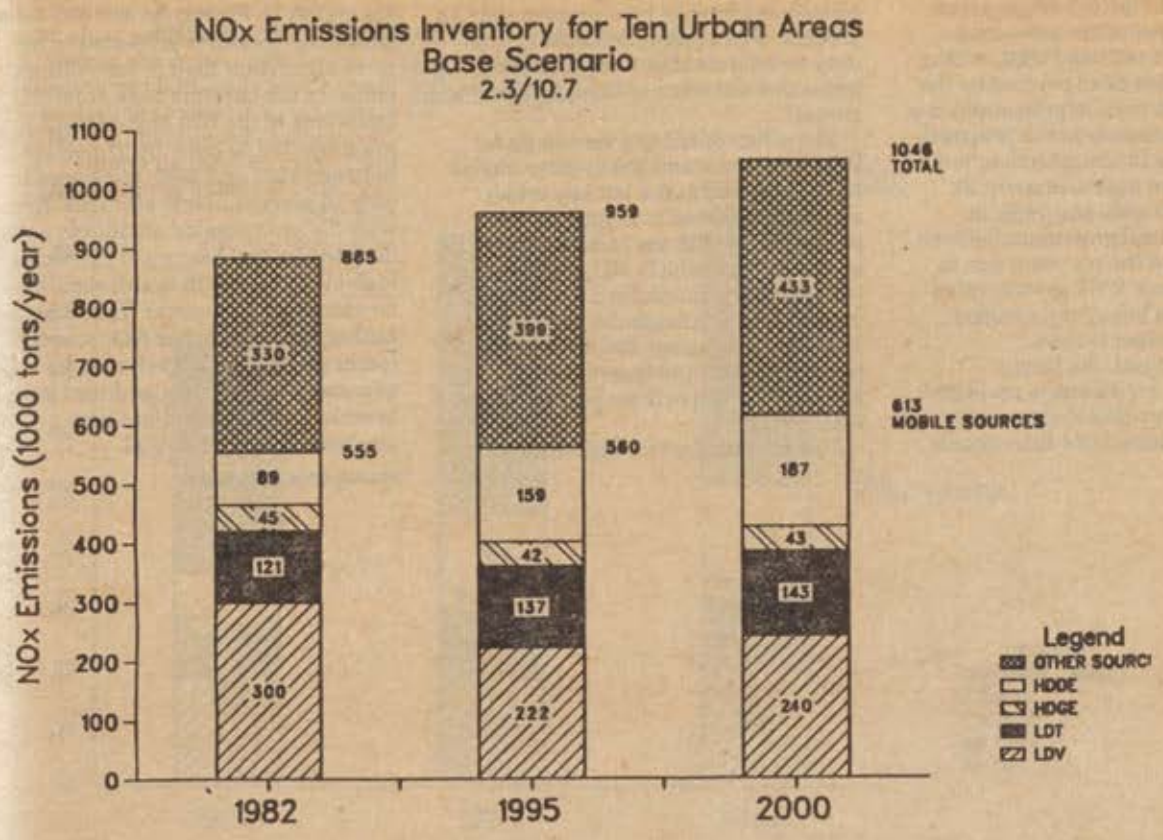
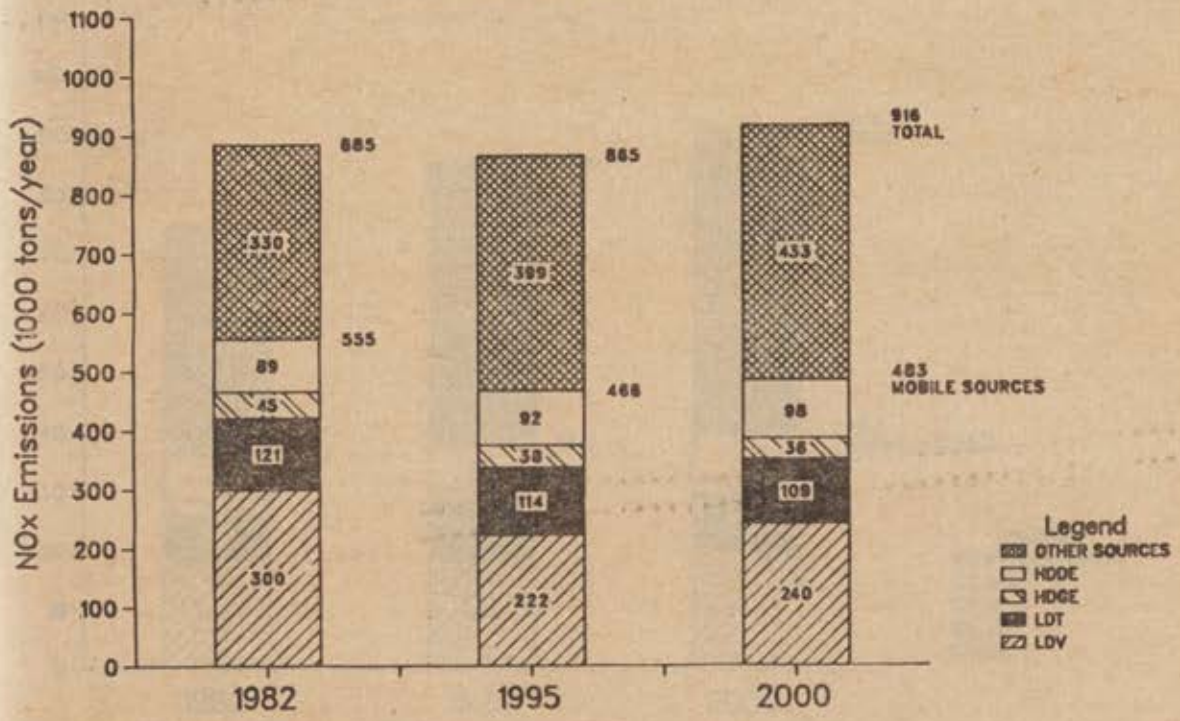


Figure 2b



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As shown in Figure 2a, total base-case NO_x emissions in the ten urban areas modeled are expected to grow by 8 percent between 1982 and 1995, with a projected increase of 18 percent by the year 2000. These growth projections are lower than those made in the proposal, which estimated future growth in total NO_x emissions at approximately 20 percent between 1980 and 1995. In general, the revised growth projections are lower than in the proposal due in large part to lower VMT growth rates and lower future heavy-duty engine emission conversion factors.

As in the proposal, the largest increase in NO_x emissions is projected for the heavy-duty diesel class, with year 2000 emissions more than double the 1982 levels. Light-duty truck emissions increase by approximately 18 percent, while gasoline-fueled heavy-duty vehicle and light-duty vehicle emissions decrease without further control.

The effect of today's standards for light-duty truck and heavy-duty engine NO_x emissions in the ten key urban areas is estimated in Figure 2b. As shown, even with the reductions due to stricter motor vehicle NO_x control, emissions are maintained roughly at current levels through the year 2000. Total NO_x emissions are reduced by 2 percent in 1995 and increase by 3 percent in 2000 (with respect to 1982 emissions).

Focusing on the two high-altitude cities (Denver and Reno) alone (shown separately in Figures 3a and 3b), future emissions growth is projected to be more significant than in low-altitude cities. In the baseline case, total NO_x emissions in the two high-altitude areas are projected to grow by 37 percent between 1982 and 2000, compared to only 16 percent at low altitudes. Even with the promulgated standards on light-duty trucks and heavy-duty vehicles, high-altitude growth is still significant at an estimated 23 percent. Therefore, even further control of other NO_x sources (perhaps on a local level) may be necessary to prevent significant growth in emissions and resultant non-attainment of the NAAQS.

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Figure 3a

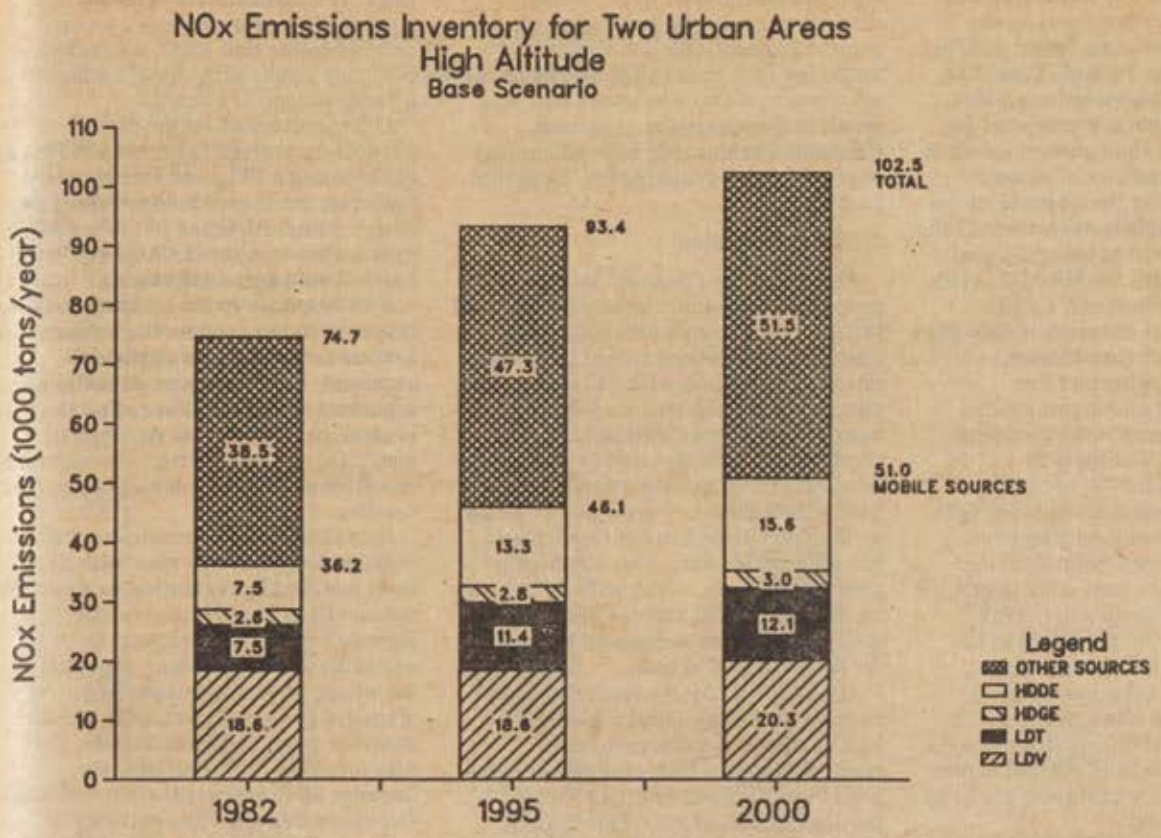
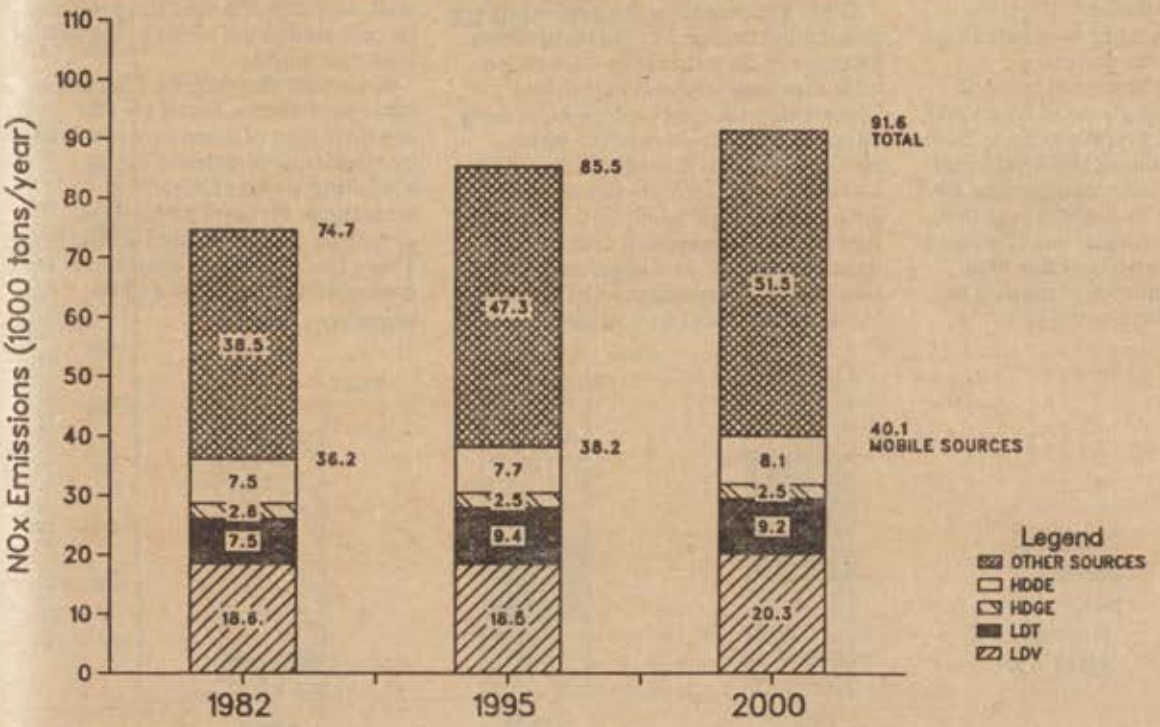


Figure 3b



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Projections of future NO_x emissions for the South Coast Air Basin (the Los Angeles area) were provided by the California Air Resources Board (CARB) and are detailed in the RIA. Total NO_x emissions (including stationary point sources) in the basin are projected by CARB to be lower than current levels in the year 2000, regardless of Federal control. However, in the absence of the new Federal standards, these reductions will not be sufficient to bring the basin into attainment with the NAAQS. With today's standards in place, CARB projects a marginal situation with regard to attainment or non-attainment.

Conclusions. It is against the background of the above projections that EPA must evaluate the comments by manufacturers that there is insufficient need for NO_x control to justify the proposed standards for light-duty trucks and heavy-duty engines. Even with the revised input data that project lower future emissions than anticipated in the proposal, overall growth in NO_x is still projected to be significant for both the nation as a whole and for the urban areas of concern. The same basic need for further NO_x control demonstrated in the proposal still exists, and current action is necessary if future problems are to be dealt with effectively.

Moreover, section 202(a)(3)(E) of the Act allows EPA to relax the No_x standards from statutory levels requiring a 75 percent reduction only if the agency finds that the statutory standards are not needed to protect the public health and welfare. Thus, the burden is on the Agency to substantiate a lack of need for the statutory standards on environmental grounds. Based upon its projections of future NO_x emissions and their relationship to both the attainment of the NO_2 NAAQS and to other actual or potential impacts, EPA finds it impossible to demonstrate that there is no environmental need for more stringent NO_x standards at this time. Therefore, the standards contained in today's action (which are not as stringent as the standards described in section 202(a)(3)(A)(ii)) have been developed under the provisions of section 202(a)(3) (B)–(D), which authorize EPA to temporarily revise the statutory standards to levels that will result in the maximum emissions reductions achievable with technology expected to be available for the period in question.

2. Diesel Particulate

Review of the Proposal. In the proposal, projections indicated that 1983 levels of nationwide urban diesel particulate emissions would more than double by 1995. As with NO_x, the most significant growth was projected for heavy-duty diesel emissions, representing an estimated 74 percent of total emissions in 1995. Based on this, heavy-duty diesels were again targeted as the key element in limiting future growth in emissions. This significant projected growth, along with its impacts on air quality and various health and welfare concerns, supported the need for the proposed action.

Issues raised by the comments. Several of the key input parameters highlighted in the discussion of comments on the NO_x analysis are also used in projections of future diesel particulate emissions. Therefore, comments and EPA's responses to comments on estimates of VMT growth, diesel penetration, and heavy-duty emission conversion factors (included earlier) will not be discussed further in this section.

Other comments on the particulate projections included criticism of EPA's estimate of the cancer risk associated with exposure to diesel particulate emissions, with commenters expressing opinions on both sides of the issue. NRDC expressed the opinion that EPA had underestimated the cancer risk potential of diesel particulate when the Agency (in the proposal) assessed the threat as "small" in comparison with other known carcinogens. On the other hand, General Motors and the American Trucking Association questioned the negative health effects of diesel particulate exposure, based on their determination that there is a lack of evidence implicating diesel emissions as a "serious cancer hazard."

Other comments on the diesel particulate projections criticized EPA for anticipating a PM_{10} ambient standard based on the March 1984 proposal for such a standard. Some felt this was premature since the NAAQS for PM_{10} had not yet been established.

EPA response to the comments. In response to the comments on cancer risk associated with diesel particulate exposure, EPA disagrees with GM's argument and still believes that the risk is small but significant. Actual risk estimates of diesel particulate exposure are presented and discussed in the next section.

In response to the question concerning anticipation of a PM_{10} standard, EPA feels justified in evaluating its standards against PM_{10} levels based on the Agency's published proposal to establish such a standard. Potential violations of the proposed PM_{10} standard are significant, with 105–329 counties projected to be in non-attainment in 1987. Furthermore, because all diesel particulate emissions fall easily into the PM_{10} category, it seems logical to evaluate the effect of control on this basis. Total suspended particulate (TSP) levels could also be considered as the basis for comparison. The number of violations of this established NAAQS are widespread as well, with 300–525 counties projected to be non-attainment areas in the 1987 to 1989 time frame.

Emissions Projections. Changes in input parameters, based on consideration of comments received and on continuing updates of EPA's modelling, resulted in revised projections of diesel particulate emissions and associated air quality. These final emissions projections are presented in Figures 4a and 4b.

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Figure 4a

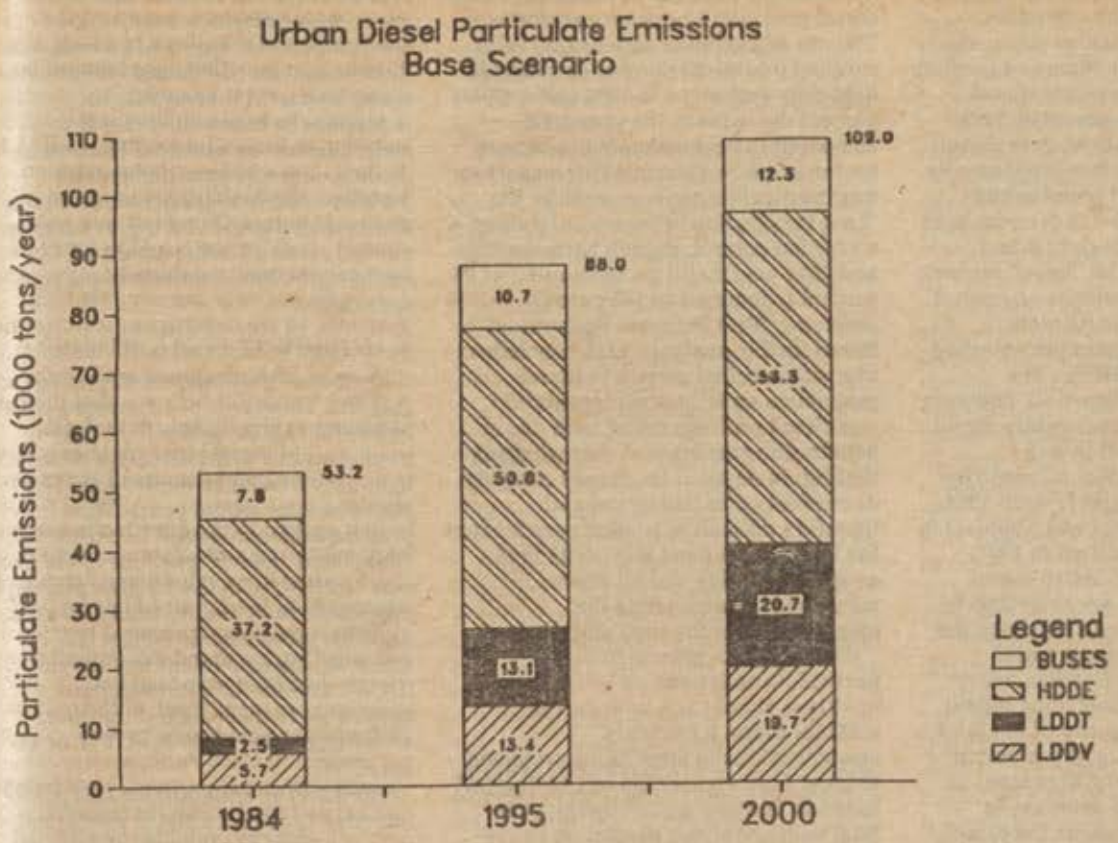
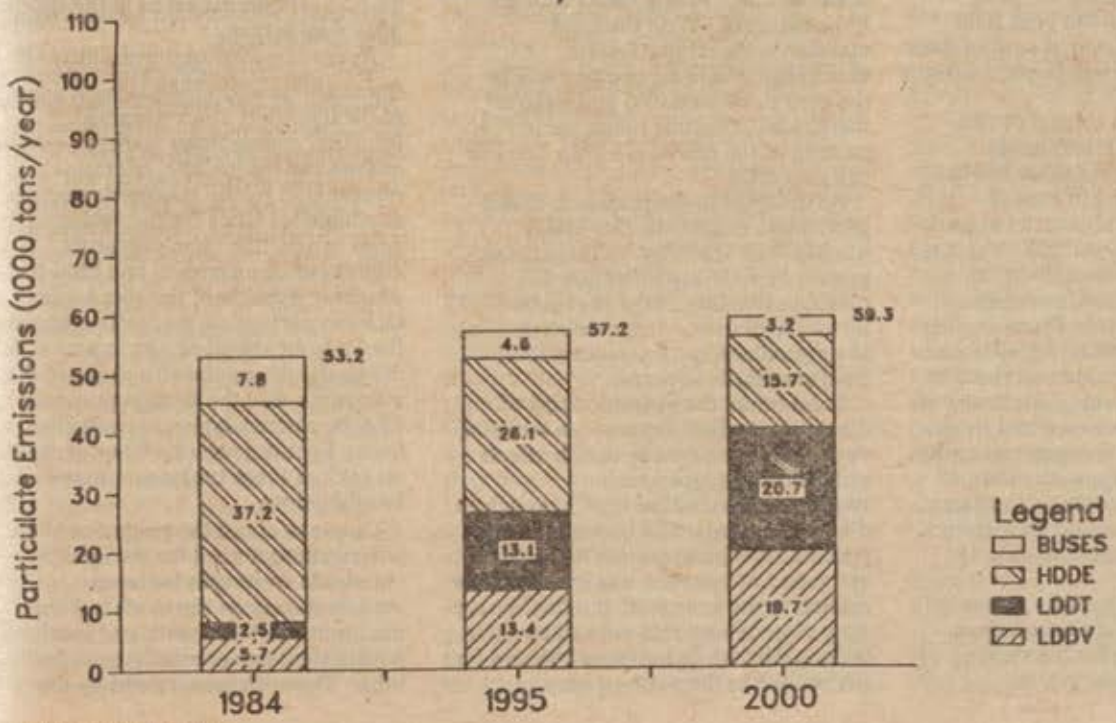


Figure 4b



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Unlike NO_x, diesel particulate emissions are modelled for urban areas across the nation in the aggregate, without focus on particular cities. The scenarios presented in Figures 4a and 4b differ only in the heavy-duty diesel particulate standards assumed. Both scenarios assume the light-duty diesel particulate standards that are currently set to come into effect with the 1987 model year—0.20 and 0.26 g/mi for light-duty vehicles and light-duty diesel trucks respectively. The "base" scenario shown in Figure 4a assumes no control of heavy-duty diesel particulate emissions, *i.e.*, it assumes uncontrolled emissions at 0.70 g/BHP-hr. The "controlled" case in Figure 4b, however, is based on the final heavy-duty diesel standards promulgated in this rulemaking—0.60 in 1988, followed by 0.25 in 1991 and 0.10 g/BHP-hr in 1994, with urban diesel buses being subject to the 0.10 g/BHP-hr standard in 1991.

As Figure 4a shows, urban diesel particulate emissions are projected to grow to twice the current levels by the year 2000 if no heavy-duty diesel controls are imposed. It is this heavy-duty diesel category (including buses) that makes up the majority of the total emissions, representing 84 percent in 1984 and approximately 63 percent of the total in 2000. (This decrease in heavy-duty share occurs as the diesel penetration of the light-duty market increases.)

The effect of heavy-duty diesel and urban bus control is significant, as shown in Figure 4b, with the final standards bringing about an estimated 46 percent decrease from the base (uncontrolled) case in the year 2000. However, even this level of control does not prevent some growth beyond current levels.

The more stringent control (0.10 g/BHP-hr standard) of urban buses beginning in 1991 and of other heavy-duty classes beginning in 1994 is projected to have a substantial impact on emissions by the year 2000. The 0.10 g/BHP-hr standard accounts for 23 percent of the reduction in emissions from uncontrolled levels. From another perspective, if the 1994 0.10 g/BHP-hr standard were eliminated and the 0.25 g/BHP-hr standard simply continued on through 2000 for both buses and trucks, total diesel particulate emissions in the year 2000 would be approximately 33 percent higher than in 1982. In contrast, the final more stringent standards limit growth during this period to only 11 percent.

The emissions projections presented in Figures 4a and 4b are based upon EPA's best estimates for the various input parameters; however, as mentioned earlier, a sensitivity analysis examining the impact of lower light-duty diesel pentration rates was performed. The use of the lower penetration rates resulted in a 29–30 percent decrease in light-duty emissions in 1995 and a 47–50 percent decrease in the year 2000, compared to best estimate projections for the same two years. With respect to total particulate emissions under the "Low Penetration" scenario, assuming no further control, growth between 1984 and 2000 would still be substantial at 68 percent (compared to 105 percent assuming "Best Estimate Penetration"). Based on this analysis, EPA concludes that uncontrolled growth in diesel particulate emissions represents a significant problem under both diesel penetration scenarios. Acknowledging that future demand for diesels is highly dependent upon fuel prices and therefore difficult to predict very far into the future, EPA must rely on its best estimates for this and all other parameters in evaluating the effectiveness of the final standards.

The impact of growth in diesel particulate emissions on urban air quality is significant, with current ambient diesel particulate concentrations in large cities projected to grow from an average of 1 to 3 $\mu g/m^3$ to levels of 3 to 7 $\mu g/m^3$ by the year 2000 with no further control on heavy-duty diesels. These future diesel particulate levels represent approximately 5 to 12 percent of the proposed standard for PM_{10}. (All diesel particulate is considered "fine" in nature and is usually less than 2.5 microns in diameter, thus falling easily into the PM_{10} category.) With the final standards, diesel particulate concentrations in large cities will be reduced to between 1.5 and 4 $\mu g/m^3$, thereby contributing roughly 2 to 7 percent of the allowable PM_{10} level in the year 2000.

As outlined in the proposal, diesel particulate emissions also affect atmospheric visibility. In large cities, growth in visibility reduction due to diesel particulate in the year 2000 could be lessened from a baseline 22 percent to approximately 12 percent with the final standards in place.

In addition, the estimated risk of diesel particulate exposure in terms of cancer and non-cancer health effects will also be reduced with implementation of the final heavy-duty diesel standards. The baseline (uncontrolled) cancer risk factor is estimated at between one and eight per million in the year 2000; the final heavy-duty diesel standards are estimated to reduce this risk to between one and four per million in the same year.

Conclusions. Based on the above projections, EPA believes that diesel particulate emissions are a serious environmental concern with respect to their impact on health and welfare. It seems apparent that significant reductions in heavy-duty diesel emissions are an essential element in dealing with this environmental problem. Today's stringent controls on heavy-duty diesels and urban buses are viewed as an effective means of reducing the future growth in particulate emissions.

B. Light-Duty Truck NO_x Standards

Review of the proposal. EPA proposed that NO_x standards of 1.2 grams per mile (g/mi) for LDT_1s (lighter light-duty trucks) and 1.7 g/mi for LDT_2s (heavier light-duty trucks) be implemented for 1987 and later model years. The proposed discrimination between the "light" and "heavy" portions of the fleet was twofold, with the 1.2 g/mi standard applicable to light-duty trucks less than 6,000 lbs gross vehicle weight (GVW) and 4,000 lbs equivalent test weight (ETW), and the 1.7 g/mi standard applicable to those light-duty trucks exceeding either 6,000 lbs GVW or 4,000 lbs ETW.

The 1.2 g/mi standard for LDT_1s was intended to reflect a rough equivalence with the 1.0 g/mi standard already in effect for passenger cars. The 1.7 g/mi level for LDT_2s was intended to reflect the fact that larger trucks will tend to have higher emission rates and that a more stringent standard could cause potential compliance problems with the particulate standard for heavier light-duty diesel trucks.

Issues raised by the comments. Commenters addressed several aspects of the light-duty truck proposal. Principal among these were the question of the need for the NO_x control represented by the standards and the available leadtime for the 1987 model year. In addition, manufacturers addressed comments to potential fuel economy impacts of the standards, adverse particulate tradeoffs claimed for the 1.7 g/mi standard, the impact of full-life useful life on the stringency of the standards, and the criteria proposed by EPA for distinguishing between light and heavy light-duty trucks. The comments on each of these topics are reviewed briefly below.

Opinions about the existence of an environmental need for the new standards were split between manufacturers on the one hand and environmental and state and local government representatives on the other. The criticisms voiced by the

manufacturers about EPA's emissions projections (discussed in the previous section of this preamble) led them to conclude that EPA had overstated the need for additional NO_x control. This position led some of the manufacturers to claim that no revisions to the light-duty truck NO_x standard were justified on the basis of air quality need, or failing that, that only the lighter trucks should be regulated. From a different viewpoint, environmental and governmental interests argued that the need for NO_x control was actually much greater than acknowledged by EPA, and that standards even more stringent than those proposed are feasible and should be required.

While the feasibility of the proposed NO_x standards was generally uncontested (and cost comments supported EPA's cost estimates), the issue of effective model year was raised by most of the manufacturers. Two light-duty truck manufacturers (Ford and Chrysler) stated that they could comply with the standards in model year 1987, as proposed, but all others claimed that a delay of at least one year was necessary in order to give them enough time to develop and certify conforming vehicles. Two manufacturers even argued for a delay until the 1989 model year, citing leadtime constraints facing their firms. In addition, several manufacturers argued that they were entitled to 4 years leadtime under section 202(a)(3)(B) of the Act before any standards for LDT_2s can be implemented.

As for fuel economy impacts, a few manufacturers claimed that the proposed standards would result in fuel economy penalties. GM claimed up to a six percent penalty for light-duty gasoline trucks. Others felt the impact would be less. For example, Ford cited a value of one to one-and-a-half percent. Most of the fuel economy estimates were derived from data on current engines certified to a 1.0 g/mi NO_x standard for California.

Commenting on the impact of the proposed standards on its diesel light-duty trucks, GM argued that the proposed standards would adversely affect the ability of its heavier diesel trucks to meet the 1987 particulate standard. Because of this, GM felt that the standard for heavier light-duty trucks should remain at 2.3 g/mi.

The impact of full-size useful life on the effective stringency of the proposed standards (both 1.2 and 1.7 g/mi) was cited by several manufacturers, who claimed that the level of each should be raised to account for full-life compliance requirements. (Under the statute, light-duty vehicles must meet emission standards for only 5 years or 50,000 miles.) Otherwise, the commenters argued, the standards do not provide equivalent stringency to the light-duty vehicle standard as claimed by EPA; rather, they are more stringent than the light-duty level.

The criteria used to distinguish between light-duty trucks required to meet 1.2 g/mi or 1.7 g/mi were intended by EPA to correspond to California requirements, but some commenters claimed that they did not. EPA used "equivalent *test* weight" as one criterion, while California uses the slightly different "equivalent *inertia* weight." According to these comments, this difference, combined with EPA's inclusion of a gross vehicle weight (GVW) criterion, would lead to inconsistent classifications between EPA and California and cause manufacturers in some cases to have to certify to varying sets of standards. Arguments were also advanced as to why EPA would not need to retain the GVW discriminator to prevent possible migration of trucks from one class to the other.

EPA response to comments. EPA has carefully considered the comments received on the issue of light-duty truck NO_x standards. For a more complete treatment of the comments, the interested reader is referred to Chapter 2 of the Regulatory Impact Analysis. A summary of EPA's responses is provided in the following paragraphs to identify EPA's positions in each area.

The first issue identified above concerns the need for new light-duty truck standards. EPA's review and reanalysis of the environmental basis for future NO_x control appears earlier in this preamble. It suffices here to reiterate that EPA continues to believe that future NO_x emissions from light-duty trucks should be reduced.

As for the appropriate model year for new standards, EPA's review leads it to agree with those manufacturers who argued for an additional year of leadtime. Based upon a reanalysis of leadtime requirements and a March, 1985 promulgation date, EPA finds that the first model year for which the new standards can be generally applicable is 1988. EPA disagrees, however, with those manufacturers who argued that they were entitled to 4 years leadtime to meet new LDT_2 standards. As discussed in the proposal, EPA cannot comply with the leadtime provision of section 202(a)(2)(B) of the Act since the NO_x standards for LDT_2s are already several years behind schedule (due in part to the manufacturers' requests for delays in the standards proposed in 1981).

EPA has reviewed the issue of fuel economy impacts very carefully. The result of that review, as detailed in Chapter 2 of the Regulatory Impact Analysis, is that no adverse impacts can be substantiated. In fact, EPA continues to believe that a small benefit may result for the whole light-duty truck fleet on average (although no benefit was assumed in the economic impact analysis).

Turning to GM's comment concerning a possible adverse effect of the proposed standards on particulate emissions from its heavier light-duty trucks, the Agency must disagree with the GM position. The 1.7 g/mi level was introduced by EPA in part to prevent the difficulty alleged by GM. Based upon analysis of data in GM's own submission concerning the NO_x/particulate tradeoffs to be expected, EPA concludes that GM should be able to meet the particulate standard at a NO_x standard of 1.7 g/mi for heavier light-duty trucks.

The next issue raised is that of the relative stringency of the proposed standards compared to the existing light-duty vehicle NO_x standard. First, the 1.7 g/mi standard for LDT_2s is actually less stringent than the 1.0 g/mi light-duty vehicle standard. It is set at a level which deals with feasibility issues affecting some of the heavier members of the class. Even when the effects of full-life useful life are considered, 1.7 g/mi is still less stringent than the light-duty vehicle standard. Thus, manufacturers have no grounds for claiming that 1.7 g/mi for LDT_2s is more stringent than the light-duty vehicle standard.

As for the 1.2 g/mi level for LDT_1s, EPA's intent is to provide for approximate equivalence only. There is no specific statutory requirement for this approach; rather, it represents EPA's interpretation of the Act that Congress intended to establish some equity between light-duty vehicles and light-duty trucks. This standard accomplishes that objective. EPA's evaluation of the effect of an extended useful life indicates that making specific allowance for this effect would change the level of the standard by less than 0.1 g/mi. The only important issue in evaluating the appropriateness of 1.2 g/mi at this time is that of its general feasibility which, as already noted, has not been challenged by the manufacturers.

The final area of comment concerned the criteria used by EPA to separate light and heavy light-duty trucks. EPA agrees with the comments; the fact that the proposed criteria did not completely correspond to California's requirement

was inadvertent and is being corrected in this rule. EPA also agrees that the need for a second discriminator based on GVW is unnecessary. Therefore, that provision is being eliminated. Since the specific California parameter (equivalent inertia weight) does not appear in Federal regulations, EPA will instead use loaded vehicle weight, which defines the California equivalent inertia weight classes, for its cutpoint. On this basis, vehicles up to and including 3,750 pounds loaded vehicle weight will be considered to be light light-duty trucks (LDT_1s), and those over that limit will be considered to be heavy light-duty trucks (LDT_2s).

Options for the final rule. Based upon the public comments and EPA's evaluation of them as outlined above, the Agency evaluated four main options for potential inclusion in today's rule. These options, ranging from retention of the standards as proposed to no new light-duty truck NO_x standards at all, are identified and reviewed below. Further information on the costs, emission impacts and cost effectiveness of the options can be found in the Alternatives chapter of the Regulatory Impact Analysis.

1.2/1.7 in 1987: This option would retain the light-duty truck standards as originally proposed. It would have the maximum environmental benefit of any of the options under consideration, but would not, in EPA's judgment, allow sufficient leadtime for compliance by manufacturers.

1.2/1.7 g/mi in 1988: This option maintains the level of the standards as proposed, while responding to valid concerns expressed about available leadtime for the 1987 model year. With a one year delay of implementation, the technical feasibility of this approach is well established and therefore is not an issue. Comments did indicate the potential for an adverse impact of a 1.7 g/mi NO_x standard of particulate emissions from the heavier light-duty diesel trucks but, as already discussed, EPA has concluded that such impacts are unlikely.

On the other hand, there are legitimate reasons why the standard for heavier light-duty trucks should remain at the 1.7 g/mi level rather than being lowered. These trucks are not only heavier, they have increased frontal area and aerodynamic drag. This forces their average emission rates to be higher than those of the lighter trucks. In addition, reducing the standard below 1.7 g/mi would significantly impact the ability of affected diesel engines to comply with the diesel particulate standard.

In the mid to late 1990s, this option would produce a three to four percent reduction in NO_x emissions in the urban areas evaluated, and about a one percent reduction in total nationwide NO_x emissions. Its cost per vehicle is low, averaging less than $30 per truck. Much of the reason for the low cost comes from the fact that manufacturers, as indicated in confidential submissions to EPA, are generally moving toward the adoption of three-way closed loop control systems (the technology which would be used to meet these standards) even without new standards. This is being done because there are other benefits to this technology besides reduced emissions, principally in the areas of improved performance, driveability and fuel economy. The 1.2/1.7 g/mi standards option thus capitalizes on the emission reduction potential of this technology at very low cost. The overall cost effectiveness of this option is about $263/ton if benefits are undiscounted, or $405/ton if benefits are discounted at a rate of ten percent.

1.2/2.3 g/mi in 1988: Under this option, any potential compliance problem would be eliminated for heavier light-duty diesel trucks. However, as discussed above, EPA has concluded that the compliance issues claimed at 1.7 g/mi do not justify a relaxation in the proposed level. Overall, the cost per vehicle (sales-weighted fleetwide basis) would be reduced slightly from the previous option, as would the degree of NO_x control obtained.

This option suffers from a further problem in that it fails to address the statutory provisions applicable to the heavier light-duty trucks under section 202(a)(3). In order to avoid setting a new, lower standard for these vehicles, EPA would have to make a finding under section 202(a)(3)(E) that further NO_x control is environmentally unnecessary. As already noted, EPA cannot make such a finding.

No new standard: This option clearly results in no benefits and no cost. As with the previous option, which considered no control of the heavier light-duty trucks, EPA would have to make a finding of no environmental need for control of LDT_2 NO_x emissions to adopt this approach. As has already been shown, EPA is unable to reach such a conclusion based on its most recent emission projections and air quality analyses. In addition, it should be noted that the potential air quality benefits resulting from the use of three-way catalyst systems, which manufacturers have indicated in their comments are already planned in many cases, would potentially be sacrificed under this option.

Conclusions. Determining the appropriate choice among the above options is straight-forward. Both the overall environmental need and the feasibility of the new standards argue for maintaining the standards at the levels proposed. Thus, the choice is between options one and two. Based upon the leadtime problems which EPA has recognized, option two has been selected. Therefore, revised light-duty truck NO_x standards of 1.2 and 1.7 g/mi, depending on loaded vehicle weight, take effect for the 1988 model year. Light-duty trucks up to and including 3,750 lbs loaded vehicle weight must meet the 1.2 g/mi NO_x standard, and those of 3,751 lbs or greater loaded vehicle weight must meet the 1.7 g/mi standard. (This cutpoint corresponds to the 4,000 lbs equivalent inertia weight discriminator used in the California motor vehicle regulations.)

C. Heavy-Duty Engine NO_x Standards

Review of the proposal. Two stages of revised heavy-duty engine oxides of nitrogen (NO_x) emission standards were proposed. For 1987 and later model year heavy-duty engines, the proposed standard was 6.0 grams per brake horsepower-hour (g/BHP-hr). A 4.0 g/BHP-hr NO_x standard was proposed for 1990 and later model year heavy-duty engines. The 4.0 standard represented what the proposal deemed to be the approximate limit of reductions attainable by 1990 model year heavy-duty diesel engines using current and reasonably foreseeable technology, and was judged not to pose any serious feasibility issues for gasoline-fueled engines.

Issues raised by the comments. Commenters addressed both the levels of the proposed NO_x standards for heavy-duty engines and the proposed model year 1987 and 1990 effective dates. Issues raised by the manufacturers' comments are discussed first, and are followed by discussion of issues raised by commenters that challenged the proposed standards as insufficiently stringent.

The major points addressed by the manufacturers were the leadtime available for a 1987 model year standard, the environmental need for revising the heavy-duty NO_x standard, and the technical feasibility of a 4.0 g/BHP-hr standard for heavy-duty diesel engines. Other issues raised by the industry included potential fuel economy penalties associated with the proposed standards, particularly for diesel engines, along with the costs of

these standards and statutory leadtime provisions.

Manufacturers challenged any revision of the NO_x standard for 1987 model year heavy-duty engines on the grounds of insufficient leadtime to design, tool-up, produce, and certify conforming engines. The 6.0 g/BHP-hr standard was generally acknowledged as technologically feasible, but not for the 1987 model year. Most manufacturers instead suggested that model year 1988 be the effective date for the first revision of the NO_x standard. However, a few heavy-duty diesel engine manufacturers (Cummins, International Harvester, Mack) relied on the 4-year leadtime provision in section 202(a)(3)(B) of the Act to argue that no revision of the current heavy-duty engine NO_x standard of 10.7 g/BHP-hr can take effect until the 1989 or 1990 model year.

Manufacturers again claimed that the EPA emissions projections and air quality analyses, used in support of both the proposed light-duty truck and heavy-duty engine NO_x standards, overstated the need for additional NO_x control.

While most manufacturers accepted the 6.0 standard, at least if implemented sometime after model year 1987, General Motors (GM) claimed that no heavy-duty engine NO_x standard more stringent than 8.0 g/BHP-hr could be justified on the basis of environmental need in either the short- or long-term. The specific challenges manufacturers made to EPA's emission projections and air quality analyses were the same as those used to contest the need for the light-duty truck NO_x standards, and are discussed under the "Environmental Impacts" heading of this section.

Acknowledgment by the industry of the technological feasibility of the 6.0 g/BHP-hr NO_x standard did not translate into support for such a standard. Diesel engine manufacturers predicted fuel economy penalties ranging as high as 12 percent could result from the 6.0 g/BHP-hr NO_x standard, relative to the current 10.7 g/BHP-hr standard. However, most of the estimates were in the 3 to 6 percent range. Cost estimates for compliance varied and were not supplied by all manufacturers. Ford estimated that compliance for medium heavy-duty diesel engines would cost $350 on a sales-weighted basis. International Harvester's estimated cost ranged from $337 to $675 per engine, depending on whether electronic controls were required.

Comments on the 6.0 g/BHP-hr NO_x standard for gasoline-fueled heavy-duty engines were received from General Motors (GM), Ford Motor Co. (Ford), and the Chrysler Corporation. GM acknowledged that the standard was technologically feasible for most gasoline-fueled engines, but criticized EPA's assessment of how this standard would be met and claimed that a 1.5 percent fuel economy penalty would result. Ford also called the standard feasible, but said that additional hardware, beyond that assumed by EPA in the proposal, will be required to comply with a 6.0 g/BHP-hr NO_x standard. Chrysler agreed that a 6.0 g/BHP-hr NO_x standard was feasible for gasoline-fueled engines. The only cost estimate for gasoline-fueled heavy-duty engines, $180 for compliance with the 4.0 g/BHP-hr standard, was received from Chrysler, even though Chrysler claimed that the technology necessary to reach that level was not available.

Another major issue raised by the industry was the feasibility of the proposed 4.0 g/BHP-hr NO_x standard, which all manufacturers characterized as beyond the limits of technological feasibility for heavy-duty diesel engines. Any heavy-duty engine NO_x standard lower than 6.0 g/BHP-hr, commenters claimed, would result in unacceptably large fuel economy penalties for diesel engines. In addition, manufacturers said that compliance with the proposed particulate standard in 1990 would not be possible under a 4.0 g/BHP-hr NO_x standard. The lowest NO_x standards suggested by any of the manufacturers for the 1990–92 time frame were 5.1 g/BHP-hr (the current California standard) in 1990 by Daimler-Benz, 5.0 in 1991 by Volvo, and 4.5 in 1992 by Cummins, whose recommendation was contingent on EPA making a commitment to review the 1992 standards no later than calendar year 1987. (This point is also discussed below under "Heavy-Duty Diesel Engine Particulate Standards.")

Manufacturers of heavy-duty gasoline-fueled engines also termed a 4.0 g/BHP-hr NO_x standard for 1990 or 1991 infeasible. Ford claimed that a 4.0 g/BHP-hr NO_x standard would require three-way catalysts for these engines, a step that it described as not feasible. GM said that a 4.0 g/BHP-hr NO_x standard for gasoline-fueled engines would cause hydrocarbon (HC) emissions to double, making compliance with model year 1987 HC standards impossible, and would cause a 6 percent fuel economy penalty. Chrysler simply stated that it could not comply with a 4.0 g/BHP-hr NO_x standard using technology expected to be available for the 1990 model year.

Environmental interests and state and local government representatives, on the other hand, termed the proposed standards inadequate to address what they characterized as a crucial need for additional reductions in NO_x emissions. Most environmentalists argued that a 4.0 g/BHP-hr NO_x standard should be implemented in the 1987 model year, with a 1.7 g/BHP-hr standard (representing a 75 percent reduction from baseline gasoline-fueled engine NO_x emissions) taking effect in model year 1990. The Colorado Department of Health even recommended a 1.0 g/BHP-hr NO_x standard for those engines used in vehicles up to 14,000 lbs gross vehicle weight. NRDC pointed to California's current 5.1 g/BHP-hr heavy-duty engine NO_x standard as evidence that a short-term standard lower than 6.0 g/BHP-hr was feasible. For the most part, however, these recommendations were not necessarily based on the assumption that all, or even most, engines would be capable of compliance when the standards first took effect. Instead, these recommendations were based on the need for NO_x reductions as presented in the proposal, combined with a strong emphasis on the technology-forcing provisions of the Act and the availability of noncompliance penalties (NCPs) for technologically "laggard" manufacturers unable to meet the standards when they first take effect.

Several other issues were also raised by those requesting EPA to establish heavy-duty engine NO_x standards more stringent than those proposed. The California State Attorney General said that the NO_x standard for gasoline-fueled heavy-duty engines should be set low enough to force the use of three-way catalytic converters on those engines. The California Air Resources Board (CARB) joined the Attorney General in arguing that the State of California, despite their authority to set mobile source emission standards more stringent than Federal levels, will be unable to deal with increasing NO_x emissions and resulting problems with nonattainment of the ambient NO_2 standard unless more stringent Federal standards are established. This is because of the high amount of vehicle miles traveled (VMT) in California by heavy-duty diesel engines certified to Federal standards. CARB estimated that federally certified engines represent as much as 45 percent of all VMT accumulated by heavy-duty diesel engines in the Los Angeles area (currently the only NO_2 nonattainment area in the country).

EPA response to the comments. The first issue identified above concerns the leadtime required for implementation of a 6.0 g/BHP-hr NO_x standard. An analysis of the practical leadtime required for heavy-duty engine manufacturers to comply with a 6.0 g/

BHP-hr NO_x standard is presented in Chapter 2 of the RIA, with separate analyses for gasoline-fueled and diesel engines. Different analyses are required to account for the different control technology used by the two engine types, and the analysis for diesel engines also accounts for the simultaneous imposition of particulate regulations for those engines. For reasons discussed in the RIA, EPA concludes that the 21 months remaining after publication of this final rule until the beginning of the 1987 engine model year (January 1, 1987) is not adequate for most manufacturers and that additional time for compliance must be allowed. Delay of a 6.0 g/BHP-hr standard by one year, to the 1988 model year, makes approximately 33 months of leadtime available. Based on EPA's analysis of the leadtime requirements, this should provide all manufacturers with adequate, but not excessive, leadtime.

In response to those manufacturers that cited section 202(a)(3)(B) of the Act to argue that no revision to the heavy-duty engine NO_x standards can be implemented before the 1989 or 1990 model year, EPA reiterates the discussion presented in the proposal with respect to a 1987 model year standard. The now-conflicting statutory provisions, which call for NO_x standards to have been in place for the 1985 model year but also call for 4 years leadtime for any revisions of the statutory heavy-duty NO_x standards, cannot both be met and necessitate the approach taken by EPA today. EPA believes that the requirement to promulgate the statutory standards, or revised standards, as soon as practicable is paramount. EPA also believes the 1988 effective date to be an appropriate resolution of the statutory issues and the legitimate leadtime concerns expressed by the manufacturers. EPA notes again that more than 4 years have passed since the Agency's intent to revise the NO_x standards for heavy-duty engines was first announced, and since the manufacturers first requested their postponement. While this elapsed time is not, strictly speaking, part of the leadtime for the 1988 model year standard being promulgated today, EPA does not believe that it should be ignored in considering the implementation date for a near-term NO_x standard. The reader is also referred to the proposal (49 FR *at* 40259, October 15, 1984) for additional discussion of this issue.

EPA's responses to the manufacturers' criticisms of the emission projections and air quality analyses used in support of the proposal are presented under the "Environmental Impacts" heading in this section, and are not repeated here. As stated above in the discussion of environmental need, EPA has completely reanalyzed the need for future NO_x control and found that reductions in heavy-duty NO_x levels are necessary to deal appropriately with projected future growth in NO_x emissions.

While EPA continues to believe that a 6.0 g/BHP-hr NO_x standard is feasible for all heavy-duty engines in 1988, several of the specific comments on this topic have led to revisions in EPA's technical and economic analyses of this standard. EPA accepts the statement by Ford that more hardware than the proposal assumed will be used by some gasoline-fueled engines to comply with the standard while minimizing the fuel economy impacts, and has updated its analyses accordingly. EPA also accepts the assertion that slight fuel economy penalties may result from this standard, but disputes the manufacturers' claims of the magnitude of such penalties (*i.e.*, 3 to 12 percent). The technical analyses in Chapter 2 of the RIA show that the 6.0 g/BHP-hr NO_x standard may cause up to a 2 percent penalty for diesel engines, and should not cause any penalty for gasoline-fueled engines, in the first year that it is effective. However, EPA also believes that potential fuel economy penalties will be affected by the projected application of fuel efficiency improvements, and should diminish in future model years. The reader is referred to the "Technological Feasibility" chapter of the RIA for details of these analyses.

EPA does not agree with NRDC that an even lower short-term NO_x standard is feasible, in light of the significant trade-off between NO_x and particulate emissions and the likelihood of substantial fuel economy penalties in this time frame. Thus EPA concludes that 6.0 g/BHP-hr is the lowest feasible short-term (*i.e.*, 1988 model year) NO_x standard for heavy-duty engines. (For further discussion of this issue, see Chapter 2 of the RIA.)

Turning to the question of the feasibility of a 4.0 g/BHP-hr NO_x standard for heavy-duty diesel engines, EPA finds that there is some validity to the manufacturers' comments regarding this standard. The data on which EPA based its analyses in support of the 4.0 g/BHP-hr standard was limited and involved problematical extrapolations. During the comment period, data were submitted that EPA concluded represent the best estimate currently available of heavy-duty diesel engine technology in the 1991 time frame. These data suggest that 5.0 g/BHP-hr is the lowest feasible standard for 1991. At NO_x levels below 5.0 g/BHP-hr, particulate emissions begin increasing at distinctly higher rates and in some cases reach levels well above 0.60 g/BHP-hr. These increases in particulate emissions are of special concern to the Agency, since they have the potential to render the particulate standards promulgated by today's action unattainable. Such increases in particulate emissions make the application of traps, required to meet the 1991 bus and heavy-duty engine particulate standards, very difficult. For this reason, EPA does not consider 4.0 g/BHP-hr to be a feasible standard for 1991–93. (For further information about the feasibility problems associated with a 4.0 g/BHP-hr NO_x standard, see Chapter 2 of the RIA.)

EPA has determined, on the basis of the manufacturers' comments and subsequent reanalysis of the issues, that a NO_x standard of 5.0 g/BHP-hr for heavy-duty engines in 1991 is as stringent a standard as can be implemented by that time. This standard would reduce the adverse impact of reducing NO_x on engine-out particulate emissions, and an approximately equal standard (5.1 g/BHP-hr) is already being met by a number of engines in California, although without any accompanying particulate standard. EPA estimates that a NO_x standard of 5.0 g/BHP-hr may cause a first-year fuel economy penalty of up to one percent for heavy-duty diesel engines, which should be diminished to about 0.5 percent within a few years. For gasoline-fueled engines, EPA estimates that any potential fuel economy penalty will be very slight.

Of the arguments made by environmental organizations and state and local governmental representatives in support of their contention that even the proposed standards were insufficiently stringent, the most important was that noncompliance penalties (NCPs) can and should be taken into consideration in determining the levels of new heavy-duty engine emission standards. EPA views NCPs as a mechanism by which the Agency is freed from an obligation to establish standards that can be met by *all* engines, even those of technological laggards, and is allowed to base standards upon the capabilities of the technological leaders. However, EPA does not believe that Congress intended NCPs to force the Agency to set standards based solely on the cleanest possible engines, such that most manufacturers and most engines cannot

comply. In fact, section 202(a)(3) of the Act requires EPA to consider other factors (leadtime, cost, fuel economy) in setting standards, which implies that Congress intended standards to be achieveable by most manufacturers, if not all. In this case, EPA has determined (contrary to NRDC's suggestion) that most engines could *not* comply with a 4.0 g/BHP-hr standard in the time frame suggested by NRDC without incurring excessive costs and unreasonable fuel economy penalties. (See Chapter 2 of the RIA for a detailed discussion of the feasibility issue.) EPA does not believe that NCPs would be an appropriate remedy in such a case, or that NCPs can substitute for the feasibility determinations required by section 202(a)(3) (B)–(D) of the Act.

The California Attorney General argued that a lower NO_x standard, one which would force the use of three-way-catalyst technology, should be set for gasoline-fueled heavy-duty engines, without contesting the tenchical feasibility of such an approach. EPA believes that different NO_x standards for gasoline-fueled and diesel heavy-duty engines are not appropriate, since the legislative history of the Clean Air Act indicates that Congress generally contemplated common emission standards for both engine types. Although EPA did establish different hydrocarbon (HC) and carbon monoxide (CO) standards for gasoline-fueled and diesel heavy-duty engines (48 FR 52170, November 16, 1983), that uinque action was based on the unusual circumstances of that case. Specifically, diesel engines could meet the statutory HC and CO standards easily, while gasoline-fueled engines could meet these standards only at unreasonable cost.

This is not the case for the NO_x standards of today's rulemaking, where reference to the "Economic Impact" chapter of the RIA shows that the costs of compliance at the 6.0 and 5.0 g/BHP-hr NO_x levels are somewhat similar for both engine types, especially when the costs are considered in relation to the base cost of each type of engine. The cost of adding three-way-catalyst systems to gasoline-fueled heavy-duty engines would dramatically alter this balance, with the possible effect of forcing at least some gasoline-fueled engines out of the heavy-duty market. Yet the additional reductions in NO_x emissions would be insignificant, and the gasoline-fueled engines sales lost would be gained by diesel models that would be permitted higher NO_x emission levels. Thus, the benefits of the NO_x reductions attributable to such control of gasoline-fueled engines, already slight, would tend to be eliminated. Therefore, EPA is promulgating common NO_x standards for both engine types.

Options for the final rule. Two options were considered for the near-term, a 6.0 g/BHP-hr standard in the 1987 model year, as proposed, and a 6.0 standard in model year 1988. In the longer term, 6.0 and 5.0 g/BHP-hr were considered as options.

6.0 g/BHP-hr in model year 1987: As discussed in EPA's response to the comments, above, analyses of the leadtime required for manufacturers to comply with a 6.0 NO_x standard are presented in the RIA for both gasoline-fueled and diesel heavy-duty engines. The conclusion EPA draws from those analyses is that inadequate leadtime exists for a model year 1987 revision to the heavy-duty engine NO_x standard. However, those analyses also indicated that a delay of one year to the 1988 model year would provide sufficient leadtime (up to 33 months after today's notice) for all manufacturers.

6.0 g/BHP-hr in 1988: This option features the level of short-term heavy-duty engine NO_x control that was proposed, but delays implementation for one model year in response to the manufacturers' comments regarding leadtime requirements. The technological feasibility of this standard is established by the analysis in support of the proposal and was not contested by the industry in their comments. EPA's analysis indicates that any fuel economy penalties associated with this standard should be small (on the order of 2 percent or less for diesels, none for gasoline-fueled engines), and should diminish through continued technological advances in future model years.

This option alone would be projected to reduce NO_x emissions, from levels projected without revisions to the heavy-duty engine standard, in the ten urban areas evaluated by 6 to 8 percent in the mid-to-late 1990s. Reductions in nationwide NO_x emissions would be 5 to 6 percent lower in the same period. The cost per vehicle, over the long run, is estimated at $37 and the undiscounted cost effectiveness at $24 per ton of NO_x emission reduction.

6.0 g/BHP-hr in 1988 and in 1991: This option would establish the 6.0. g/BHP-hr heavy-duty NO_x standard in 1988, then leave it in place indefinitely. As such, it fails to take into account the progress that will be made in heavy-duty engine technology, and fails to respond completely to the need for NO_x control in the mid-to-late 1990s as still evidenced by the revised environmental support analyses. In addition, it fails to respond to section 202(a)(3)(B) of the Act, which mandates that standards set under that section that are less stringent than those prescribed in section 202(a)(3)(A)(ii) be applicable only for a period of three model years. Such revised standards must be followed by either the statutory standard or a more stringent revised standard.

In the discussion of the "6.0-in-1988" option, it was stated that NO_x emissions would be reduced by 6 to 8 percent in the ten urban areas modeled, and by 5 to 6 percent nationally, for the latter half of the next decade from levels projected without any new NO_x controls on heavy-duty engines. Despite this, those levels would be 2 to 10 percent greater in the urban areas, and 7 to 15 percent greater nationwide, than 1982 levels. Since this option merely retains the 6.0 g/BHP-hr standard through 1994, the cost and cost-effectiveness estimates are also the same.

6.0 g/BHP-hr in 1988 and 5.0 g/BHP-hr in 1991: EPA chose to evaluate this option as a result of the legitimate concerns expressed by the industry over the adverse impacts of the proposed 4.0 g/BHP-hr NO_x standard on heavy-duty diesel particulate emissions and on fuel economy, and because it provides needed additional NO_x emission reductions. This option represents a significant technical challenge for the manufacturers, while responding to the requirements of section 202(a)(3)(B) of the Act that revised heavy-duty engine NO_x standards promulgated under section 202(a)(3)(B) (*i.e.*, 6.0 g/BHP-hr model year 1988) be effective only for a period of three model years, and that subsequent revisions impose more stringent standards.

This option, which presumes establishment of the 6.0 g/BHP-hr NO_x standard model year 1988, is projected to hold mid-1990s NO_x emissions in the ten urban areas evaluated to essentially 1982 levels. This is a reduction of about 8 percent from the levels projected for the mid-1990s in the absence of new heavy-duty engine NO_x standards. On a nationwide basis, NO_x emission inventories would be about 7 percent lower in the mid-1990s than the levels projected without this control. The cost per vehicle, relative to the 1988–90 model years under a 6.0 g/BHP-hr NO_x standard, is estimated to range from $44 to $131 in the long run. When combined with the estimated benefits in terms of reduced NO_x emissions, this yields an undiscounted marginal cost-effectiveness estimate of $100 to $314 per ton. The inclusion in today's final rule of a NO_x averaging program for heavy-duty engines in conjunction with

the long-term NO_x standard will improve both of these estimates somewhat, although EPA is unable to precisely determine to what extent.

Conclusions. It is apparent from the above discussions that a need for reductions in heavy-duty engine NO_x emissions will continue to exist through the next decade, and that 6.0 g/BHP-hr in the 1988 model year is the only reasonable choice for a near-term heavy-duty engine NO_x standard. This option was generally accepted by the industry to be feasible in terms of both stringency and leadtime, and no more strigent standard appeared to be feasible in that timeframe. Thus, the level of the longer term standard poses the more difficult choice of options.

Based on the comments and on EPA's updated technical, environmental, and economic analyses, the 5.0 g/BHP-hr NO_x level reflects what EPA now believes to be the limit of foreseeable control technology for heavy-duty diesel engines without significant adverse impacts on engine-out particulate emissions (thereby rendering compliance with the particulate standards much more difficult), and without excessive fuel economy penalties. As discussed more fully in Chapter 2 of the RIA, the tradeoffs inherent in reducing NO_x and particulate emissions from diesel engines, combined with the relative need for NO_x and for particulate controls, favor a model year 1991 NO_x standard of 5.0 g/BHP-hr. Finally, such a level is approximately equal in stringency to the current California standard for heavy-duty engine NO_x, and is more than 50 percent lower than the currently effective Federal standard. While such a standard, alone, will not solve California's NO_x attainment problems, it is stringent enough to prevent federally certified heavy-duty engine NO_x emissions from increasing in California.

While the Agency has selected the 5.0 g/BHP-hr standard for today's rule, it acknowledges that the need for this standard is based upon future projections of NO_x emissions which are themselves somewhat uncertain. Therefore, EPA will, in the future, be open to the reconsideration under section 202(a)(3)(E) of the Act of the need to go to a 5.0 g/BHP-hr standard as revised projections of future NO_x emissions become available. Of course, if EPA's projections prove to be underestimates of the actual NO_x problem, EPA will also consider imposing more stringent standards under section 202(a)(3)(B) of the Act.

In summary, EPA is promulgating heavy-duty engine NO_x standards of 6.0 g/BHP-hr for 1988–90 model year heavy-duty engines, and of 5.0 g/BHP-hr for 1991 and later model year heavy-duty engines. Averaging of NO_x emissions, which is being promulgated for 1991 and later model years, will ease the burden of compliance with the latter standard to some extent by providing more flexibility to manufacturers without increasing total emissions under the standard. Adverse impacts on particulate emissions, as well as the potential for significant fuel economy penalties for heavy-duty diesel engines, render the 4.0 g/BHP-hr standard in 1991 infeasible at this time.

D. Heavy-Duty Diesel Particulate

Review of the proposal. EPA proposed that particulate emissions from heavy-duty diesel engines be regulated for the first time beginning with the 1987 model year, under a proposed standard of 0.60 grams per brake horsepower-hour (g/BHP-hr). For model year 1990, standards of 0.25 g/BHP-hr for heavy-duty diesel engines plus 0.10 g/BHP-hr for those engines used in urban buses were proposed. The possibilities of establishing a model year 1990 standard of 0.40 g/BHP-hr for those engines used in "line-haul" applications (to avoid the need for trap-oxidizer use on those vehicles), and of establishing a 0.10 g/BHP-hr standard for all heavy-duty diesel engines, were also discussed in the proposal.

Issues raised by the comments. There was general agreement among manufacturers that the 0.60 g/BHP-hr level was an attainable standard. However, manufacturers were nearly unanimous in opposing the feasibility of its implementation for 1987. Daimler-Benz and Mack were alone in suggesting that this level was attainable for 1987; and only Daimler-Benz thought it could be done in that year along with the 6.0 g/BHP-hr NO_x standard. Mack argued that it would take until 1990 to comply with both the NO_x and particulate standards together. Most manufacturers suggested 1988 as the earliest year for new standards, with some arguing for 1989. Environmental interests, based upon the technology forcing nature of the applicable provisions of the Clean Air Act, coupled with the fact that significant need for particulate control had been demonstrated, called for retention of the 1987 deadline.

The long-term trap-based levels received much stronger opposition from manufacturers than did the 0.60 g/BHP-hr standard. Most manufacturers characterized particulate traps as unavailable and infeasible for use on heavy-duty engines. However, very little new data was submitted to the Agency in support of this position beyond that which had been reviewed by EPA during preparation of the proposal. For example, GM submitted a summary of heavy-duty trap development and testing from 1981 through 1983, most of which had been previously submitted. Noteworthy in the new data in GM's submission was the successful accumulation to date of a total of nearly 50,000 miles on a trap-equipped heavy-duty dump truck. Other manufacturers, including International Harvester and Cummins, while currently pessimistic about traps, were willing to work toward trap-based standards in the 1991 to 1992 timeframe.

Two manufacturers, Daimler-Benz and Volvo White, supported EPA's belief that traps would be feasible, with Daimler-Benz predicting availability in 1990 and Volvo White in 1991. Daimler-Benz's position was based upon what appears to be the most advanced development and test program of any heavy-duty manufacturer. Current applications of its traps on urban buses have already demonstrated a service life of 100,000 miles. While this data indicates considerable progress, Daimler-Benz cautioned that considerable development work remained to be done before trap systems will be commercially viable.

The Manufacturers of Emission Controls Association (MECA), whose member companies are supplying the trap materials being tested by manufacturers, strongly supported the feasibility of trap-based standards. MECA cited worldwide test and development work by its member companies in support of this position.

Since most manufacturers continue to maintain that traps are not viable for the foreseeable future, most of their comments on the applicable model year for trap-based standards were either conditioned upon the assumed development of traps, or very tentative. Within that context, most manufacturers suggested alternative dates in the 1991–92 time period. Daimler-Benz was alone among the heavy-duty engine manufacturers in suggesting that 1990 might be feasible.

Environmental and state interests argued for speedy adoption of trap-based standards. Relying principally upon EPA's analysis of feasibility, they called for accelerated application of trap technology. These groups emphasized the technology forcing aspects of the statute and the use of non-conformance penalties (NCPs) for manufacturers unable to meet stringent requirements. The Colorado Department of Health even argued that the trap-based 0.25 g/

BHP-hr standard should be adopted for 1988.

Relative to the appropriate level for a trap-based standard, NRDC and CARB argued that EPA should adopt a 0.10 g/BHP-hr standard for 1990 making full use of trap technology rather than the approximately seventy percent application rate represented by the proposed 0.25 g/BHP-hr standard. The Colorado Department of Health supported a 0.10 g/BHP-hr standard for 1991. NRDC also argued that EPA should consider the use of methanol fuel as an available means of compliance and begin rulemaking action aimed at establishing a methanol fuel distribution system and methanol-based standards.

Manufacturers also commented on feasible levels for trap-based standards. They challenged EPA's assumptions about trap deterioration rates and trap efficiencies, but did not generally dispute the claim that a 0.25 g/BHP-hr standard could be met if traps were available. Manufacturers did argue, however, that a 0.10 g/BHP-hr standard could only be met using traps of the highest efficiency designs, and with substantially greater technological risks than at 0.25 g/BHP-hr. Most manufacturers did not address 0.10 g/BHP-hr for buses separately from their comments on trap standards in general. Daimler-Benz and Volvo White, however, both supported the general feasibility of a 0.10 g/BHP-hr bus standard if fuel sulfur were regulated. MECA supported the feasibility of both the 0.25 g/BHP-hr standard for all heavy-duty engines and the 0.10 g/BHP-hr level for buses.

Public transit groups, such as the American Public Transit Association, voiced strong opposition to the proposed 0.10 g/BHP-hr bus standard. They claimed that this standard would increase both initial bus prices and ongoing operating costs, thereby putting upward pressure on fares and causing reduced ridership on buses. They argued that buses represent too small a share of overall diesel emissions to justify such a restrictive standard.

Turning to another area, EPA indicated in the proposal that some fuel economy penalty was likely with trap oxidizers (on the order of 1 to 2 percent). Comment on this topic was not extensive, but those who did comment agreed that some penalty would be involved. Specific estimates were provided by Cummins, which projected an overall penalty of about 2.6 percent, and Ford, which placed the figure at 3 percent.

Manufacturers also provided cost estimates for the application of traps to heavy-duty engines. These costs, which may include fuel economy penalties, were considerably higher than EPA's estimates. The highest estimate was International Harvester's at $7,000 for a heavy-heavy-duty diesel engine. GM placed this figure at $4,000, while Cummins suggested about $2,500. The cost for traps on medium-duty diesels was placed at about $2,000 by Ford, GM and International Harvester. EPA had projected trap costs (exclusive of fuel economy impacts) of $400 for light-heavy-duty engines, $600 for medium and $700 for heavy-heavy-duty diesel engines.

Daimler-Benz, along with several other manufacturers, raised the issue of diesel fuel sulfur levels. According to the comments, sulfur from the fuel could be a problem either through trap plugging from engine-out sulfate emissions, or through the generation of significant measurable particulate sulfate emissions which would make it impossible to meet the 0.25 g/BHP-hr or 0.10 g/BHP-hr standards. Commenters' recommendations varied from regulating the sulfur content of diesel fuel to adopting a correction factor for particulate measurements to account for sulfate emissions.

The last key issue concerning the proposed particulate standards involves the possible exemption from trap-based standards for over-the-road line-haul vehicles. As explained in the proposal, EPA's main concern with diesel particulate emissions is their impact on urban air quality. EPA considered exempting line-haul vehicles from the more stringent standards, because these vehicles accumulate much of their mileage in rural, inter-city operation.

The basic concept of a relaxed standard for these trucks was strongly opposed by environmental groups, states and local agencies on the grounds that line-haul vehicles are an important contributor to the total diesel particulate emissions in urban areas. For example, CARB estimated that about seventy-five percent of urban heavy-duty diesel particulate in Southern California comes from line-haul trucks. Manufacturers generally supported the concept, but challenged the specific level suggested by EPA. Of those manufacturers who commented on the level of the standard only one (Volvo White) agreed with EPA that a standard of 0.40 g/BHP-hr could be reached without the use of traps. Some argued for 0.50 g/BHP-hr (including Ford, Daimler-Benz) while others said that a standard of 0.60 g/BHP-hr was required (Caterpillar, Mack). Manufacturers also recognized the difficulty EPA had in establishing a precise means of defining and regulating line-haul engines. Various possibilities were suggested using different combinations of engine and vehicle characteristics, although some manufacturers opposed the inclusion of any vehicle-related parameters in any definition of "line-haul engines."

EPA response to the comments. The comments on the short-term standard have indicated that EPA's proposed 0.60 g/BHP-hr level is feasible. However, those comments have prompted a review of the leadtime requirements for the standard. As detailed in Chapter 2 of the RIA, EPA now believes that new standards should not be applied before 1988. There is now insufficient time remaining before the start of the 1987 model year to complete the necessary design changes, emissions and durability testing and development, and complete the certification process. Therefore, the adoption of the 0.60 g/BHP-hr standard has been delayed from 1987 to 1988.

The Agency's review of new information submitted on the subject of trap oxidizer feasibility indicates that, for light-duty diesels, continued progress has been made in solving the various technical difficulties associated with traps. Daimler-Benz has already introduced traps on light-duty vehicles in California, and Volkswagen and other manufacturers will do so in the 1986 model year. In the heavy-duty area, where no trap-forcing standard currently exists, activity has been minimal. However, what little work has been done also indicates progress. (See Chapter 2 of the RIA for a description and analysis of trap development to date.) Traps are not fully developed today, but they were not expected to be. The important issue is whether they can reasonably be expected to be available for future standards, and on this issue EPA's position is unchanged. In fact, the new data which were included in manufacturers' comments were extremely promising, and EPA is confident in its projections of successful application of traps to heavy-duty engines.

The appropriate leadtime for the introduction of trap-based standards has been reexamined as part of EPA's review of overall trap feasibility. EPA now believes that the introduction of trap-based standards (*i.e.*, 0.10 g/BHP-hr for urban buses and 0.25 g/BHP-hr for other heavy-duty engines) should be delayed from 1990, as proposed, until 1991. A delay to 1991 will allow more time for manufacturers to compete the task of trap development successfully, and plan for orderly introduction. It also will allow the new particulate requirements to be introduced

simultaneously with revised NO_x standards also planned for 1991.

EPA's decision has been made in full awareness of both the technology-forcing aspects of the statutory requirements, and the expected existence of NCPs. While the forecasts of trap availability are positive, it is important not to lose sight of the fact that major advances in technology are still required. It will be a very difficult challenge for manufacturers to successfully apply traps to most of their engines by 1991. EPA does not believe that either the availability of NCPs or the technology-forcing requirements of the Act justify reducing leadtime below that actually needed by most manufacturers, even though it may be possible for one manufacturer (Daimler-Benz) to introduce traps in 1990.

In their comments on the appropriate level for trap-based standards, environmental and state groups argued that traps should be required on all engines, and that the standard should therefore be lowered to 0.10 g/BHP-hr in 1990 or before. EPA believes that this position arises from an incomplete understanding of the implications of such a change. The proposal discussed a 0.10 g/BHP-hr standard for all engines in 1990, indicating that it could be attained through 100 percent trap usage. However, the proposal also indicated that there likely would be substantial difficulties in meeting such a deadline and that EPA therefore did not propose that standard for that time period.

Not only would a 0.10 g/BHP-hr standard in 1990–91 required traps on *all* engines (including the most difficult engine applications otherwise avoided under a 0.25 g/BHP-hr standard), but it would also limit manufacturers to only the highest efficiency trap designs and result in increased technological risks that adequate traps won't be developed in time, or won't be sufficiently durable in use. These points were underscored in manufacturers comments on the 0.10 g/BHP-hr level. Higher efficiency traps would require either larger traps, to maintain regeneration frequency and back pressure rise, or more frequent regeneration, to handle the increased collection of particulate. Both of these aspects increase the engineering challenges involved in establishing long-term trap durability suitable for a wide variety of heavy-duty engines. For example, it may be harder to establish uniform regeneration conditions with larger traps, and a larger trap would be subject to more internal thermal stresses during regeneration. High efficiency traps could also tend to be more sensitive to plugging under adverse conditions. Through increased regeneration frequency or increased backpressure, higher efficiency traps would also tend to impact fuel economy to a greater degree than lower efficiency units.

Based upon its analysis of the issues surrounding adoption of a 0.10 g/BHP-hr trap standard, EPA has concluded that such a standard does not appear feasible for 1991 for most engines. (Feasibility for the subset of engines used in urban buses is another matter, and is discussed below). However, in light of the comments and reanalysis of other available information, the technical issues all appear to be subject to solution given additional time for development of, and experience with, trap systems. Added time also has the advantage of allowing for expected progress by manufacturers in reducing engine-out particulate levels, which will directly ease the impact of a more stringent standard. In addition, the adoption of a 5.0 g/BHP-hr NO_x standard in 1991, instead of the 4.0 g/BHP-hr level which was proposed, significantly eases the difficulty associated with these low particulate levels and make a uniform 0.10 g/BHP-hr particulate standard in 1994 more feasible. Therefore, based upon its analysis of the comments and other data in the record, EPA has determined that a 0.10 g/BHP-hr standard should be feasible for the 1994 model year, but not before.

As noted above, NRDC argued that EPA should establish both NO_x and particulate standards based upon the use of methanol as a fuel in new engines. The proposal discussed the potential reductions in emissions resulting from the conversion of heavy-duty diesel engines to methanol. While EPA continues to believe in the potential of methanol in this area, it considers it premature to actually set standards requiring the use of methanol. Many basic questions remain to be dealt with before widespread adoption of methanol fuel will be possible. Therefore, while continuing to study the issues involved and to encourage the development of methanol-based technology, EPA is taking no action at this time specifically on methanol-based standards. Nevertheless, the establishment of more stringent NO_x and particulate standards should have the effect of making methanol-based technology more desirable and relatively cost effective.

The proposal also included a 0.10 g/BHP-hr standard for urban buses in 1990, which did not draw extensive specific comment from manufacturers beyond their discussion of 0.10 g/BHP-hr in general. In its review of this issue, EPA has found nothing in the comments to change its evaluation that traps capable of meeting a 0.10 g/BHP-hr standard should be applicable to buses in the same time period that traps capable of meeting 0.25 g/BHP-hr will be available for heavy-duty engines in general. As a group, bus engines have less diversity in engine characteristics and operating conditions than do other types of heavy-duty engines. They also do not operate for sustained periods at high loads, meaning that problems of trap durability will be eased. Therefore, EPA believes that the engineering problems involved in meeting a 0.10 g/BHP-hr standard can be overcome for urban buses sooner than for other engine types, and that the 0.10 g/BHP-hr bus standard is feasible for 1991. For further discussion of this issue, see Chapter 2 of the RIA.

As for the comments that increased costs would adversely affect public transit systems, EPA cannot agree. The increases in both the price and operating costs of buses as a result of these standards are low compared to current costs (see Chapter 3 of the RIA). On the other hand, since these buses are driven only in urban settings, the cost effectiveness of applying traps to buses is much better than it is for other heavy-duty diesels. (Cost effectiveness is discussed in Chapter 5 of the RIA.) Therefore, EPA finds the urban bus standard to be fully justified.

As noted in the discussion of the comments, estimates of fuel economy impacts from manufacturers were slightly higher than those assumed by EPA. EPA has considered these comments in arriving at final estimates of the actual impacts to be expected. One result of the fuel economy data supplied to EPA has been an increase in the trap size EPA is projecting will be needed to insure a minimal impact on back pressure and fuel economy. In light of increased trap sizes, the data available do not justify the increased fuel penalties claimed by commenters. EPA's analysis, described in Chapter 2 of the RIA, leads to the conclusion that fuel economy impacts can be limited to 0.5 to 1.5 percent for trap-equipped engines. For urban buses under the 0.10 g/BHP-hr standard, EPA has assumed that the fuel economy penalty will correspond to the full 1.5 percent.

Based upon its review of manufacturers' estimates of the cost of trap technology, EPA believes that manufacturers substantially overestimated the actual cost to be expected. In response to the comments received, EPA has undertaken a

comprehensive review of all of its cost estimates for trap systems. As detailed in Chapter 3 of the RIA, the Agency has reviewed required components and trap design, and drawn upon contracted studies of the expected cost for such systems. EPA has increased its estimate of trap sizes based upon the comments. At the same time, the costs for the ceramic monolith trap material used in EPA's estimates has been reduced based upon information from suppliers. EPA's revised analysis estimates the cost of equipping heavy-duty diesel engines with complete trap systems at $460 per engine for light-heavy-duty engines, $540 for medium, and $660 for heavy-heavy-duty engines (not including the costs of any adverse fuel economy impacts).

The next issues raised by manufacturers concerned the potential impacts of fuel sulfur levels on either trap durability or measured levels of particulate emissions. Increased sulfate levels at current fuel sulfur contents should only occur with traps whose substrates are catalyzed. This catalytic conversion of sulfur dioxide also occurs with light-duty trap-oxidizers, and is the most significant drawback associated with such traps. However, as such traps do not appear to be the most promising for heavy-duty engines, increased sulfate levels for heavy-duty traps is probably not an issue here. While the data to fully assess this problem were not available, EPA will continue to investigate this issue and resolve any continuing difficulties. While it does not appear at present that regulating sulfur content of diesel fuel is a prerequisite to the feasibility of traps, if it is shown to be necessary based on this further analysis, EPA will investigate potential action under section 211(c) of the Act.

Commenters on the fuel sulfur issue also expressed concern that EPA's technique for measurement of particulate emissions includes in the measurement the water absorbed on sulfates. EPA is still in the process of examining a number of different approaches to minimizing the inclusion of water in particulate measurements, so no action on this issue is included in this rule. However, EPA is continuing its investigations and welcomes any additional pertinent data. As all past testing has included this absorbed water, feasibility of the 1988 standard is not at issue. It is only when trap-oxidizer usage increases sulfur conversion that inclusion of water poses a potentially significant problem. Nonetheless, EPA is confident that this issue can be resolved and will not prevent the development of traps capable of meeting the 0.25 and 0.10 >g/BHP-hr particulate standards.

The last issue commented upon was that of EPA's suggested exemption from trap-based standards for line-haul engines. The comments raised two significant problems with such an exemption. The first is that of the impact of the exemption on overall diesel particulate emissions. At the proposed level of 0.40 g/BHP-hr, EPA had evaluated this effect and concluded that the impact was acceptable in consideration of the high percentage of non-urban operation experienced by these vehicles and the overall cost savings which were realized.

Whether EPA's judgment was correct has now become moot, because of manufacturers' arguments that 0.40g/BHP-hr cannot be reached with non-trap-based control techniques, and that 0.50 g/BHP-hr is the approximate lower limit for a non-trap-based standard. EPA agrees with the manufacturers' conclusions on this point. EPA has also examined the impact of a line-haul exemption at a 0.50 g/BHP-hr level and has found that such a standard would substantially increase urban diesel particulate emissions. Total emissions of diesel particulate in 1995 would be increased by about 10 percent in urban areas if a 0.50 g/BHP-hr line-haul standard were adopted. In the year 2000 this increase would be 12 percent. EPA believes that such increases are excessive given the overall need for particulate control indicated by its future emissions projections. Thus, accepting 0.50 g/BHP-hr as the lowest non-trap-based standard achievable, EPA agrees with those commenters who said that the line-haul exemption presents an unacceptable tradeoff.

Since the impact of this decision on line-haul vehicles is so great, EPA remains open to the possibility of a workable line-haul exemption becoming available in the future. Such a solution would hinge upon the ability of manufacturers to eventually meet a standard below 0.50 g/BHP-hr, and on the ability of EPA to develop an acceptable regulatory framework for defining line-haul engines or vehicles. The opposition of some manufacturers to including vehicle-related parameters into the certification process has already been noted. Further, the issues of how to properly define the line-haul category so as to avoid the exemption of some engines which are actually going into urban use (either through cross-over of use patterns or through the deliberate purchase for urban use of what would be a line-haul engine to avoid the use of traps) still remain to be settled.

Options for the Final Rule. In view of the issues discussed above and EPA's responses, several options were developed for consideration in developing today's final rule. These include options for the short term standard, the long term standard and the special standards for urban bus engines and line-haul engines. These options are reviewed below.

Short term options

0.60 g/BHP-hr in 1987: This option represents retention of the short term standard as originally proposed. Based upon the analysis of comments received, the 0.60 g/BHP-hr level remains a feasible standard. However, EPA's leadtime analysis has indicated that there is insufficient leadtime for the implementation of a new standard for 1987.

0.60 g/BHP-hr in 1988: Because of the leadtime issue associated with the first option, this option would delay the 0.60 g/BHP-hr standard until 1988. EPA has determined that an additional delay of one year should be sufficient to allow compliance with this standard.

Long term Standards

0.25 g/BHP-hr in 1990: This option represents the proposed standard unchanged. However, the leadtime now available to meet this standard in 1990 has been judged inadequate by EPA (see next paragraph, as well as Chapter 2 of the RIA), and a delay in the standard is required. A delay for one year would also serve to synchronize implementation of the particulate standard with the new heavy-duty NO_x standard in 1991.

0.25 g/BHP-hr in 1991: This option implements trap-based standards for heavy-duty engines in the earliest year for which EPA believes traps will be generally available. Approximately 70 percent of all engines produced in 1991 will require the use of traps under this standard. Because of projected reductions in engine-out particulate levels over time, this fraction will decline to about 60 percent by 1994. The long-term cost of this option with a 60 percent trap application rate is about $585–690 per engine (including an estimated fuel economy penalty of between 1 and 1.5 percent). Its impact on emissions will be to reduce total diesel particulate emissions nearly 25 percent in 1995 and nearly 30 percent in 2000, compared to the case where only the 1988 option is implemented.

0.10 g/BHP-hr in 1991: The possibility of adopting 0.10 g/BHP-hr in 1990 rather than the 0.25 g/BHP-hr level was reviewed in the proposal and rejected.

The analysis of comments outlined above indicates that EPA still does not consider this to be an appropriate option for 1991 for all engines because of the increased technological risks associated with requiring high-efficiency traps on all engines.

0.10 g/BHP-hr in 1994: While concluding that the 0.10 g/BHP-hr standard is not suitable for 1991, EPA's analysis does support the feasibility of that standard for 1994. This determination is based on comments submitted to the Agency and other available information concerning the feasibility of the 0.10 g/BHP-hr level in general. The problems identified in those comments all appear to be solvable given more time for further trap development. In addition, the relaxation of the 1991 NO_x standard from 4.0 g/BHP-hr as proposed to 5.0 g/BHP-hr serves to ease the difficulty of complying with a 0.10 g/BHP-hr particulate standard. Therefore, 0.10 g/BHP-hr for 1994 is feasible.

Special bus and line-haul engine standards

Since leadtime for the primary standards has already been shown to be inadequate for 1990, both of these special standards are considered here as options for 1991.

0.10 g/BHP-hr for urban buses in 1991: While EPA does not intend to promulgate a fleetwide 0.10 g/BHP-hr standard for 1991, the adoption of this level for urban buses is still appropriate. Since buses accumulate essentially all of their mileage within the urban environment, bus engine control is an extremely effective means of reducing urban particulate levels. Adding the extra bus control to a 0.25 g/BHP-hr standard would reduce overall particulate by approximately an additional 2.5 percent in 1995, and 3 percent in 2000. As outlined earlier in today's notice, EPA considers a 0.10 g/BHP-hr standard to be technologically feasible for buses in 1991.

0.50 g/BHP-hr line-haul standard in 1991: This option is based upon the lowest projected level for a non-trap particulate standard for line-haul vehicles in 1991. As noted earlier, relaxing the line-haul standard from 0.25 g/BHP-hr to 0.50 g/BHP-hr would produce substantial increases in overall urban particulate emissions (about 10 percent in 1995 and 12 percent in 2000). At this time, EPA is not aware of any technology difficulty with applying traps to these vehicles (so that they could meet the 0.25 g/BHP-hr general standard) which would justify such a large emissions increase.

Conclusions. To aid in the evaluation of the options described above, pertinent information on their cost and environmental impacts are collected in Table 1. This table is extracted from the analysis of alternatives presented in the Chapter 2 of the RIA, and the reader is referred to that document for more details. The options beginning in 1987 (0.60 g/BHP-hr) and 1990 (0.25 g/BHP-hr, 0.10 g/BHP-hr for urban buses) are not included in Table 1. EPA has determined these options to be infeasible based upon insufficient leadtime, so they have not been evaluated further. While EPA has also determined that a 0.10 g/BHP-hr standard is inappropriate for 1991, that option has still been included for comparison purposes.

TABLE 1.—IMPACTS OF DIESEL PARTICULATE OPTIONS

Option	Total particulate emissions (1,000 tons per year)		Cost per engine	Discounted cost effectiveness (dollar per ton)
	1995	2000		
No control	87.9 +65%*	108.9 +105%		
0.60 in 1988	80.3 +51%	99.3 +87%	46	2,710
0.25 in 1991(A) (averaging (A))	61.2 +15%	70.6 +33%	631-736	8,690-10,400
0.25 in 1991(A) w/.10 for buses	59.7 +12%	68.3 +28%	671-774	8,950-10,300
0.25 in 1991(A) w/.50 for line-haul	67.0 +26%	78.9 +48%	388-491	7,050-8,930
0.10 in 1991(A)	52.9 0%	58.2 +9%	1,211-1,382	12,900-14,700
0.10 in 1994(A)	57.2 +8%	59.3 +11%	966-1,122	10,300-11,900

*Note: Percentages refer to change relative to 1984. Those given for the 1991 and 1994 options include the change brought about by implementation of the 1988 option. In addition, those given for the 1994 option include the effects of the 0.25/0.10 option for 1991.

As indicated in Table 1, the short-term 0.60 g/BHP-hr standard provides significant benefits at low cost, as indicated by its cost effectiveness. For comparison purposes, the cost effectiveness of most alternative strategies for particulate control are in the range of $14,000–50,000/ton, with some even higher. The 0.60 g/BHP-hr standard represents a feasible near-term emissions reduction. Clearly, it is a good first step in diesel particulate control. It is also clear in light of the long-term environmental impacts of diesel particulate emissions that substantially more control is needed in the future than that represented by this option, although more stringent standards will not be feasible before 1991.

The adoption of a trap-based standard no higher than 0.25 g/BHP-hr in 1991 to follow the 1988 standard of 0.60 g/BHP-hr is also clearly supported by the data in Table 1. That level would substantially reduce particulate levels for both 1995 and 2000 at a cost which is also quite cost effective.

Among the other 1991 options, the line-haul option must be disqualified on the basis of emissions impacts. It has already been noted that under this option emissions would increase 10 to 12 percent in 1995 and 2000, respectively, compared to emissions under the 0.25 g/BHP-hr standard. While the cost effectiveness of the line-haul option is somewhat improved compared to the 0.25 g/BHP-hr standard, it is a relatively modest improvement, and insufficient to warrant serious consideration of this approach. However, as noted in the analysis of comments on this issue, EPA remains open to the possibility of a more appropriate line-haul option in the future.

The bus option, on the other hand, improves overall particulate control at the same time that cost effectiveness is improved. Thus, this option is attractive to EPA for the final rule.

The only other choice is between a 0.10 g/BHP-hr standard in 1991 and the same level in 1994. Implementation in 1991 would bring a slightly greater emission reduction than would implementation in 1994. However, it has been pointed out that EPA does not consider 0.10 g/BHP-hr to be within reach for 1991, therefore 1994 is the appropriate choice here.

In summary, EPA's analysis of comments and comparison of options available for the final rule has led to the selection of a 0.60 g/BHP-hr standard for

1988, a 0.25 g/BHP-hr standard for 1991 with a 0.10 g/BHP-hr urban bus standard, and a 0.10 g/BHP-hr standard for all heavy-duty engines in 1994. These choices have been made on the basis of their overall technological feasibility, and represent a substantial contribution to the needed control of particulate emissions.

E. High-Altitude Standards

1. Heavy-Duty Diesel Engine Particulate

Review of the proposal. The following high-altitude standards were proposed for heavy-duty diesel engine particulate emissions: 0.72 g/BHP-hr for model year 1987 and 0.30 g/BHP-hr for 1990 and later model years, with a separate standard of 0.12 g/BHP-hr for 1990 and later model year urban bus engines. These are proportional to the corresponding low-altitude standards in the proposal, being 20 percent greater in each case. The 20 percent increase was EPA's best estimate, at the time of proposal, of the likely impact of operation at high altitudes on heavy-duty diesel engines.

Issues raised by the comments. Comments on the proposed high-altitude particulate standards for heavy-duty diesel engines were received from the manufacturers that would be affected, the Engine Manufacturers Association (EMA), the Colorado Department of Health, the City of Denver, local and national environmental protection groups, and a number of individuals residing in and near the designated high-altitude counties.

The comments from individuals and from environmental groups were supportive of the need for separate particulate standards for heavy-duty diesel engines operated at high altitude, with some commenters claiming that such standards should be even more stringent than the corresponding low-altitude standards. The Colorado Department of Health and the City of Denver also were in favor of high-altitude particulate standards more stringent than those contained in the proposal. Reduction in visibility in high-altitude areas was often cited as a reason for requiring such stringent particulate controls.

Manufacturers' comments tended to focus more on EPA's methodology in setting the proposed levels of these standards and on the very short leadtime provided, considering the lack of appropriate test facilities, than on the environmental need for such standards. The Engine Manufacturers Association (EMA), a trade group of manufacturers of heavy-duty diesel engines, noted that high-altitude emission standards are "unprecedented" for the heavy-duty market. EMA went on to criticize the extrapolation, from limited light-duty data, of the likely impact of altitude on particulate emissions from heavy-duty diesel engines. Due to the major differences in engine design between light- and heavy-duty applications, EMA said that the validity of such extrapolations should not be assumed. These criticisms were echoed by individual manufacturers, all of whom said that EPA should not be proposing standards when, admittedly, no directly relevant data on which to base them exist.

The data cited by the industry as necessary to a proper standard-setting process are not available because no facilities currently exist with transient cycle test capabilities either at high altitude or that are capable of simulating high altitude. This lack of facilities was noted by every manufacturer in its comments. General Motors (GM) estimated the cost of adding a single test cell with heavy-duty engine transient cycle capabilities to its Denver facility at over $1.1 million; a test cell capable of simulating high altitude ambient conditions at a low altitude site could cost over $4 million. In either case, GM stated that 18 to 24 months would be required for construction. The International Harvester Co. (IHC) estimated a cost of $3.7 million for adding an appropriate cell to its existing test facilities. In more general terms, Volvo White called proof of conformance with a high-altitude standard "extremely expensive, if not impossible."

Only Cummins Engine Co., Inc. (Cummins) described some limited testing it had performed in which it simulated high-altitude operation by throttling the air intake, thus reducing intake pressures. The resulting data on the sensitivity of particulate emissions to air/fuel ratio changes can be combined with knowledge of changes in air density at altitude to estimate the impact of altitude on emissions. Based on this work, Cummins stated that its products appear to be capable of holding increases in particulate emissions at high-altitude to no more than 20 percent over low-altitude levels.

Cummins also raised the issue of enforcement of high-altitude standards for the heavy-duty engine fleet. As a result of the structure of the heavy-duty engine manufacturing and sales industries, it is impossible for the engine manufacturer to ensure that all engines registered and operating in high-altitude counties are appropriately certified. Cummins recommended that the enforcement of heavy-duty engine high-altitude standards be the responsibility of the states, based on proof of compliance at registration.

In summary, all of the manufacturers recommended that EPA withdraw the proposed standards and commence a program of collecting baseline data. They urged that only after analyzing valid data on high-altitude particulate emissions from HDDEs should EPA propose a technically supportable standard, allowing the industry adequate leadtime for both test facility construction and development of complying engines.

EPA response to the comments. EPA recognizes the need for additional control of diesel particulate emissions at high-altitude that was cited by many commenters. At the same time, valid objections to the proposed standards, particularly with respect to test facility availability, leadtime, and enforcement, have been raised by the comments.

Cummins stated that it understood the goal of the proposed standards to be the limiting of particulate emissions from heavy-duty diesels to no more than a 20 percent increase in high- relative to low-altitude areas. Preliminary indications are that Cummins products will be able to meet this goal. Thus, while EPA acknowledges that the proposed standard may not be attainable for all engines, particularly naturally aspirated heavy-duty diesels, it appears that the level of the proposed standard may be within range for much of the market.

However, EPA concurs with those commenters claiming that setting truly proportional high-altitude paticulate standards (*i.e.*, ones that simply reflect the increases expected in particulate emissions at high altitude), such as those proposed, would accomplish little. While it would serve to prevent a given engine family from emitting more than the average increase in particulate at high altitude, this represents a fairly small benefit in terms of emissions reduction. This is particularly true when the testing and facility costs cited by the industry are considered.

The questions about enforcement of high-altitude heavy-duty engine emission standards raised another difficulty with the proposal. The draft regulations accompanying the proposal embody the "two-vehicle strategy," in which different engine configurations are certified for compliance with high-altitude versus low-altitude standards. For some of the same reasons cited by Cummins, EPA believes that the "one-vehicle strategy," in which all engines would have to comply with the high-altitude standards, is appropriate. This is especially true in the case of heavy-

duty engines, due to the extremely transient nature of their operations. It would be all but impossible to limit heavy-duty diesel engine use in high-altitude regions to those engines that had been certified to the high-altitude standards.

Based on the need for high-altitude test facilities and the time that would be required for their construction, EPA acknowledges that inadequate leadtime now remains for a high-altitude heavy-duty diesel particulate standard to take effect as proposed in model year 1987. However, EPA does not believe that such standards are unnecessary, nor that any issues of technical feasibility block the eventual promulgation of such a standard.

Conclusions. In recognition of the inadequate leadtime, the minimal emission benefits that the standard as proposed would bring, the test and facility costs that would be incurred, and the issue of one- versus two-vehicle regulatory strategies, EPA is withdrawing the proposed high-altitude particulate standards for heavy-duty diesel engines from this final rule. Since the need for reductions in particulate emissions at high-altitude is unlikely to ease without action, however, EPA will study the problems of high-altitude particulate control and will consider the development of a separate proposal for such emission standards if warranted by the results of such study.

2. Light-Duty Truck Standards

Review of the proposal. The high-altitude light-duty truck emission standards were proposed in order to complete previous regulatory activities in this area. The idle carbon monoxide (CO) and particulate standards were included because of their inadvertant omission from previous high-altitude rulemaking actions. The oxides of nitrogen (NO_x) standards were proposed to prevent excessive increases in NO_x emissions as a result of compliance with the particulate standard, and the proposed level of the NO_x standards was equal to the low-altitude NO_x standards since NO_x emissions do not tend to increase at altitude.

These standards were proposed to take effect in model year 1987. The proposed standards were all equal to the corresponding low-altitude standards: For NO_x, 1.2 grams per mile (g/mi) for light-duty trucks up to and including 6,000 lbs gross vehicle weight (GVW) and 3,999 lbs equivalent test weight (ETW), and 1.7 g/mi for light-duty trucks over either 6,000 lbs GVW or 3,999 lbs ETW; for particulate (diesel light-duty trucks only), 0.26 g/mi; and for idle CO (gasoline-fueled light-duty trucks only), 0.50 percent of exhaust gas flow at idle.

Issues raised by the comments. The particulate standard drew the most comment of the three high-altitude standards proposed for light-duty trucks. All of the manufacturers said that the high-altitude standard should be proportional to the low-altitude standard, to reflect the increase in engine-out particulate emissions known to occur at high-altitude. The manufacturers also criticized the apparent inconsistency in EPA's positions regarding high-altitude particulate standards for diesel light-duty trucks and for heavy-duty engines.

General Motors (GM) and Toyota both submitted a limited amount of test data on high-altitude particulate emissions from light-duty trucks. The GM data were all from GM's 6.2L engine and showed an average increase of 0.13 g/mi relative to low-altitude, while data from both turbocharged and naturally aspirated engines submitted by Toyota showed increases of 0.10 to 0.24 g/mi, representing increases of 48 to 100 percent over low-altitude levels. Other manufacturers did not submit data, but several indicated that a standard 50 percent greater than the low-altitude standard would be appropriate.

EPA's reasoning for not proposing a porportional high-altitude particulate standard for light-duty trucks was characterized by manufacturers as "severely flawed" for several reasons. One, available light-duty vehicle and light-duty truck data all indicate substantial increases in engine-out particulate emissions at high altitude. Two, EPA has not presented evidence in support of its assertion that the only impact of the proposed standard will be to force a higher percentage of light-duty diesel trucks to be equipped with traps. Three, trap-equipped light-duty trucks will also exhibit increased particulate emissions at high-altitude. Finally, the availability of light-duty diesel particulate averaging will not help smaller manufacturers to meet the proposed high-altitude particulate standards, since some of them may market only one light-duty diesel truck engine family.

GM and Toyota both said that the proposed standard would be likely to result in the unavailability of light-duty diesel trucks at high altitude. Ford Motor Co. recommended that no light-duty truck high-altitude particulate standard be set until engineering data are available showing that traps having the increased efficiency necessary to compensate for increased engine-out levels are feasible.

The idle carbon monoxide (CO) standard was criticized on the grounds of questionable methodology in determining its level, lack of need, and the lack of correlation between idle CO emissions and CO emissions during the Federal Test Procedure used in certification. While several manufacturers requested that EPA drop *all* idle CO standards, others stated that they had no objection to the proposed high-altitude standard. No manufacturer raised any question concerning the feasibility of the standard.

Nor were any feasibility issues noted with respect to the proposed NO_x standards. Ford said that its comments on the low-altitude light-duty truck NO_x standards were applicable here. American Motors Corporation said that its major concern with all high-altitude emission standards for light-duty trucks is the added test burden and cost necessary to show compliance with these standards, which could result in a price increase.

EPA response to the comments. In response to comments criticizing the apparent inconsistency of proposing proportional high-altitude particulate standards for heavy-duty engines, but the same standard at all altitudes for light-duty trucks, EPA notes several points. First, light-duty trucks are more similar to light-duty vehicles than to heavy-duty engines in their engine design, emission control technology, certification test procedures, and in-use duty cycles. It is thus appropriate for EPA to extend its approach to setting high-altitude particulate standards for diesel light-duty vehicles to light-duty trucks. EPA still believes this approach is the preferable control strategy, and it is consistent with past EPA regulatory actions in the light-duty area.

Second, EPA has presented its analysis indicating that the impact of setting the same light-duty truck particulate standard at both altitudes will be to require a somewhat higher fraction of trap-equipped vehicles in high-altitude areas. EPA believes that a large number of light-duty trucks could be sold without being equipped with traps in the absence of a high-altitude particulate standard for light-duty trucks. Many of these vehicles could be equipped with traps, if necessary, thereby considerably lowering a manufacturer's average high-altitude particulate emissions.

Finally, the serious need for reductions in diesel particulate emissions at high-altitude, combined with the decision not to promulgate high-altitude particulate standards for heavy-duty diesel engines at this time,

means that all other available controls should be implemented as soon as possible. EPA maintains that the increased use of traps on light-duty diesel trucks at high-altitude will be the major effect of this standard, and that this is clearly justified on the grounds of environmental need and technological feasibility.

It may well be true that trap-equipped light-duty trucks will also display increased particulate emissions at high altitude relative to low altitude. The Toyota data from two naturally aspirated light-duty trucks showed high-altitude particulate emissions of 0.31 g/mi, while data from one turbocharged light-duty truck showed 0.41 g/mi at high altitude. Application of trap-oxidizers of 50 to 60 percent efficiency in reducing emissions would allow all of these vehicles to certify to the 0.26 g/mi standard at high altitude. GM did not supply absolute emission levels, but only the increases observed in moving from low to high altitude; thus, EPA cannot respond to those data in the same way. However, EPA believes that use of traps will allow other manufacturers to comply as well.

Volkswagen (VW) complained that averaging is of no advantage in meeting high-altitude particulate standards to a small manufacturer who may offer only a single light-duty truck diesel engine family. As EPA stated in promulgating the averaging concept for light-duty diesel particulate, no averaging program is entirely free of competitive impacts. However, the ability of a manufacturer to average light-duty diesel vehicles and trucks together should assist smaller manufacturers in this respect.

As for the idle CO standard, EPA rejects the arguments based on lack of need or on the methodology used to determine the level of the standard. Idle CO standards raise no issues of feasibility, the need for CO control remains strong in high-altitude areas (several high-altitude areas exceed the National Ambient Air Quality Standard for CO), and the methodology used to set the level of the standard was not effectively challenged by commenters in this rulemaking, nor in the rulemaking in which the low-altitude light-duty truck idle CO standard was set (48 FR 52170, November 16, 1983).

The NO_x standards at high-altitude were not questioned, except for AMC's comments on the increased test burden and the potential for increased cost. EPA believes that high-altitude NO_x standards for light-duty trucks are necessary to prevent increased per-vehicle NO_x emissions, and that the costs of compliance will be essentially the same as those at low altitude.

Finally, EPA notes that the discriminator proposed for determining which light-duty trucks are required to meet the 1.2 g/mi 1.7 g/mi standards at high altitude was the same as was proposed for low altitude, and therefore has the same problems identified in comments on the low-altitude light-duty truck NO_x standards. EPA is therefore changing the discriminator for the high-altitude light-duty truck NO_x standards to correspond to the revised low-altitude regulations: Light-duty trucks up to and including 3,750 lbs loaded vehicle weight (LDT_1s) will have to meet the 1.2 g/mi NO_x standards, while those over 3,750 lbs loaded vehicle weight (LDT_2s) will have to meet the 1.7 g/mi standard. This makes the high-altitude light-duty truck NO_x regulations consistent with both the California regulations and the low-altitude Federal regulations.

Conclusions. EPA is proceeding with promulgation of all of the high-altitude emission standards that were proposed for light-duty trucks. For NO_x and for idle CO, no questions of technical feasibility were raised, and the objections that were voiced by a few manufacturers are not substantial, and not serious enough to override EPA's reasons for proposing the standards. In the case of particulate, EPA has responded to the criticisms focused on the level of the standard, and continues to believe in the validity of its approach to high-altitude particulate control. Today's final rule also maintains consistency with the approach to light-duty vehicle and light-duty truck regulations for high altitude followed in the past.

F. Emissions Averaging

Review of the proposal. EPA proposed that manufacturers be given the option of averaging particulate emissions to meet the 0.25 g/BHP-hr low-altitude and 0.30 g/BHP-hr high-altitude particulate standards, effective with the 1990 model year. The implementation scheme proposed was, in all substantive aspects, similar to that promulgated for light-duty diesel vehicles and trucks (48 FR *at* 33456, July 21, 1983).

A participating manufacturer would be required to determine emission limits (subject to ceilings of 0.60 g/BHP-hr at low-altitude and 0.72 g/BHP-hr at high-altitude) for each heavy-duty engine family to be produced in a given model year. This family emission limit would serve as the effective standard by which EPA would determine compliance of all engines within the family.

The participating manufacturer's year end sales and power-weighted average (subject to restrictions concerning subclasses and high-altitude, low-altitude, and California sales regions) of all engine families' emissions would then be required to comply with the applicable 0.25 g/BHP-hr standard. Urban bus engines were excluded from the averaging option.

The Administrator would grant a certificate of conformity to each family that demonstrated compliance with its family emission limit. It would be a condition of the certificate that the manufacturer's weighted emission level meet the applicable particulate emission standard (0.25 or 0.30 g/BHP-hr) at the end of the model year. The certificate would be rendered void *ab initio* at the conclusion of the model year for those engines causing any exceedance of the applicable standard.

Comments were requested on various aspects of the program, including the desirability of EPA's establishing a NO_x averaging program for heavy-duty engines and light-duty trucks patterned after the proposed particulate averaging scheme. EPA also requested comment on the possibility of establishing an emissions credits trading program between manufacturers.

Issues raised by the comments. Commenters who opposed the averaging option for particulate and/or NO_x emissions did so on one or more of the bases of legality, environmental impact, or adverse competitive impact. Several commenters opposed allowing averaging for either of the two pollutants but no commenter opposed averaging for one while supporting it for the other.

Private and state sponsored environmental groups, as well as the Manufacturers of Emission Controls Association (MECA), claimed that averaging as proposed was inconsistent with EPA's responsibility under section 202(a)(3)(A)(iii) of the Act to set standards that require use of the best technology that is expected to be available at the time the standards are implemented. Several of these commenters noted EPA's own estimate that, under the particulate averaging proposal, approximately 30 percent of the heavy-duty diesel fleet would be able to avoid the use of particulate traps. According to the Coalition for Clean Air and others, averaging should be allowed only after standards are set such that all vehicles would be required to install the best available control technology (*i.e.*, trap-oxidizers for particulate control).

Several state environmental organizations were concerned that averaging might result in localized increases in pollutant concentrations. This could result, they claimed, from factors which would produce a non-

homogeneous distribution of vehicles for which averaging was being used. For example, a manufacturer might apply differing levels of control to over-the-road engines compared to urban engines, or to engines produced to meet special California standards compared to engines intended for use in other states. The American Lung Association and MECA expressed concern that averaging might result in fleet-wide emission increases.

Caterpillar, Chrysler, and AM General opposed the program on the grounds that it would result in adverse competitive impacts on manufacturers with more limited model lines. Caterpillar also felt that allowing NO_x averaging would compound the inequity introduced by particulate averaging "due to the close relationship between NO_x and fuel economy which is an important competitive feature of the heavy-duty diesel engine." Caterpillar also stated that allowing averaging would be unfair to companies that manufacture heavy-duty engines but not vehicles. Caterpillar argued that such manufacturers are unable to control the demands of their client companies for specific engines.

Commenters who favored the particulate averaging option were generally supportive of the implementation of NO_x averaging as well, due to the close relationship between these two pollutants. Although a few commenters did request the opportunity to review any NO_x averaging proposal before a rule was promulgated, most either favored NO_x averaging along similar lines as proposed for particulate averaging or offered specific comments on how such a program should be implemented. For example, GM favored NO_x averaging between gasoline and diesel engines, but several other parties noted concerns about the adverse competitive effects such an arrangement would have.

The comments of those who favored the general concept of averaging can be divided broadly into two categories: (1) Requests for rules that would place fewer restrictions on averaging than EPA proposed, and (2) requests for rules that would place more restrictions on averaging than EPA proposed.

Daimler-Benz requested that smaller volume manufacturers be allowed to average across subclasses in an effort to mitigate some of the anti-competitive effects of averaging. General Motors (GM) also suggested that averaging be allowed between light-heavy and medium-heavy duty (predominantly urban) engines, with a factor for useful life included in the averaging equation.

GM further requested that, even if urban bus engines are restricted from averaging with other heavy-duty engines, they be designated as an averaging group on their own. GM argued that total urban emissions would not be affected as a result.

Numerous manufacturers and the Engine Manufacturers Association (EMA) felt that the basic averaging unit should be the engine configuration rather than the engine family. They argued that averaging by family would result in a manufacturer receiving no credit for producing a configuration that has relatively low emissions, even if the configuration has significant sales. As proposed, actual total emissions would be less than the sales-weighted average; averaging by configuration would provide a more accurate representation of a manufacturer's actual emissions. If averaging were to be implemented based on the family concept, International Harvester suggested that the sales-weighted average emission level of the family be used to represent the family, not the emission level of the highest emitting engine configuration. Commenters also suggested that averaging by configuration would also make it easier to identify sources of in-use noncompliance than would averaging by family.

Another specific argument advanced by manufacturers and EMA was that the use of conditionally granted certificates of conformity is neither necessary nor legally authorized. EMA quoted section 206(b)(2)(A)(i) of the Act, which states that a suspension or revocation of a certificate of conformity "* * * shall apply in the case of any new motor vehicles or new motor vehicle engines manufactured after the date of such notification" of the manufacturer by EPA regarding suspension or revocation. From this, EMA inferred that suspension or revocation may only apply prospectively. EMA argued that the implementation of nonconformance penalties (NCPs), as well as EPA's authority to revoke or suspend certificates prospectively and EPA's recall authority, provide sufficient deterrents and/or corrective responses to the exceedance of emissions standards. An additional argument against the granting of conditional certificates was that identification of culpable engine families might prove difficult, resulting in the recall of a manufacturer's entire subclass of engines. As an alternative, several manufacturers suggested that manufacturers be allowed to average emissions forward into the succeeding model year, if noncompliance was found to be likely in the current year.

EMA argued against EPA's setting the precedent of establishing an emission ceiling at the level of a previous standard. Given the relationship between NO_x and particulate emissions, should the standard for one of these pollutants be lowered, it is likely that some increase in emissions of the other would result. That a previous standard had been achieved would not guarantee its feasibility under such a circumstance.

Among those commenters that appeared to favor averaging with more restrictions than were proposed were DOE and Mack, which felt that the averaging classes were too broadly defined to avoid significant adverse competitive impact. Specifically, Mack foresaw difficulties in selling trap-equipped engines to some customers and non-trap-equipped engines to others; it therefore felt averaging should be restricted to the family level (i.e., the engines within a family would be averaged to assess compliance with the 0.25 g/BHP-hr standard). Under such a proposal, trap usage would be maximized.

The NPRM also discussed the possibility of EPA's creating an emission credit trading program. GM favored such a program, noting the incentive to reduce emissions it would provide. Three other manufacturers (Ford, Daimler-Benz, and Nissan) were sufficiently interested to request specific proposals. Four manufacturers (Mack, Caterpillar, International Harvester, and Volvo White) opposed a trading program on the grounds that it is either not necessary or would have adverse competitive impacts. Of those commenters who do not manufacture engines or vehicles, only one, the Rhode Island Department of Environmental Management, specifically addressed this topic; it opposed allowing manufacturers to "buy their way out" of NO_x compliance.

EPA response to the comments. Many of the arguments summarized above are identical to those that were presented in response to the proposal to allow averaging of particulate emissions from light-duty diesel vehicles and trucks. The reader is therefore referred to the relevant discussions beginning at 48 FR 33456 (July 21, 1983), in addition to the responses below.

The Agency finds the averaging concept, as applied by the standards promulgated, to be fully consistent with the technology-forcing mandate of the Act. Particulate trap technology is heretofore untried on the fleet level. EPA believes that the 0.25 g/BHP-hr

standard which, through averaging, effectively requires use of traps on 70 percent of all heavy-duty vehicles will significantly reduce the risk of widespread noncompliance while allowing manufacturers to gain valuable experience with this new technology. To promulgate this standard without allowing averaging, or to promulgate, prior to 1994, a significantly lower standard with averaging, would increase the technological risk associated with the standard because traps would have to be used in even the most difficult design applications. This might result in significant fuel economy penalties and might adversely impact other performance-related factors. The issue of the appropriate level for the 1991 standard is reviewed in greater detail under the discussion of EPA's proposed and final particulate standards earlier in this preamble. It should also be noted that this rule includes a 0.10 g/BHP-hr standard for 1994 based upon projections that high-efficiency traps should be available for essentially all engines by that time. Thus manufacturers still have the incentive to continue to develop particulate control technology. Use of the best available control technology (traps) will be maximized according to a reasonable and feasible time table, regardless of whether any manufacturer chooses to utilize the averaging scheme.

Allowing manufacturers to average emissions to comply with the 5.0 g/BHP-hr NO_x standard is also consistent with the Act's technology-forcing mandate. The 5.0 g/BHP-hr standard represents the lowest level which EPA believes can be reached for the heavy-duty engine class as a whole without significantly increasing particulate levels or causing significant fuel economy penalties. For some engines the 5.0 g/BHP-hr NO_x standard will be particularly difficult to meet without significantly impacting particulate emissions and fuel economy. The availability of an averaging program will ease the compliance burden for these engines by mitigating the undesirable particulate increases and fuel economy penalties associated with tighter control of NO_x emissions.

EPA has addressed the issue of potential localized urban impacts of averaging through several conditions of the averaging program. First, averaging has not been permitted between California and 49-state engines. Thus, if California were to establish more stringent NO_x or particulate standards than the Federal levels, manufacturers would be prevented from compensating for the more stringent California standard by marketing their higher emitting engines throughout the 49-state region.

Second, averaging has been restricted to within the various subclasses of heavy-duty diesel engines for both particulate and NO_x emissions. The urban fraction of truck mileage varies considerably between subclasses and averaging between subclasses could result in trading control of predominantly urban vehicles for control of predominantly non-urban vehicles. For example, without restrictions, manufacturers might choose to control their inter-city line-haul (heavy heavy-duty) engines more strictly in order to offset lesser control over their light-heavy and medium-heavy engines, which are predominantly urban in operation.

Finally, as discussed below, urban buses are excluded from the particulate averaging program, precluding the possibility of some cities receiving high emitting buses while others receive low emitting buses. EPA had also proposed to restrict averaging at high-altitude locations; however, since high-altitude standards for heavy-duty engines are no longer included in this rulemaking, that restriction has been dropped for all except light-duty truck NO_x.

EPA believes that the above restrictions are both reasonable and necessary for the proper functioning of the averaging program without adverse local impacts. They should adequately guard against the possibility of undesirable localized impacts while still providing the maximum available flexibility to manufacturers.

EPA does not believe that allowing emissions averaging will lead to significant increases in fleetwide emission levels. Under averaging, the emission level of each engine family will relate to the family emission limit in exactly the same fashion as it currently relates to the non-averaging standard. Thus, since all the family emission limits must average out to equal the standard, there would be no change in fleetwide emissions. While there may be some incentive, under averaging, for a manufacturer to reduce the safety margin between a family's emission level and its emission limit, EPA does not believe that this incentive is substantially different from that which exists under a non-averaging approach.

EPA has considered carefully the comments relating to the effects of averaging on marketplace competition. The reader is referred to the "Competitive Impacts" discussion in the final rule for light-duty diesel particulate emissions averaging (48 FR *at* 33460, July 21, 1983). The issues raised there are identical in scope to most of those outlined above. In summary, EPA recognizes that a larger, more diverse manufacturer will realize a somewhat greater benefit from this proposal than a smaller, more specialized one. However, competitive advantages have always been available to larger manufacturers due to their ability to lower the prices for engines in more competitive classes and raise them in less competitive classes. A program that allows both NO_x and particulate averaging should not substantially increase the ability of large manufacturers to engage in such pricing practices for two reasons. One, the restriction that presents averaging between families in different diesel subclasses limits the scope of adjustments that a broad line manufacturer may make in improving his competitive position. Two, a manufacturer who attempts, through averaging, to gain a competitive advantage in a specific model line will find that he can make only limited excess sales of that line before falling into potential noncompliance with his sales-weighted subclass emission average. EPA believes that the lower overall cost of compliance, due to the increased flexibility afforded by averaging, will outweigh the possible small competitive effects. The overall efficiency of most of the affected parties should increase under this proposal, and no single party should be unduly burdened.

EPA does not agree with Caterpillar that engine-only manufacturers have inherently less ability to market—and therefore control the sales of—specific engine models to their clients than do manufacturers of both vehicles and engines. Furthermore, the ability of each manufacturer to project the sales of specific engine models is substantially equivalent. (It is basic to the successful operation of any manufacturing concern that it be able to forecast its clients' demands with some degree of accuracy.) Caterpillar presented no evidence to substantiate its position on this issue; furthermore, the other engine-only manufacturer that commented on averaging did not advance a similar argument. The averaging program has been designed so that the manufacturer may adjust the emission limits of any engine family to account for uncertainty in the total sales of that family's engines. The emission limit may then be revised throughout the year to reflect recent and projected sales trends. This built-in flexibility should serve to alleviate the concerns of manufacturers that project, as a model year progresses, marginal exceedence of the standard.

EPA agrees with those commenters who pointed out that, due to the strong relationship between NO_x and particulate, it is appropriate to allow manufacturers to average NO_x emissions if they are allowed to average particulate emissions. Such an allowance, by increasing manufacturers' flexibility, will enhance the expected gain in efficiency resulting from the use of averaging. NO_x averaging is therefore being implemented for both light-duty trucks, for which diesel particulate averaging is already available, and heavy-duty engines, in a fashion almost identical to that for particulate, the major difference being that gasoline engines are included in the NO_x averaging program. EPA agrees with those commenters who felt that the competitive impact of allowing NO_x averaging between gasoline and diesel engines would be unduly adverse. NO_x averaging between engine families is therefore restricted by fuel type.

Daimler-Benz suggested that smaller manufacturers be allowed to average emissions across subclasses, as discussed above, but EPA is not convinced that the program as promulgated will create enough of an adverse competitive impact to justify such a change to the rule. Furthermore, one of the reasons for prohibiting averaging between subclasses is environmental in nature, as described above. Should no such restriction exist, the opportunity exists for different control levels to be applied to engines of widely varying urban mileage fractions, with the potential result of localized pockets of high pollutant concentrations. In the same sense that the Agency does not wish to provide an unfair advantage to larger firms, it does not intent to risk the environmental goals of this rule in favor of less diverse companies.

EPA also rejects GM's suggestion that averaging be allowed between light and medium heavy-duty engines. It may be true that GM could make greater use of averaging under such an approach. However, EPA's concerns over adverse competitive and environmental effects of averaging between subclasses remains, and the Agency believes that the restrictions in this program are necessary to curtail those effects.

The agency also cannot accept GM's request that a separate averaging class be established for emissions of particulate from urban bus engines. EPA is especially concerned with urban bus particulate emissions. Bus operation is almost entirely urban in nature and buses make a significant and disproportionate contribution to overall urban particulate loading. Consequently, EPA has determined that these vehicles should be controlled fully with trap technology (which poses less technological risk for buses than for other HDE's, as noted above), and should be excluded from any averaging program in order to maximize the control gained. Moreover, a separate averaging class for buses would be of limited usefulness since it is very unlikely that bus emissions could be reduced significantly below the 0.10 g/BHP-hr standard.

Since NO_x emissions in urban corridors pose a less acute problem than particulate emissions, urban bus emissions of NO_x may be averaged with emissions of NO_x from other heavy-duty engines, subject only to the restrictions described in a later discussion. Such a provision should enhance manufacturers' flexibility in complying with the more stringent model year 1991–93 urban bus particulate emission standard.

With respect to the arguments relating to averaging by configuration instead of by family, EPA agrees that adopting the configuration-based approach (or adopting International Harvester's family average approach) would result in a more accurate representation of a manufacturer's fleetwide emissions. However, the promulgated standards currently take into account the fact that actual emissions will be less than those indicated by the family emission limits. Were the program to have been based on averaging by configuration, more stringent standards would be necessary to achieve reductions comparable to those predicted from the progrm as currently designed. EPA does not see any practical difference between the two approaches when viewed in this manner.

EPA does not agree with the argument that it might be easier to identify sources of in-use noncompliance under a configuration-based, rather than a family-based, approach to averaging. Under the family-based averaging approach, in-use testing and recall protocols would remain essentially equivalent to methods to be used under a non-averaging program. Under a configuration-based approach, however, assessments of in-use compliance would be more difficult to achieve for two reasons. First, a separate sample of engines of each configuration within a family would need to be tested in order to effect a recall of those configurations, even though the case of the noncompliance might obviously be associated with each configuration in the family. Second, it would be difficult to locate and bring in for testing the requisite number of engines of each specific configuration (as compared to accomplishing this at the family level where the potential sample population is much larger).

Other reasons for choosing the family-based approach are outlined in detail in the discussion labeled "Emission Limit Basis: Engine Family vs. Vehicle Configuration" which was published with the light-duty diesel particulate averaging rules (48 FR *at* 33458, July 21, 1983). To summarize that discussion, implementation on a configuration basis would be unduly burdensome for EPA. An entirely new certification program would need to be designed to allow for the testing and certification of each engine configuration. The result would be a greatly increased testing burden on the industry. The monitoring of such a program would be beyond EPA's current capabilities.

In regard to EPA's authority to render certificates void *ab initio* at the end of the model year, the reader is referred to section 206 of the Act, whereby the Administrator is granted authority to issue a certificate of conformity "upon such terms * * * he may prescibe." Moreover, averaging is neither required by the statute nor required of manufacturers. EPA thus may condition voluntary participation in the averaging program on compliance with terms the Agency may set in the reasonable exercise of its discretion. EPA must ensure that it can enforce emissions standards under an averaging scheme. NCPs, prospective suspension or revocation of certificates, and the recall program by themselves may not, in some cases, provide sufficient enforcement authority.

It is anticipated that the NCP program will be structured so that a penalty will be assessable against a manufacturer who chooses the averaging option only when an engine is found to exceed its family emission limit. A manufacturer's sales weighted average emissions might exceed the applicable standard though all engines be in compliance with their respective family limits. NCPs may not be able to deter or correct this situation, should it occur.

EPA is not in a position to evaluate a manufacturer's compliance with the standard under averaging at any time prior to year end; therefore, prospective suspension or revocation of certificates is not seen as a viable enforcement tool. As stated previously, it is the manufacturer's basic responsiblity under averaging to ensure that, at the end of a model year, his sales weighted emission levels do not exceed their respective standards. The program as

structured provides maximum flexibility to the manufacturer in setting family emission limits and revising those limits to insure compliance with the standard. In the extreme, a manufacturer unable to predict its average emissions level could simply meet the standard with all families and thereby eliminate any risk. If a manufacturer is unwilling to accept responsibility for meeting the standard under averaging then it need not participate in the program.

Finally, use of EPA's recall authority under section 207 of the Act to enforce end-of-year compliance with a standard may be difficult or inappropriate in those instances where there is no identifiable defect in any vehicles (i.e., where the nonconformity is caused simply by producing too many of a manufacturers' higher emitting vehicles). EPA therefore has incorporated into the certificate the condition that the year-end sales weighted emission level be in compliance with applicable standards. This approach is both necessary for efficient enforcement and consistent with section 206 of the Act.

The reader is referred to the discussion of this issue with respect to light-duty diesel particulate averaging under the title "Conditional Certification" (48 FR *at* 33459, July 21, 1983). It is noted there that manufacturers themselves have set a precedent for conditional certification. Ford has in the past "sought and been given conditioned certificates * * * in an effort to avoid delays in product introduction dates where durability testing would not be completed on schedule. The Agency sees no legal differences between those former conditioned certificates and those which will be issued under these new regulations."

Any engine whose certificate is rendered void *ab initio* would be in violation of section 203 of the Act. A manufacturer would be subject, under section 205, to a $10,000 fine for each engine found to be in such violation. However, engine manufacturers should realize that EPA's objective in granting conditioned certificates is not to impose "draconian" or "senseless" penalties (as characterized by one commenter), but simply to give itself the ability to seek some remedy through a negotiated settlement in the event of noncompliance. The Agency of course would have some discretion in choosing which remedies and/or penalties to pursue where violations occurred. Since EPA's primary goal would be to eliminate the nonconformance, it would likely seek recall of certain affected vehicles, where appropriate, for the purpose of adjusting overall emissions to bring the manufacturer's average into compliance. If a subclass or fleet average standard is exceeded, EPA will certainly consider which engines are most efficiently recalled to achieve redress. It should not be necessary to recall an entire subclass (unless, of course, the subclass comprises only one family). Finally, it is again noted that the averaging program as promulgated here is completely voluntary. A manufacturer who does not believe he can adequately implement its requirements is under no obligation to participate.

The concept of allowing a manufacturer to average his emissions into the following model year as an alternative to being found out of compliance in the current model year is, in essence, equivalent to the banking of emission credits (or in this case, debits). The issue of credit trading was discussed briefly in the proposal and, due to interest on the part of several commenters and within the Agency inself, is being explored further (see below). However, no such program is included in today's rulemaking.

In regard to EPA's approach to setting family emission limit ceilings, the Agency concurs with EMA that choosing previously achieved standards might not always be appropriate. While EPA recognizes that some tradeoff may be inherent in any adjustment of NO_x or particulate, the function of an emissions ceiling is to prevent manufacturers from effecting a tradeoff with undue environmental impacts from individual vehicles. In the present rulemaking, emission ceilings for the 1991 standards are set at levels which EPA has determined to be feasible, given the relative reductions effected in both NO_x and particulate emissions. For the 1994 0.10 g/BHP-hr particulate standard, EPA will maintain the emission ceiling at 0.60 g/BHP-hr in order to insure that manufacturers have the flexibility neededto include non-trap equipped engines in their averaging programs. While the ceiling for non-trapped emissions could undoubtedly be lowered somewhat between 1991 and 1994, the Agency sees little benefit in doing so. EPA is satisfied that the 0.10 g/BHP-hr standard is stringent enough to effectively preclude inclusion of any significant number of high emitting engines into an average.

Mack's suggestion that averaging be allowed between engines within a family but not between families within a subclass would result in maximized trap usage and minimized flexibility for manufacturers. EPA believes that such an approach would have little overall benefit and would nullify most of the advantages of averaging. The restrictions on averaging as promulgated represent what EPA believes to be the best compromise between the interests of larger manufacturers such as GM, who would prefer no restrictions, and smaller or less diverse manufacturers, such as Mack and Caterpillar.

EPA recognizes the sensitive and complex nature of the emission credit trading concept. While credit trading could enhance manufacturer flexibility and incentive in meeting standards, an improperly structured program could adversely affect competition. As no specific proposals were presented in the NPRM, and as the program requires careful consideration, it would be inappropriate to promulgate rules at present. EPA does intend to explore this possibility further and to make a specific proposal in the near future if such a proposal is warranted.

Summary of final rule. The averaging programs promulgated by today's final rule are identical in many aspects to the particulate averaging program that was proposed and described above under *"Review of the proposal."* These basic aspects are as follows:

For heavy-duty engines, the particulate averaging scheme is promulgated such that, from the 1991 through 1993 model years, an average 0.25 g/BHP-hr standard is applicable to all engines except urban bus engines. The proposed high-altitude heavy-duty diesel engine particulate standards have been deleted, as discussed elsewhere in this document. Therefore, the high-altitude restriction is no longer needed. The standard for 1991–93 model year urban bus engines is 0.10 g/BHP-hr, and may not be achieved through the use of averaging. A ceiling of 0.60 g/BHP-hr is imposed on the family emission limits to be set by a manufacturer which chooses the averaging option. Effective with the 1994 model year, the particulate standard for all heavy-duty diesel engines is lowered to 0.10 g/BHP-hr (while the family emission unit ceiling remains at 0.60 g/BHP-hr). Urban bus engines will remain a separate class which is not permitted to participate in the averaging program.

As noted previously, a NO_x averaging scheme is also being effected beginning in 1991. For heavy-duty engines, the sales- and power-weighted NO_x emission limit is set at 5.0 g/BHP-hr, with a 6.0 g/BHP-hr ceiling on individual family emission limits. Like the particulate averaging program, its use is entirely optional to the manufacturer. It differs from the particulate averaging program in the following aspects. NO_x

emissions from gasoline-fueled heavy-duty engines may be averaged. NO_x emissions from gasoline-fuled engines may not, however, be averaged together with emissions from diesel engines, but they may be averaged among all gasoline-fueled heavy-duty engine families. NO_x emissions from urban bus engines may be averaged with emissions from other heavy-duty engines, subject to applicable fuel type, subclass, and sales region restrictions, effective with the 1991 model year.

All other aspects of the heavy-duty engine averaging program for particulate and NO_x emissions stand as proposed.

EPA has also decided to implement a NO_x averaging program for light-duty trucks with this rulemaking along similar lines as the programs for heavy-duty engine NO_x and particulate and for light-duty diesel particulate (48 FR *at* 33456). This averaging option will be effective with the 1988 model year. The comments reviewed in this section apply equally in many respects to light- and heavy-duty averaging; EPA's rationale for the concept applies to both a light-duty and a heavy-duty averaging program.

A manufacturer who chooses to participate in the averaging program for light-duty truck NO_x emissions will determine emission limits for each of its light-duty truck families (subject to a 2.3 g/mi ceiling). NO_x emissions will then be averaged among all light-duty truck engine families of the same fuel type. The difference between vehicles certified to the two different light-duty truck emission standards will be handled in a fashion identical to the method currently used in averaging particulate emissions from light-duty diesel vehicles and trucks. Each participating manufacturer will calculate a weighted light-duty truck standard that will be equal to its sales weighted average of the lighter light-duty truck standard (1.2 g/mi) and the heavier light-duty truck standard (1.7 g/mi).

Light-duty truck NO_x averaging will not be permitted between gasoline and diesel engine families nor between families intended for use in California, high altitude and low-altitude regions.

The concept of inter-manufacturer trading of emission credits is being explored further. Due to the complexity of this issue and the fact that no specific scheme was proposed by EPA, it is not addressed by today's rulemaking. However, EPA has noted the interest by manufacturers in emissions trading. The Agency is, therefore, developing a separate proposal on this topic for possible issuance in the near future.

G. Allowable Maintenance

Review of the proposal. The proposal addressed several basic aspects of allowable maintenance. The first was the extension of provisions already implemented for light-duty vehicles as well. This part of the proposal assigned minimum technologically necessary maintenance intervals for the emission-related components of light-duty vehicles, which were the same intervals specified for light-duty trucks in an earlier rulemaking (45 FR 63734, September 25, 1980).

Second, EPA proposed the addition of several new items to the existing list of "emission-related components." Electronic engine controls and related actuators and sensors would be added to the list for all vehicles and trucks. For gasoline-fueled vehicles and trucks, EPA proposed that turbochargers, carburetors, evaporative canisters, and air injection systems be added to the list of emission-related components. For diesels, particulate trap-oxidizer systems were added to the list. The interval proposed for all of these components was 100,000 miles, with the exception of 150,000 miles for trap-oxidizers on the heavier diesel engines.

A third aspect of the proposal was introduction of the "critical emission-related components" concept, a subset of emission-related components. These critical components were defined in the proposal as those which either are designed exclusively for emission control purposes, or whose failure may result in a significant increase in emissions accompanied by no significant impairment in performance, driveability, and/or fuel economy.

With designation of these critical components, EPA proposed that manufacturers be required to demonstrate a "reasonable likelihood" that maintenance recommended for these critical components will actually be performed by owners. Five specific methods of meeting the reasonable likelihood requirement were proposed, with manufacturers given the option to have other methods approved in advance by the Administrator.

The proposal included minor amendments aimed at the clarification of some existing aspects of the allowable maintenance regulations. One of these was the relationship between maintenance specified by EPA for certification testing and that required by manufacturers of vehicle purchasers in their owner's manuals. To prevent further misinterpretation of this relationship, a proposed wording change would clarify that no emission-related maintenance can normally be recommended to owners at shorter intervals than allowed for durability testing as part of certification, except with the Administrator's approval.

Also included in the proposal was a clarification of the distinction between maintenance and inspections. Inspections do not constitute maintenance, since they do not assure the proper functioning of the emission control system, and thus are not items of scheduled maintenance. However, it was proposed to allow the inclusion of inspections in maintenance schedules required by manufacturers of vehicle purchasers, provided that such schedules clearly state that the inspections are not required for warranty or recall coverage.

A final area covered in the proposal was improvement of the warning systems designed to indicate when maintenance is needed. Based on survey data (available in the public docket) indicating that current systems are somewhat ineffective, EPA proposed that warning lights be required to stay on until the required maintenance is performed. Other measures, such as improved content of the message displayed by the signal and the addition of a second warning light, were also proposed.

Issues raised by the comments. The majority of the comments on allowable maintenance were submitted by vehicle and engine manufacturers and associated organizations, with a few submittals by local, state, and Federal authorities. The majority of the comments raised issues that can be grouped into these four major categories: (1) Legal authority and justification of need, (2) maintenance intervals, (3) proof of likelihood requirements, and (4) clarification of existing provisions.

Legal questions focused largely on EPA's authority to establish for vehicle and engine manufacturers the maintenance intervals which may be recommended to their customers. The Motor Vehicle Manufacturers Association (MVMA), General Motors (GM), Ford, and others contended that the Act gives manufacturers and not EPA both the right and the responsibility to determine that level of maintenance which is "reasonable and necessary to assure the proper functioning of the emission control system," and to in turn recommend these proper maintenance intervals to their customers. Further, GM maintained that the change from "reasonable and necessary" to "technologically necessary," with respect to recommended maintenance intervals, was "monumental and

revolutionary," and not founded on any authority delegated by Congress.

Most manufacturers also pointed out that EPA does not have the authority to specify any maintenance interval beyond the useful life of a vehicle. This issue was raised in response to the apparent extension of light-duty truck maintenance intervals to light-duty vehicles, even though some of the intervals were greater than the 50,000-mile useful life defined by the Act for passengers cars. Though this error was acknowledged by EPA during the public hearing on the proposal, manufacturers felt it important that the final rule should clarify this matter.

Ford and others criticized EPA for not having justified the need or feasibility of the proposed actions by conducting thorough environmental and economic impact analyses. Ford was joined by GM and MVMA in characterizing EPA's proposal as "arbitrary and capricious" and an "abuse of the Agency's discretion." The American Automobile Association (AAA), on the other hand, supported the allowable maintenance provisions strongly and commented that the proposed actions were "long overdue."

For various reasons, many of the manufacturers suggested reproposal of the allowable maintenance provisions in a separate rulemaking. This comment was mainly in response to the light-duty vehicle provisions, with GM, Ford, Chrysler, Nissan and others expressing the need for more leadtime and time for proper comment and response. However, a delay was also suggested by some members (Cummins, Caterpillar) of the Engine Manufacturers Association (EMA), in order to gain more experience and information on the maintenance requirements of certain components, particularly those not yet in use in heavy-duty engine applications (*i.e.*, particulate traps and electronic engine controls).

The second major issue raised by the comments dealt with the specific maintenance intervals proposed. Although GM challenged the feasibility of all intervals (except for idle mixture), most frequently criticized was the proposed 100,000-mile interval for oxygen sensors. Basing their arguments primarily on the lack of evidence that an oxygen sensor can function properly for the interval proposed, manufacturers recommended oxygen sensor maintenance intervals ranging from 30,000 to 60,000 miles.

As mentioned earlier, those intervals proposed for light-duty vehicles that went beyond the 50,000-mile useful life specified in the Act were uniformly opposed by the manufacturers, while AAA recommended that intervals for certain emission-related automobile components be greater than 50,000 miles. Several commenters (MVMA, GM, Chrysler, and American Motors) challenged all 100,000-mile intervals, including those already implemented for certain light-duty truck and heavy-duty engine components.

Ford questioned the proposed 100,000-mile interval for carburetors in particular, citing the proposed stipulation that "no adjustment, cleaning, repair or replacement" would be permitted prior to 100,000 miles of use. Ford pointed out an apparent inconsistency with respect to the interval of 50,000 miles set for idle mixture (associated with the carburetor system), and expressed its difficulty in determining whether or not its recommended maintenance intervals were in compliance with the proposed regulations.

A third broad category of issues raised by the comments dealt with the concept of "critical" emission-related components and the requirement that manufacturers provide reasonable proof of likelihood that maintenance recommended for these components will actually be performed in use. In general, most commenters (including Cummins and other manufacturers) accepted the classification of some components as "critical," with the exceptions of Volkswagen (which found the categories confusing and redundant) and GM (which opposed strict maintenance requirements on any item not strictly designed for emission control, such as the entire closed-loop system). The Oregon Department of Environmental Quality supported the concept of "critical" components and recommended that the components be explicitly identified in the owner's manuals for the benefit of consumers.

Opposition to the proof of likelihood requirement was widespread, with most manufacturers unwilling and reportedly unable to accept responsibility for the consequences of inadequate in-use maintenance. Most felt this additional burden should not be placed on the manufacturers; instead, American Motors and others recommended that vehicle owners be encouraged to have maintenance performed through increased public awareness or the implementation of state inspection/maintenance plans. Some commenters, such as Caterpillar, felt that adequate market incentives already exist for maintenance (especially on heavy-duty diesels), and that vehicles and engines should be treated like other marketplace products, where the responsibility rests with the owners.

Numerous comments were received on EPA's suggested methods of satisfying the proof of likelihood requirements. With respect to warning lights that stay on until the recommended maintenance is performed, both Volvo White and the Department of Energy (DOE) pointed out the likelihood that such devices would be disabled in heavy-duty diesels if perceived as a hindrance, even though disconnection of warning lights would be considered a form of tampering by EPA. Chrysler, GM, and Ford questioned the value of a second warning light if one light is currently ineffective, and Chrysler suggested the impracticality of separate lights for each of the individual critical components. AAA agreed that warning lights are helpful, but they advised against messages that are too vague (*e.g.*, "Check Engine"). GM and others felt that surveys of owners' intentions would be a needless waste of time and expense because the majority of the customers asked would respond in a positive manner; furthermore, GM viewed the 80 percent favorable response requirement as "arbitrary and without foundation." Finally, GM opposed the option requiring manufacturers to provide for pre-payment of maintenance on critical emission-related components, questioning both EPA's authority to require prepayment and the cost-effectiveness of a such a measure.

The remaining issues raised by the comments dealt with the points of clarification included in the proposal. The first area covered is clarification of the relationship between maintenance allowed during certification and that recommended to vehicle purchasers in their owner's manuals. EPA's position that the maintenance intervals specified for durability testing must correspond to those which are recommended for in-use vehicles was strongly opposed by most of the manufacturers and by GM in particular. Aside from the issue of EPA's legal authority to establish in-use maintenance recommendations (mentioned earlier), manufacturers questioned the ability to precisely duplicate in-use conditions (*e.g.*, driving cycles, fuels, environmental conditions) during certification. Based on this, GM, Ford, Chrysler, and others expressed the need for flexibility to specify more frequent maintenance intervals to their customers. GM stated that this limitation on the in-use maintenance allowed to be recommended would force manufacturers to stop production of certain vehicles and engines unless they were willing to assume an unacceptable built-in risk of recall.

Finally, comments were received in response to the proposal's clarification of the difference between inspections and maintenance. Both GM and Chrysler contended that disallowing inspections as a condition for recall or warranty would increase costs to the consumer, because the manufacturers would be forced to call for automatic replacements rather than relatively inexpensive inspections. Ford, on the other hand, supported the distinction between the two as long as manufacturers would still be permitted to recommend inspections that are explicitly identified as not being required for warranty or recall purposes; in this way, Ford feels that customers would not be biased into thinking that inspections and related maintenance are unnecessary.

EPA response to the comments. All of the comments received on the allowable maintenance provisions of the proposal were reviewed by EPA and considered in today's promulgation of allowable maintenance requirements.

In order to assess the comments on allowable maintenance in the proper context, it is first necessary to realize that the proposed provisions arose from a significant amount of past action by the Agency. Thus, while at first glance it might appear from the comments that EPA was introducing a significant conceptual change deserving of an independent rulemaking proposal of its own, the facts are quite the opposite. Allowable maintenance regulations have been in place since the early 1970s (*see, e.g.*, 36 FR 16905, August 26, 1971; 38 FR 21348, August 7, 1973). The fundamentals of the allowable maintenance provisions in today's action have been the subject of rulemaking dialogue between manufacturers and EPA since 1979. The basic concepts of allowable maintenance and the intervals for heavy-duty engines were presented in a final rulemaking (45 FR 4136, January 21, 1980) and discussed in these supporting documents: (1) *Regulatory Analysis and Environmental Impact of Final Emission Regulations for 1984 and Later Model Year Heavy-Duty Engines*, and (2) *Summary and Analysis of Comments to the NPRM: "1983 and Later Model Year Heavy-Duty Engines Proposed Gaseous Emission Regulations,"* both published in December 1979. These heavy-duty regulations were followed by a final rulemaking promulgating allowable maintenance requirements for light-duty trucks (45 FR 63734, September 25, 1980) and these accompanying documents: (1) *Regulatory Analysis and Environmental Impact of Final Emission Regulations for 1984 and Later Model Year Light-Duty Trucks*, and (2) *Summary and Analysis of Comments on the NPRM for Gaseous Emission Regulations for 1983 and Later Model Year Light-Duty Trucks*, both released in May 1980.

Even the concept of requiring proof of reasonable likelihood that emission related maintenance will be performed, although not finalized in either of those actions, was proposed and commented upon. For both light-duty trucks and heavy-duty engines, EPA indicated that these provisions would probably be needed for future technology and would probably be reproposed when the new NO_x standards were proposed (45 FR 63738, September 25, 1980; 45 FR 4141, January 21, 1980).

Finally, EPA indicated in its Advanced Notice of Proposed Rulemaking for today's NO_x standards that promulgation of allowable maintenance provisions was being anticipated, and discussed the concept of "critical" emission-related components in detail (46 FR 5843, January 19, 1981). The Advance Notice included draft regulations detailing the anticipated program. These provisions were commented upon by manufacturers, and because of the comments, the final proposal was modified somewhat to respond to objections raised.

The majority of the allowable maintenance issues raised in the previous section were analyzed as part of the light-duty truck and heavy-duty engine rulemakings. These include the basic concepts of emission-related and non-emission-related maintenance, technologically necessary maintenance intervals, the establishment of all the existing intervals, and the other provisions already embodied in the 1985 allowable maintenance regulations (§§ 86.085–25 and 86.085–38). No re-analysis of these matters beyond that which is presented below has been performed (*i.e.*, the allowable maintenance issue is not examined in the Regulatory Impact Analysis). By way of the references to the above-mentioned documents, the analyses and responses contained therein are incorporated into the following discussion.

This analysis will now turn to the specific areas of comment outlined in the previous section. The issue of EPA's legal authority to establish the maintenance intervals to be recommended to vehicle owners was addressed extensively in both of the earlier rulemakings. As stated then, the necessary authority is given to the Administrator in sections 206(d) and 207(c)(3)(A) of the Act, which provide the basis for EPA's entire certification and durability programs. Section 207(c)(3) of the Act specifically requires that vehicle and engine manufacturers provide owners with maintenance instructions which "correspond to regulations which the Administrator shall promulgate." Based on these provisions and their legislative history (H.R. Rep. No. 294, 95th Cong., 1st Sess. 295 (1977); S. Rep. No. 252, 95th Cong., 1st Sess. 82 (1977)), EPA concludes that it has adequate legal authority to establish technologically necessary maintenance intervals for certification and to require that in-use maintenance recommendations be consistent with these specifications (*see also* Automotive Parts Rebuilders *v.* EPA, 720 S. 2d 142, 150–151 (D.C. Cir. 1983)). Furthermore, the claim by GM that today's regulations embody a "monumental" change is undercut by the fact that the basic concept of technologically necessary intervals for emission-related maintenance was established in 1980, and linking owner's manual maintenance to certification goes back to the early 1970's, as detailed above. GM had ample opportunity to raise this issue in the earlier forums in which it actively participated.

The statutory provisions on certification testing and maintenance instructions also provide EPA with the authority to limit allowable maintenance to that which manufacturers can show is likely to be performed. This limitation is a natural extension of EPA's efforts to ensure that the vehicles certified by manufacturers will comply with the applicable emission standards in actual use. Thus, it is a reasonable exercise of EPA's authority to define certification testing parameters and regulate the content of maintenance instructions.

In response to the proposed extension of existing light-duty truck maintenance intervals which are greater than 50,000 miles to light-duty vehicles, EPA acknowledges its error. Manufacturers are correct in citing the Act's definition of useful life for light-duty vehicles as 50,000 miles. This matter has been clarified in today's regulations, which state that no allowable maintenance provisions apply beyond the useful life of the vehicle, as defined by the Act.

In response to criticisms of inadequate justification of the need for and levels selected for light-duty vehicle maintenance intervals, EPA feels that this action in fact represents a logical progression from regulations for the other vehicle classes. The basic reasons for establishing the light-duty truck and heavy-duty engine provisions—to direct

the focus from certification to in-use compliance and to encourage manufacturers to develop more durable components that require less maintenance—are just as valid for light-duty vehicles. The extension of light-duty truck maintenance intervals to light-duty vehicles was based on the close similarity between the two classes in terms of technology and usage patterns. The technical feasibility of the light-duty truck intervals, except for those components newly added by this rulemaking, has been addressed in the previously mentioned rulemakings, and the intervals that have been judged appropriate for light-duty trucks will inherently be suitable for light-duty vehicles. If anything, light-duty vehicles would experience a less demanding service environment than do light-duty trucks, arguing for somewhat less needed maintenance for that class of vehicles. Therefore, EPA finds that the manufacturers' references to the light-duty vehicle intervals as "arbitrary and capricious" are incorrect and not supported by the record.

With respect to the lack of specific discussion of the economic and environmental impacts associated with the proposed regulations, the reader is again referred to the previous rulemakings. In support of the heavy-duty engine rule (45 FR 4136, January 21, 1980), the costs and benefits associated with the allowable maintenance provisions were estimated. The only significant costs projected were those of increasing the noble metal loading and volume of catalyst systems to extend the useful life from 50,000 miles to 100,000 miles (the effective impact of the extended maintenance requirement). Other components were found to be affected in such minor ways as to prevent assignment of specific cost estimates. The situation was similar with regard to benefits. The only quantifiable benefit was that due to reduced emissions from improved catalyst lifetimes. For other components, the effects were describable in qualitative terms, but there was insufficient information to allow for quantitative assessments. While the premise that reduced requirements for in-use maintenance would in turn produce reduced instances of improperly maintained vehicles was clear, the means to assign specific values to those improvements were generally lacking. EPA believed that limiting provisions for allowable maintenance would lead to improved durability of components, improved in-use performance, and overall reductions in emissions. Based upon the quantifiable costs and benefits, the allowable maintenance provisions were found to be one of the most cost effective aspects of the rulemaking. EPA believes that the non-quantifiable effects of those provisions made the rule more reasonable and appropriate.

Costs and benefits were also developed in support of the light-duty truck regulations, and again, the significant costs were associated with extending catalyst durability. Benefits in terms of HC and CO reductions were projected to result from fewer improperly maintained vehicles in the field. Again, quantifiable impacts were found to be very cost effective for light-duty trucks.

Thus, experience from prior rulemakings has shown that the individual impacts of the allowable maintenance provisions are generally small, and that their cost effectiveness is very good. The impacts described below associated with today's allowable maintenance provisions, when compared to those of prior rulemakings, fall within the small, non-quantifiable category (*i.e.*, the most significant costs of past rulemakings were associated with extending the catalyst durability, which is not affected here). Those impacts that are identifiable were shown to be cost effective in the previous analyses; therefore, because the situation is basically the same here, no additional quantitative analysis was performed.

Beyond the quantifiable areas, there are very important intangible reasons for the adoption of today's allowable maintenance provisions. They serve to focus the attention of manufacturers away from the narrow task of passing a carefully defined certification procedure and toward better in-use performance of vehicles and engines. They also provide insurance that manufacturers' cost control pressures do not take priority over the design and use of durable emission-related components and that vehicle owners are not required to perform maintenance that should not be necessary for the proper performance of their vehicles.

It should also be noted that, while not generally identified separately, any known cost impacts of the allowable maintenance provisions are included in the cost estimates for today's action. For example, EPA has, partly in response to comments about the need for continued improvements in the in-use durability of trap oxidizers, increased its estimates of necessary trap sizes. Costs associated with other hardware components are also considered to be for items of sufficient durability to comply with the allowable maintenance restrictions.

With regard to costs for light-duty vehicles under the new allowable maintenance provisions, no significant expense is expected because the relatively small extensions of recommended maintenance intervals to 50,000 miles (the full useful life of light-duty vehicles) from current practice (which generally calls for maintenance at about the 35,000-mile point) will not cause significant hardware changes.

With respect to the items newly added to the list of emission-related components, no significant costs are expected because of the basic mechanical durability of such components as turbochargers, carburetors, and evaporative canisters. Some development costs might have been incurred in further reducing the failure rate of oxygen sensors at high mileages under the 100,000 mile maintenance interval EPA had proposed. However, with that interval reduced to a mileage range already being attained by most current oxygen sensors (to be discussed below), no significant new costs should be involved.

In response to comments that the light-duty vehicle provisions should be delayed due to inadequate leadtime, EPA has reviewed this question carefully and finds no basis for delay. Two basic reasons for needing more leadtime would be, first, insufficient time to comment, or second, inadequate time to comply with the provisions. With respect to the first point, the basic aspects of the proposal have been extensively reviewed and commented upon in the other rulemakings cited above. The Agency believes that this fact, plus the amount of time for public comment provided in the course of today's rulemaking, has been more than adequate. As for providing adequate time to comply with the allowable maintenance provisions, the Agency sees no significant burden beyond that of compliance with the NO_x and particulate standards promulgated today. EPA's analysis of required leadtime for these standards includes, for example, the need to develop a high-mileage particulate trap-oxidizer, which is the component EMA identified as needing more time to gain high-mileage experience.

With respect to the heavy-duty engine manufacturers' desire to gain more knowledge of trap-oxidizer performance before being subject to required maintenance intervals on traps, EPA believes that the intervals set for traps represent the minimum acceptable life

for this component. Reasonable high-mileage performance with minimal maintenance requirements is essential in ensuring effective operation of the trap throughout the useful life of the vehicle. Therefore, this requirement should be viewed as a design parameter in the development of diesel particulate traps and thus is appropriately introduced at this time. EPA's analysis of trap feasibility and cost has included consideration of lifetime durability issues, and the Agency has concluded that long-lived traps will be available as required. Of course, the Agency remains open to further evaluation of this issue as trap development proceeds. The minimum maintenance interval for traps can be reviewed in the future if the situation warrants.

Probably the most uniformly criticized maintenance requirement was the 100,000-mile interval proposed for oxygen sensors, with manufacturers recommending 30,000 to 60,000 miles as appropriate intervals. In response to these comments, EPA has closely reviewed available information on current maintenance practices within the industry and the high-mileage performance of oxygen sensors. As detailed in the report "*Durability of Oxygen Sensors*," [1] EPA's in-use data show that the majority of oxygen sensors currently in use perform satisfactorily to at least 80,000 miles, with a failure rate of approximately 10 percent or less. Based on these findings, EPA blieves that extension of the current 50,000-mile interval (as already established for light-duty trucks) is justified. However, since currently available data do not support the originally proposed 100,000-mile interval, EPA has revised the maintenance interval for oxygen sensors to 80,000 miles.

No revisions have been made to the 100,000-mile intervals proposed for other components, including evaporative canisters, electronic engine controls, air injection systems, and carburetors, which are all viewed as components with no extensive routine maintenance requirements. Manufacturers' comments, in general, included no evidence or rationale to effectively dispute this position. Instead, manufacturers expressed the opinion that the intervals were excessively long, but provided no substantive data to support this position. The 100,000-mile interval specified for turbochargers on gasoline-fueled vehicles and trucks was carried over from the specification for the lighter classes of heavy-duty diesels, implemented with the earlier rulemaking. This is appropriate, considering the common useful-life and use patterns of gasoline-fueled and diesel engines in these vehicles. In response to Ford's interpretation of the carburetor maintenance allowed by the proposed regulations, the final regulations clarify that the carburetor cannot be *rebuilt* or *overhauled* prior to 100,000 miles of use; however, adjustments to the idle mixture can be made at 50,000 miles (as specified by the maintenance interval assigned to this component).

In requiring that manufacturers offer reasonable proof that recommended maintenance on critical components will indeed be performed in use, EPA has been mindful of the parallel responsibility of the vehicle or engine owner to perform reasonable maintenance. It is for this reason that EPA has carefully limited the requirement to only those components which are critical for emissions control and which will not otherwise visibly affect the vehicle's operation. Further, EPA has provided specific and reasonable means for making an acceptable showing of likelihood, some of which fall well short of conclusively establishing proof of actual maintenance. This has been done to limit the responsibility of the manufacturer to a reasonable level, while at the same time providing the incentive to not require maintenance on these components unless truly needed.

Because of the way it has been established and limited, EPA believes that the proof of maintenance requirement for critical emission-related components presents minimal burden to manufacturers. Indeed, if market incentives already exist for heavy-duty diesel maintenance, as Caterpillar contends, then the impact of additional EPA regulation in this area should be minor. If it is not, the additional burden placed on the manufacturers will be small in view of the limited number of components affected and the leniency of the proof requirements as described above.

EPA would again like to emphasize (as was done in the proposal) the limited number of components affected by the proof of likelihood requirement. Because proof of likelihood is not required for components whose maintenance intervals are beyond full useful life, this requirement has no impact on light-duty vehicles whatsoever. Further, since the intervals for four of the six critical components of light-duty trucks and heavy-duty gasoline-fueled engines fall within 10,000 to 20,000 miles of the full useful life periods for these two classes, EPA expects that most manufacturers will extend these intervals by the slight additional mileage necessary to avoid the proof-of-likelihood requirement. For heavy-duty diesel engines, only particulate traps, exhaust gas recirculation systems, electronic engine controls, and positive crankcase ventilation valves are subject to this requirement.

One specific aspect of the means available for demonstration of reasonable likelihood which received significant adverse comment was the requirement for dual warning light indicators. EPA agrees with the comments that an additional light will not significantly enhance the effectiveness of this option. Therefore, in the final rule the requirement has been reduced to that of only a single light.

EPA's final responses address the allowable maintenance issues clarified in the proposal: Certification versus in-use maintenance and inspections versus maintenance. In response to comments on the first issue, EPA emphasizes that the certification program is intended to demonstrate the reasonable likelihood that vehicles will meet their emission standards in use as warranted by the manufacturer. To make this demonstration, the certification program must take into account maintenance practices upon which the manufacturers are warranting their vehicles. To preserve the integrity of the demonstration, no additional emission-related maintenance than that conducted during certification can be required in use as a condition for emissions warranty coverage. However, the Agency will allow manufacturers to recommend additional maintenance provided that the instructions clearly state, in a form approved by the Administrator, that such maintenance is not necessary to maintain emission warranty coverage or manufacturer recall liability.

In making the connection between certification and in-use, it is important to note that the maintenance intervals as originally developed for heavy-duty vehicles and light-duty trucks were established based upon in-use performance and practice. Manufacturers in their comments have implied that the maintenance intervals are appropriate for certification testing, but not for in-use. This position is contrary to the facts.

The derivation of all allowable maintenance intervals has been based exclusively on data concerning in-use

[1] "Durability of Oxygen Sensors," Snapp, L., U.S. EPA, OAR, OMS, ECTD, EPA-AA-SDSB-85-04.

operation. As described in the preamble to the final light-duty truck provisions (45 FR 63738, September 25, 1980), maintenance intervals for most of the components addressed were the longest intervals that any manufacturer recommended for that item in its owner's manual. Starting from that point, some intervals were adjusted as needed in response to public comments (*e.g.*, spark plug change intervals were adjusted to account for the difference between using leaded versus unleaded fuels in some vehicles).

The fact that all of the allowable maintenance intervals are in-use intervals eliminates the contention of those manufacturers arguing for the option of requiring more maintenance in their owner's manuals. If indeed there is a difference in the amount of maintenance which is required on certification durability vehicles compared to in-use vehicles (which there should not be in a properly designed program), then that difference indicates the need for less maintenance on the durability vehicles than what is specified in the regulations. While manufacturers are not free to require additional maintenance of users, they are, of course, free to reduce maintenance on durability vehicles if they so desire.

The final point commented upon was the wording change to make it clear that inspections do not constitute maintenance because they reveal rather than prevent part failure (*see* 40 CFR 86.082-2). Thus inspections do not assure the proper functioning of the emission control system, and may not be specified as scheduled maintenance items required to maintain emissions warranty or recall protection. Some manufacturers argued that this would lead to increased cost, whereas Ford said it would not and supported the distinction.

There are two reasons why EPA does not expect this requirement to actually increase costs. First, the areas where inspections are currently employed by manufacturers are in low-mileage applications, well below 50,000 miles. These requirements are eliminated entirely by today's maintenance intervals, which are at 50,000 miles or above for all items except spark plugs. For light-duty vehicles, then, essentially no emission-related maintenance is allowed within the vehicle's useful life, whether inspection or otherwise. Beyond that point, the regulations do not govern and the manufacturer is able to establish its own requirements. Therefore, the issue does not significantly affect light-duty vehicles. For light-duty trucks and heavy-duty engines, again no significant emission-related maintenance is permitted below 50,000 miles. At higher mileages, current manufacturer practice is generally to require maintenance rather than inspection, so no significant impact is expected for these vehicles either.

EPA recognizes that some manufacturers believe that inspections at relatively low mileages may lead to early identification and correction of isolated problems. This may be the case and EPA intends to allow such inspections. However, these inspections, being more frequent than that maintenance which should be technologically necessary, cannot be a requirement for emissions warranty or recall coverage. Thus, the final regulations allow the inclusion of recommended inspections in the maintenance instructions, provided that the instructions clearly state, in a form approved by the Administrator, that such inspections are not necessary for emission warranty coverage or manufacturer recall liability.

Conclusions. In summary, today's allowable maintenance provisions establish minimum technologically necessary maintenance intervals for emission-related components of light-duty vehicles and revise certain existing requirements for light-duty trucks and heavy-duty engines. The concept of "critical" emission-related components and the associated proof-of-likelihood requirements for maintenance during the vehicle's useful life are also established in this rule.

This action also promulgates wording changes clarifying the existing provisions specifying the relationships between certification and in-use maintenance requirements and inspections versus maintenance. These two items, since they involve only matters of clarification to the existing regulations, are not affected by the leadtime constraints which have led to the delay in the rest of the rulemaking from 1987 to 1988. Therefore they are being retained as effective for the 1987 model year as proposed.

Today's regulations on allowable maintenance are consistent with those provisions proposed (49 FR 40258, October 15, 1984). Except for a few clarifications of wording, there are only two changes from the proposal. The first is the reduction in the minimum technologically necessary maintenance interval for oxygen sensors, from the proposed 100,000 miles to an interval of 80,000 miles. The second change is the deletion of the requirement to use two indicator lights in systems used to signal the owner of the need for critical emission related maintenance. Only one light is now required.

H. Heavy-Duty Engine Test Procedure Revisions

Review of the proposal. The proposed rule included several revisions to the heavy-duty engine test procedures contained in Subpart N of 40 CFR Part 86. These were the inclusion of particulate testing and measurement procedures for heavy-duty diesel engines, the specification of continuous NO_x measurement for diesel engines, and other minor technical corrections.

The incorporation of particulate testing procedures for heavy-duty diesel engines is fundamentally related to the establishment of particulate emission standards. This action required numerous revisions within Subpart N, which are detailed in Table 1 of the Appendix. The procedure is basically the same as that proposed in the heavy-duty diesel particulate proposal (46 FR 1910, January 7, 1981).

The particulate measurement procedure requires that the exhaust be cooled to 125°F primarily by dilution with room air (in a dilution tunnel) and proportional sampling of the diluted exhaust stream. Dilution and cooling can be accomplished in either one or two steps. Proportional sampling can also be accomplished in either of two ways: through the use of two constant mass samplers (one for the sample and one for the entire diluted exhaust), or through the use of a variable mass sampler which maintains a constant proportion with the standard constant volume sampler. For complete details, the reader is referred to the regulations appearing at the end of today's notice.

Issues raised by the comments. Individual manufacturers did not have many comments on the proposed revisions to Subpart N. The comments made were, for the most part, coordinated by the Engine Manufacturers Association (EMA). The issues raised by the comments can be placed in four general groups.

The first group of issues includes those which were essentially accepted by EPA and incorporated into the final regulations. These included clarification of engine exhaust system specifications, elimination of the need to filter primary and secondary dilution air, clarification of the temperature specifications for gas flowing into sampling system instrumentation and sample pumps applied to the specific type of sampling being described, relaxation of the specifications for weighing balance accuracy and precision, filter handling

procedures, plus a number of minor technical changes, clarifications and typographical corrections.

The second group of issues includes those which were not accepted by EPA. These recommendations all had the potential to significantly affect the mass of particulate measured. Overall, the amount of data available was inadequate or showed conflicting results, but supported the possiblity that measured particulate mass could be affected. These recommendations included the elimination of the 86°F upper temperature limit on dilution air (primary and secondary), applying the 125°F temperature specification for single dilution systems at the primary tunnel sample zone rather than the filter face, raising the non-proportionality limit (between tunnel and sample flow) from ±5 percent to ±7 percent, adding a humidity-related correction factor for particualte measurements, adding a fuel sulfur correction for particualte measurement, and raising or eliminating the upper test cell temperature limit during natural engine cool-down of 86°F.

The third group of issues are those upon which EPA specifically requested comment in the proposed rule. These issues were the accuracy of the current NO_x humidity correction factor for diesel engines, the appropriateness of the current cycle performance statistic pertaining to the standard error for horsepower, the desirability of adding a standard calibration procedure for the throttle control system for gasoline-fueled engines, and the desirability of changing the current primary torque measurement method to an electronically-compensated case-load system.

The fourth group of comments did not relate to Subpart N *per se*, but were still related to heavy-duty engine testing. These comments requested the elimination of the current smoke standard for diesel engines, the designation of a third party to generate official test data when the measurements of EPA and manufacturers disagree, and allowance to use instrumentation which EPA had approved as being equivalent to CFR-specified instrumentation.

EPA response to the comments. A thorough summary and analysis of all comments related to the test procedures is included in an appendix to the RIA.

The first group of comments were of a relatively minor nature, and were able to be addressed quickly. Most involved matters of consistency or the correction of obvious errors. The rest could be analyzed without gathering additional data, such as the precision and accuracy required of the particulate weighing balance. In all cases but one, this consisted of accepting the recommended revisions. This one exception concerned the proposed specifications for accurately measuring and maintaining flow proportionality between the primary tunnel and the sample flow. EMA recommended a performance specification. However, EPA retained the proposed design specifications but included both clarifications on proportionality and conditioned acceptance of alternate procedures. EPA believes that resolution of the issue in this manner will satisfy the manufacturers' concerns even though it does not take the exact form recommended by the manufacturers.

The second group of comments listed above involved procedural changes which could substantially affect the mass of particulate measured. While there was a general lack of adequate data upon which to base a decision, the limited data available supported retention of the current procedures. The proposed particulate procedure has been used by EPA and industry since its publication as an EPA recommended practice in 1979. Thus, no substantive revisions should be made lightly. Also, since all particulate data referred to in this rulemaking were generated using the proposed test procedure, the technical feasibility of the standards being finalized today is not in question. EPA remains open to receiving additional data pertaining to these issues which demonstrate an absence of effect on particulate measurements, or provide for suitable correction of such effects. However, the only issue raised which appears to require further resolution is that pertaining to the inclusion of water associated with sulfate in the measured particulate mass. While this is not a substantive issue with respect to the model year 1988 standards, as outlined above, it may be with respect to the model year 1991 standards if sulfate levels in the exhaust change dramatically. Sufficient time is available to provide for the timely resolution of this issue.

The third group of issues listed above, which had been raised by EPA, were analyzed and, based on this analysis, no changes to the proposed rules were made.

As the issues contained in the fourth group vary widely in nature, the resolution of each is described separately. A comment recommending elimination of the smoke regulations was based on the belief that low particulate standard levels will also result in low smoke levels. However, the purpose of the smoke standards is to control smoke under worst-case conditions, which are quite different from the average transient cycle conditions which are the focus of the particulate standards being finalized today. High smoke and thus high particulate levels during these short worst-case conditions will not significantly affect average particulate levels, so the current level of smoke control would not be guaranteed with only the particulate standards. Thus, the smoke standards should be retained.

The issue concerning instrumentation specified in the CFR refers to the requirement that manufacturers must provide equipment "specified by the Administrator when testing is being performed at the manufacturer's facility at EPA's request." The commenter requested this be changed to equipment "approved by the Administrator," the difference being the additional allowance of equipment "approved" by EPA as being "equivalent" to that specified in the CFR. As this is clearly reasonable, this change is being made.

The comment regarding the designation of "official test data" recommended that official test data be determined by using an independent lab rather than use of EPA's data (in the event of a substantial difference between EPA and the manufacturers). The designation of EPA's data as the official data has been in effect since the implementation of emission standards in the early 1970's. As no evidence was presented demonstrating why the current approach was inadequate, no change is being made at this time.

IV. Economic Impact

The complete economic analysis of this rule is contained in the Regulatory Impact Analysis (RIA), which is available in the docket. The highlights of the analysis are summarized here. All figures are in 1984 dollars, and a 10 percent discount rate is assumed.

Light-Duty Trucks. Only the cost of the NO_x standards at low altitude are summarized here. As has already been discussed above, as well as in the proposal, EPA believes that the costs of the high-altitude standards and other regulatory provisions for light-duty trucks will be insignificant. Thus, the estimates in the following discussion refer to only the costs of the low-altitude light-duty truck NO_x standards.

The total 5-year (1988–92) cost to the manufacturers, discounted to 1988, is estimated to be $427 million. This estimate includes research and development costs, the costs of recertification testing, and all necessary hardware for 1988 through 1992 model year light-duty trucks. Since no changes

in fuel economy or other operating and maintenance costs are projected to result from these standards, the total 5-year aggregate cost to the nation for these standards is also $427 million discounted to 1988.

Manufacturers are projected to recover these costs through estimated increases in the prices of average new 1988-92 model year light-duty trucks of $27 (gasoline-fueled) and $37 (diesel).

Gasoline-fueled heavy-duty engines. The 6.0 NO_x standard being implemented in model year 1988 is estimated to result in costs to the manufacturers of $7.9 million over the 1988-90 period, discounted to 1988. This estimate includes research and development costs and recertification testing prior to 1988, as well as the cost of necessary hardware on 1988, 1989, and 1990 model year gasoline-fueled heavy-duty engines. With no fuel economy impact or changes in operating and maintenance costs projected, $7.9 million is also the estimated 3-year (1988–90) aggregate cost to the nation discounted to 1988. Manufacturers are expected to recover these costs through an estimated increase of about $7 in the purchase price of a new 1988 through 1990 model year gasoline-fueled heavy-duty engine.

The 5.0 NO_x standard being implemented in model year 1991 is estimated to result in costs to the manufacturers of $14.2 million over the 1991–93 period, discounted to 1991. As in the previous estimates, this includes research and development and recertification testing prior to 1991, as well as the cost of necessary hardware on 1991–93 model year gasoline-fueled heavy-duty engines. No fuel economy impacts or changes in operating and maintenance costs are expected to result, thus $14.2 million also represents EPA's estimate of the 3-year (1991–93) aggregate cost to the nation of this standard, discounted to 1991.

Manufacturers are projected to recover these costs through and estimated increase of about $14 in the purchase price of an average new 1991–93 model year gasoline-fueled heavy-duty engine. This estimated increase is relative to 1988–90 costs.

Heavy-duty diesel engines. Today's notice promulgates revised NO_x standards for the 1988 through 1990 model years, and for 1991 and later model years. Various particulate standards are being promulgated for the 1988 through 1990 model years, the 1991 through 1993 model years, and for 1994 and later model years. Cost estimates are presented for 1988–90 and 1991–93 for each pollutant and in total, and for 1994–96 for the third phase particulate standard. In all cases, the term "cost to the manufacturer" refers to the total costs of research and development, recertification testing, and necessary hardware for three model years' production of heavy-duty diesel engines.

1988: The cost to the manufacturers of the 6.0 NO_x standard is estimated to be $66.4 million and the cost of the 0.60 particulate standard is estimated to be $43.9 million, for a total cost to the manufacturers of $110.3 million. All of these estimates are discounted to 1988.

These costs are expected to be recovered by the manufacturer through increases of $115 in the purchase price of an average 1988–90 model year heavy-duty diesel engine. Of this estimate, $69 is attributable to the NO_x standard and $46 is attributable to the particulate standard. Fuel economy penalties in the range of 0 to 2 percent may occur in the first year (1988) as a result of the NO_x standard. These penalties are projected to decrease, and eventually be eliminated, over time.

The 3-year aggregate cost to the nation, discounted to 1988, for the model year 1988 NO_x and particulate standards is thus estimated to be $111 million to $592 million, depending on the degree of fuel economy penalty. This breaks down as $67 million to $548 million for the NO_x standard, again depending on the fuel economy penalty, and $44 million for the particulate standard.

1991: The 3-year cost to the manufacturers of the 5.0 NO_x standard is estimated to be $73 million, and the cost to the manufacturers of the trap-based 0.25 particulate standard (with 0.10 for urban buses) is estimated to be $403 million, both discounted to 1991. The total discounted cost to the manufacturers of the 1991 model year standards is thus estimated to be $476 million.

These standards are expected to result in a first price increase for an average new heavy-duty diesel engine of $404. Of this estimate, $68 is attributable to the NO_x standard and $336 is attributable to the particulate standard. The particulate-related portion of the first price increase, and therefore the total as well, will be somewhat higher initially due to the increased need for traps in the first few years; the $336 and $404 estimates thus represent estimates of the stabilized first price increase.

The estimated fuel economy penalty due to the NOx standard is between 0 and 1 percent in the first year (1991), decreasing by 1993 to the stabilized penalty estimated at 0.5 percent. The maximum 1 percent penalty translates to an estimated $348 per vehicle increase in discounted lifetime fuel costs on a fleetwide basis.

In the case of particulate, a fuel economy penalty of 1 to 1.5 percent is projected to occur for those non-bus engines equipped with traps, with only the higher estimate applicable to urban bus engines which must meet a more stringent 0.10 particulate standard in model years 1991–93. This translates to an estimated $227 to $330 per vehicle increase in discounted lifetime fuel costs on a fleetwide basis, with about 60 percent of non-bus engines and 100 percent of bus engines being equipped with traps. Traps will also result in an estimated fleetwide average increase of $62 in discounted lifetime maintenance costs. As was true in the case of estimated first price increase, these costs may be somewhat higher initially due to the increased need for traps in the first few years, and these figures thus represent estimates of the stabilized changes in operating and maintenance costs. Combining the stabilized estimates of first price increase and operating (fuel economy penalty and maintenance) cost increases yields an estimate of $625 to $728 for the stabilized total increase in cost for an average heavy-duty diesel engine on a fleetwide basis.

The three-year (1991–93) aggregate cost to the nation of the 1991 model year NO_x standard is estimated to be between $73 million and $358 million, discounted to 1991, with the range corresponding to the 0-to-1 percent range in estimated fuel economy penalty. The 3-year aggregate cost to the nation of the 1991 model year particulate standards, also discounted to 1991, is estimated to be between $746 million and $868 million, with the range resulting from the range of estimated fuel economy penalties on a fleetwide basis.

1994: The particulate standard will drop to 0.10 g/BHP-hr for all heavy-duty diesel engines in model year 1994, which will push trap usage between 60–70 percent in 1991–93 to 90 percent in 1994 and beyond. The 3-year cost to the manufacturers of this standard is estimated to be $185 million, discounted to 1994. As stated at the beginning of the discussion of heavy-duty diesel engine economic impact, this cost includes research and development and recertification testing prior to 1994 and all necessary hardware for 1994–96 model year production.

The model year 1994 particulate standard will result in an estimated first price increase of $163 for an average 1994 or later model year heavy-duty diesel engine, on a fleetwide basis. Operating and maintenance costs to the consumer, expressed in terms of the

incremental cost increases incurred by about 30 percent of the non-bus heavy-duty diesel engine fleet, here spread across the entire HDDE fleet, are estimated to be between $133 and $184. Of this estimate, $30 is attributable to trap maintenance and between $103 and $154 is attributable to fuel economy penalties of 1 to 1.5 percent. Combining these estimates yields an estimated total cost increase to the consumer, on a fleetwide basis and discounted to 1994, of $296 to $347 per vehicle.

The 3-year (1994–96) aggregate cost to the nation of the model year 1994 particulate standard, discounted to 1994, is thus estimated to be between $336 million and $394 million. The range in this estimate is, again, a result of the range of projected fuel economy penalties.

V. Statutory Authority

The NO_x standards for light-duty trucks and heavy-duty engines promulgated today are based on Section 202(a)(3)(B) of the Clean Air Act Amendments of 1977. The heavy-duty diesel particulate standards are based on Section 202(a)(3)(A) of the Act. These provisions have been discussed in detail in earlier sections of today's notice.

Authority for the averaging programs, allowable maintenance provisions, test procedure revisions, and the light-duty truck high-altitude standards is provided by the following sections of the Act: 202, 206(a)(1), 207, 208, and 301(a).

Administrative Designation and Regulatory Analysis

The Administrator has determined that this action constitutes a major regulation, and accordingly a Regulatory Impact Analysis has been prepared as rquired under Executive Order 12291. This analysis includes updated, detailed assessments of the estimated economic and environmental impacts of the regulations promulgated here, as well as more thorough analyses of the technological feasibility of the emission standards and other regulatory provisions promulgated here and the alternatives that were considered in the development of the Final Rule.

The Regulatory Impact Analysis has been placed in the public docket referenced at the beginning of today's notice. In addition, interested parties may obtain single copies through a written request to: Director, Emission Control Technology Division, Office of Mobile Sources, 2565 Plymouth Road, Ann Arbor, MI 48105, Attn: Heavy-Duty Section.

This regulation was submitted to the Office of Management and Budget (OMB) for review as required by Executive Order 12291. Any comments from OMB and any EPA response to those comments are in the public docket for this rulemaking.

Impact on Small Entities

Section 605 of the Regulatory Flexibility Act requires that the Administrator certify regulations that do not have a significant impact on a substantial number of small entities. I certify that this regulation does not have such an effect because it directly affects manufacturers of motor vehicles and motor vehicle engines, a group which does not contain a substantial number of small entities.

Information Collection Requirements

Except as noted below, information collection requirements contained in these regulations have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 U.S.C. 3501 *et seq.*, and have been assigned OMB Control Number 2060–0104.

The information collection requirement of this rule for heavy-duty diesel particulate emissions has been disapproved by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1980 U.S.C. 3501 *et seq.* EPA's response to this disapproval is summarized below, and revisions have been submitted for OMB approval. No person will be subject to any penalty for failing to maintain or provide the diesel particulate information required by this final rule until notice is published in the **Federal Register** that OMB approval has been obtained.

The first objection raised by OMB concerned their inability to evaluate the "practical utility" of the required information. The information to be collected is that data needed to enable EPA to establish the fact of compliance with the heavy-duty diesel particulate emission standards. Lacking the requested emissions test data and related information, EPA would be unable to determine whether a manufacturer's engines meet the particulate standards. Thus, the data have a very high degree of practical utility.

Beyond this, OMB asked for a better description of the information and how it is to be generated, recorded, collected, processed and used by the Agency. EPA has identified two areas where added information will be required from manufacturers under these new requirements. Both are related to similar information already approved for collection with regard to other pollutant emission standards. As such, they will increase the amount of information required from any heavy-duty diesel engine manufacturer, but not the types of information required. The two areas, as identified in the application, are the description of any particulate emissions control system hardware and test data on the emission rates achieved by engines to be certified.

The first area, description of particulate emission control hardware, provides data by which EPA can evaluate the specific control systems to be used to meet the particulate standards. This allows an assessment to be made of the general capability of the technology to control particulate emissions, the potential for unique measurement requirements (*e.g.*, the treatment of trap regeneration systems and associated emissions), potential for in-use tampering with the hardware, etc. This information will also form an essential base from which to evaluate emissions test data.

It should be noted that, as pointed out in the application, design information is already required for heavy-duty diesel engines. Thus, the only new data required would be that on hardware added solely for the control of particulate emissions. The only anticipated item to which this new requirement will apply will be the adoption of trap-oxidizer technology, expected for 1991 and later heavy-duty diesel engines.

As for test data required, again there is a close parallel with existing requirements. The new regulations simply add particulate emissions to the list of pollutants for which data must be provided. The data will be generated by testing which has been integrated into the existing gaseous emissions test procedure for HC, CO, and NO_x, and thus represents only a small incremental change. Testing is expected to be performed on both low-mileage and high-mileage engines to allow an assessment to be made by the manufacturer of: (a) The basic ability of its engines to meet the standards and (b) the in-use durability of its engines from an emissions standpoint.

Since the requirement for new data is incremental to requirements which are already in effect, the impact of the requirement is minimal. Manufacturers already possess the basic recordkeeping procedures and data processing equipment needed to handle this task, most of which is highly automated. Thus, the OMB questions relating to the recording and processing of the data really apply to existing procedures. Although there are variations, test data

gathered by manufacturers is generally handled in electronic form by automated processes. This extends to computer control of the actual measurement system in many cases, so that very little hand processing of data is involved. Computers record, collect, and process the data for submission to EPA.

In response to questions about the reliability of the actual burden estimates prepared by EPA, the Agency has carefully reviewed its basis for the estimates in light of new information received since the filing of the original application. The number of manufacturers and engine families expected to be certified has not changed, and those estimates are still accurate. Based upon its review of the annual hours per response estimates, both for reporting and recordkeeping, one area of potential change was identified. This area concerns the annual recordkeeping requirement. In its estimates for this area, EPA computed a six hour per engine family recordkeeping burden. However, EPA failed to account for the fact that certification is not required on an annual basis, but rather is required only when new standards begin or when the manufacturer introduces a new or substantially changed engine family. Since in this rule new standards occur on a three-year cycle, the average recordkeeping will approach only one-third of the original estimate. On the other hand, recognizing the existence of a degree of uncertainty in the original estimate, and in light of the *de minimus* nature of the total estimate, EPA did not revise its original estimate.

List of Subjects

40 CFR Part 86

Administrative practice and procedure, Air pollution control, Environmental protection, Gasoline, Labeling, Motor vehicles, Motor vehicle pollution, Reporting and recordkeeping requirements.

40 CFR Part 600

Administrative practice and procedure, Electric power, Energy conservation, Fuel economy, Gasoline, Labeling, Motor vehicles, Reporting and recordkeeping requirements.

Authority for the actions taken in this notice is granted EPA by sections 202, 203, 206, 207, 208 and 301 of the Amended Clean Air Act (42 U.S.C. 7521, 7522, 7525, 7541, 7542 and 7601).

Dated: March 8, 1985.

Lee M. Thomas,

Administrator.

APPENDIX: TABLE OF CHANGES MADE TO VARIOUS SUBPARTS

Section	Change	Reason
1. Part 86 Authority	None	
2. § 86.085-1(b), (e), (f)	Reinstate paragraphs (b) and (f), correct paragraph (e).	Revisions to paragraph (b) were not carried forward, and paragraph (f) was inadvertently deleted by 49 FR 48128.
3. § 86.085-23(f)	Correct paragraph (d)	To be consistent with 49 FR 48128.
	Reinstate paragraph (f)	Inadvertently omitted by 49 FR 48128.
4. § 86.087-9(a)(1)	Change "1984" to "1987"	Correction.
5. § 86.087-23(f)	Correct paragraph (d)	To be consistent with 49 FR 48128.
	Reinstate paragraph (f)	Inadvertently omitted by 49 FR 48128.
6. § 86.144-78(c)(3)	Change carbon hydrogen ratio from 1:1.35 to 1:1.85.	Correction.
7. § 86.1336-84	Change "on" to "one"	Do.
8. § 86.1341-84(f)	Add paragraph (f)(1) and redesignate paragraph (f) to (f)(2).	Clarify requirements for diesel engines.
9. § 86.1342-84(c)(3)	Add the multiplier * * to the CO_{2e} equation.	Correction.
10. § 86.1310-88(a)(1)	Add "and a heat exchanger" to PDP-CVS description.	Clarification.
11. § 86.1310-88(b)(1)(iv)	Eliminate "shall"	Do.
12. § 86.1310-88(b)(1)(iv)(A)	Add "Shall"	Do.
13. § 86.1310-88(b)(1)(iv)(B)	Exchange "may be" for "be"	To allow manufacturers flexibility to filter dilution air.
14. § 86.1310-88(b)(1)(iv)(C)	Add optional use of background particulate correction.	To allow manufacturers flexibility to correct for particulate background.
15. § 86.1310-88(b)(3)(iv)	Change ". . . no farther than 4 inches from . . ." to ". . . as close as practicable. . .".	To make consistent with Technical Amendments 49 FR 48144.
16. § 86.1310-88(b)(3)(vii)(A)	Change ". . . probe . . ." to ". . . port . . .".	Do.
17. § 86.1310-88(b)(5)(iii)	Add ". . . or analyzer voltage output . . ."	To allow manufacturers flexibility to use automatic data collection systems.
18. § 86.1310-88(b)(6)	Add proportionality criteria	Clarifies proportionality requirement.
19. § 86.1310-88(b)(6)(i)(D)	Add statement allowing equivalent systems	To clarify provisions allowing manufacturers flexibility to use systems that give equivalent results.
20. § 86.1310-88(b)(6)(ii)(E)	Add ". . . or less . . ."	Correction.
21. § 86.1310-88(b)(6)(ii)(I)	Add statement allowing equivalent systems	To clarify provisions allowing manufacturers flexibility to use systems that give equivalent results.
22. § 86.1310-88(b)(7)(ii)	Change ". . . 60 mm stain area . . ." to ". . . 60 mm stain diameter . . .".	Correction.
23. § 86.1310-88(b)(7)(iii)	Add statement prohibiting contact of primary and back-up filters.	Clarification.
24. § 86.1310-88(b)(7)(iv)	Change ". . . 70 mm loading . . ." to ". . . 70 mm filter . . .".	Do.
25. § 86.1312-88(a)(3)	Add word "unused" to describe reference filters.	Clarification.
26. § 86.1312-88(a)(3)	Change ". . . a minimum of 5.3 milligrams, if possible . . ." to ". . . a recommended minimum of 5.3 milligrams . . .".	Do.
27. § 86.1312-88(b)	Change balance requirement to precision of, 20 mg, readability of 10 mg.	Allow manufacturers flexibility in balance selection.
28. § 86.1327-88(e)	Change ". . . dilution air is prefiltered . . ." to ". . . dilution air may be prefiltered . . .".	To make consistent with § 86.1310-88(b)(7)(iv)(B).
29. § 86.1327-88(e)	Change to allow antifreeze	To make consistent with Technical Amendments 49 FR 48144.
30. § 86.1327-88(f)(2)	Reword to emphasize requirement that both chassis type and facility type exhaust systems can be used simultaneously.	Clarification.
31. § 86.1327-88(f)(2)(i)	Redefine exhaust system requirement	Do.
(f)(2)(ii)(A)	do	Do.
(f)(2)(ii)(B)	do	Do.
(f)(2)(ii)(C)	do	Do.
(f)(2)(ii)(D)	do	Do.
(f)(2)(ii)(E)	do	Do.
(f)(2)(ii)(F)	do	Do.
(f)(2)(ii)(A)	do	Do.
(f)(2)(ii)(C)	Delete	Do.
32. § 86.1337-88(a)(1)	Add cautionary note	Do.
33. § 86.1337-88(a)(6)	Add provision for using assembled filter holders.	Do.
34. § 86.1337-88(a)(12)	Add statement regarding use of assembled holders.	To make consistent with § 86.1337-88(a)(6).
35. § 86.1337-88(a)(18)	do	Do.
36. § 86.1337-88(a)(24)	do	Do.
37. § 86.1339-88(b)	Reiterate balance specification stated in § 86.1312-87(6).	Clarification.
38. § 86.1339-88(d)	Add provision expanding 1-hour limit to 8 hours if filters are in sealed filter holder.	Provides manufacturers with additional flexibility.
39. § 86.1339-88(h)	Adds optional weighing procedure	Do.
40. § 86.1343-88(b)	Adds description of calculations as applying to background filter case. Also typographical error corrected.	Clarification.

APPENDIX: TABLE OF CHANGES MADE TO VARIOUS SUBPARTS—Continued

Section	Change	Reason
41. § 86.1343-88(a)(2)(ii)(J)	Change "Average temperature of the dilute exhaust sample . . ." to "Average temperature of the secondary dilution air . . ."	Correction.
42. § 86.1343-86(b)(8)	Add statement permitting alternative calculations for alternative systems.	Clarification.
43. § 86.1344-88(e)(18)	Add ". . . or pair of filters"	To make consistent with § 86.1339-88(h).
44. § 86.1544-86(b)(4)	Change the numerator from "CO" to "CO_2".	Correction.
45. § 600.307-86(b)(2)(ii)	Change (0.2 × 0.15 mm) to (5 × 15 mm)	Do.

For the reasons set forth in the Preamble, Parts 86 and 600 of Title 40 of the Code of Federal Regulations are amended as set forth below:

Authority: Secs. 202, 203, 206, 207, 208, 301a, Clean Air Act as Amended; 42 U.S.C. 7521, 7522, 7525, 7541, 7542, 7601a.

PART 86—[AMENDED]

1. A new Subpart AA consisting of § 86.2500 is added to Part 86, to read as follows:

Subpart AA—Reporting and Recordkeeping Requirements for Part 86

§ 86.2500 Reporting and recordkeeping requirements.

All reporting and recordkeeping requirements contained in Part 86, except for those requirements contained in Subparts G and K, have been approved by the Office of Management and Budget under control number 2060-0104.

Subpart A—[Amended]

2. Section 86.085-1 is amended by revising paragraphs (b) and (e), and adding a new paragraph (f), to read as follows:

§ 86.085-1 General applicability.

* * * * *

(b) *Optional applicability.* A manufacturer may request to certify any heavy-duty vehicle 10,000 pounds GVWR or less to the light-duty truck exhaust emission standards. Heavy-duty engine or vehicle provisions do not apply to such a vehicle.

* * * * *

(e) *Small volume manufacturers.* Special certification procedures are available for any manufacturer whose projected combined U.S. sales of light-duty vehicles, light-duty trucks, and heavy-duty engines in its product line are fewer than 10,000 units for the model year in which the manufacturer seeks certification. In order to certify its product line under these optional procedures, the small-volume manufacturer must first obtain the Administrator's approval. Vehicles produced at facilities leased, operated, controlled, supervised, or in 10 percent or greater part owned by the manufacturer shall be counted in calculating the total sales of the manufacturer. The small-volume manufacturer's certification procedures are described in § 86.084-14.

(f) *Optional Procedures for Determining Exhaust Opacity.*

(1) The provisions of Subpart I apply to tests which are performed by the Administrator, and optionally, by the manufacturer.

(2) Measurement procedures, other than that described in Subpart I, may be used by the manufacturer provided the manufacturer satisfies the requirements of § 86.085-23(f).

(3) When a manufacturer chooses to use an alternative measurement procedure it has the responsibility to determine whether the results obtained by the procedure will correlate with the results which would be obtained from the measurement procedure in Subpart I. Consequently, the Administrator will not routinely approve or disapprove any alternative opacity measurement procedure or any associated correlation data which the manufacturer elects to use to satisfy the data requirements of Subpart I.

(4) If a confirmatory test(s) is performed and the results indicate there is a systematic problem suggesting that the data generated under an optional alternative measurement procedure do not adequately correlate with Subpart I data, EPA may require that all certificates of conformity not already issued by based on data from Subpart I procedures.

3. A new § 86.088-2 is added to Subpart A, to read as follows:

§ 86.088-2 Definitions.

The definitions in § 86.085-2 remain effective. The definitions in this section apply beginning with the 1988 model year.

Composite NO_x standard, for a manufacturer which elects to average light-duty trucks subject to the NO_x standard of § 86.088-9(a)(iii)(A) together with those subject to the NO_x standard of § 86.088-9(a)(iii)(B) in the light-duty truck NO_x averaging program, means that standard calculated according to the following equation and rounded to the nearest one-tenth gram per mile:

$$\frac{[(PROD_A)(STD_A)+(PROD_B)(STD_B)]}{[(PROD_A)+(PROD_B)]} = \text{Manufacturer's Composite } NO_x \text{ Standard.}$$

Where:

$PROD_A$ = The manufacturer's total light-duty truck production for those engine families subject to the standard of § 86.088-9(a)(iii)(A) and included in the average for a given model year,

STD_A = The NO_x standard of § 86.088-9(a)(iii)(A),

$PROD_B$ = The manufacturer's total light-duty truck production for those engine families subject to the standard of § 86.088-9(a)(iii)(B) and included in the average for a given model year, and

STD_B = The NO_x standard of § 86.088-9(a)(iii)(B).

Critical emission-related components are those components which are designed primarily for emission control, or whose failure may result in a significant increase in emissions accompanied by no significant impairment (or perhaps even an improvement) in performance, driveability, and/or fuel economy as determined by the Administrator.

Critical emission-related maintenance means that maintenance to be performed on critical emission-related components.

Emission-related maintenance means that maintenance which does substantially affect emissions or which is likely to affect the emissions deterioration of the vehicle or engine during normal in-use operation, even if the maintenance is performed at some time other than that which is recommended.

Family NO_x emission limit means the NO_x emission level to which an engine family is certified in the light-duty truck NO_x averging program, expressed to one-tenth of a gram per mile accuracy.

Non-emission-related maintenance means that maintenance which does not substantially affect emissions and which does not have a lasting effect on the emissions deterioration of the vehicle or engine during normal in-use operation once the maintenance is performed.

Production-weighted NO_x average means the manufacturer's production-weighted average NO_x emission level, for certification purposes, of all of its light-duty truck engine families included in the NO_x averaging program. It is calculated at the end of the model year by multiplying each family NO_x emission limit by its respective production, summing those terms, and dividing the sum by the total production of the effected families. Those vehicles produced for sale in California or at high altitude shall each be averaged separately from those produced for sale in any other area.

Production-weighted particulate average means the manufacturer's production-weighted average particulate emission level, for certification purposes, of all of its diesel engine families included in the particulate averaging program. It is calculated at the end of the model year by multiplying each family particulate emission limit by its respective production, summing those terms, and dividing the sum by the total production of the effected families. Those vehicles produced for sale in California or at high altitude shall each be averaged separately from those produced for sale in any other area.

4. A new § 86.091-2 is added, to read as follows:

§ 86.091-2 Definitions.

The definitions of § 86.088-2 remain effective. The definitions listed in this section apply beginning with the 1991 model year.

Production-weighted NO_x average, for heavy-duty engines, means the average of the manufacturer's family NO_x emission limits within the subclass (gasoline-fueled; or, light, medium, or heavy diesel) being averaged, weighted to account for differences in production volume and rated BHP. It is calculated at the end of the model year for determining compliance with the standard by summing, for all engine families in the subclass being averaged, the products (per engine family) of production volume, BHP rating, and the family NO_x emission limit, and dividing by the sum, for these engine families, of the products (per engine family) of production volume and BHP rating. Expressed mathematically, the calculation is as follows:

$$\text{Production-weighted NOx Average} = \frac{\sum_{i=1}^{n} \left[(PROD_i \times BHP_i \times FEL_i) \right]}{\sum_{i=1}^{n} \left[(PROD_i \times BHP_i) \right]}$$

Where:

n = the number of engine families included in the subclass (gasoline-fueled; or, light, medium, or heavy diesel) being averaged.

PROD = the manufacturer's production of a given engine family during the model year.

BHP = the production-weighted horsepower rating for that engine family, in brake horsepower.

FEL = the family NO_x emission limit for that engine family, in grams per brake horsepower-hour.

Those engines produced for sale in California or in 49-state areas shall each be averaged separately. Gasoline-fueled engines shall be averaged separately from diesel engines. Engines for use in urban buses may be averaged with other engines of the same subclass.

Production-weighted particulate average, for heavy-duty diesel engines, means the average of the manufacturer's family particulate emission limits within the subclass (light, medium, or heavy) being averaged, weighted to account for differences in production volume and rated BHP. It is calculated at the end of the model year for determining compliance with the standard by summing, for all engine families in the subclass being averaged, the products (per engine family) of production volume, BHP rating, and family particulate emission limit, and dividing by the sum, for these engine families, of the products (per engine family) of production volume and BHP rating. Expressed mathematically, the calculation is as follows:

$$\text{Production-weighted particulate average} = \frac{\sum_{i=1}^{n} \left[(PROD_i \times BHP_i \times FEL_i) \right]}{\sum_{i=1}^{n} \left[(PROD_i \times BHP_i) \right]}$$

Where:

n = the number of engine families included in the subclass (light, medium, or heavy) being averaged.

PROD = the manufacturer's production of a given engine family during the model year.

BHP = the production-weighted horsepower rating for that engine family, in brake horsepower.

FEL = the family particulate emission limit for that engine family, in grams per brake horsepower-hour.

Those engines produced for sale in California or in 49-state areas shall each be averaged separately. Engines for use in urban buses shall be excluded from participation in the particulate averaging program.

Urban bus means a heavy-duty diesel-powered passenger-carrying vehicle with a load capacity of fifteen or more passengers and intended primarily for intra-city operation, *i.e.*, within the confines of a city or greater metropolitan area. Urban bus operation is characterized by short rides and frequent stops. To facilitate this type of operation, more than one set of quick-opening entrance and exist doors would normally be installed. Since fares are usually paid in cash or tokens rather than purchased in advance in the form of tickets, urban buses would normally have equipment installed for collection of fares. Urban buses are also typically characterized by the absence of equipment and facilities for long distance travel, *e.g.*, rest rooms, large luggage compartments, and facilities for stowing carry-on luggage.

5. Section 86.087–9 is amended by revising the introductory text of paragraph (a)(1), to read as follows:

§ 86.087–9 Emission standards for 1987 and later model year light-duty trucks.

(a)(1) The standards set forth in paragraphs (a) through (c) of this section shall apply to light-duty trucks sold for principal use at other than a designated high-altitude location. Exhaust emissions from 1987 and later model year light-duty trucks shall not exceed:

* * * * *

6. A new §86.088–9 is added, to read as follows:

§ 86.088–9 Emission standards for 1988 and later model year light-duty trucks.

(a)(1) The standards set forth in paragraphs (a) through (c) of this section shall apply to light-duty trucks sold for principal use at other than a designated high-altitude location. Exhaust emissions from 1988 and later model year light-duty trucks shall not exceed:

(i) *Hydrocarbons.* 0.8 gram per vehicle mile (0.5 gram per vehicle kilometer).

(ii)(A) *Carbon monoxide.* 10 grams per vehicle mile (6.2 grams per vehicle kilometer).

(B) 0.50 percent of exhaust gas flow at curb idle (gasoline-fueled light-duty trucks only).

(iii) *Oxides of nitrogen.* (A) For light-duty trucks up to and including 3,750 lbs loaded vehicle weight, 1.2 grams per vehicle mile (0.75 grams per vehicle kilometer).

(B) For light-duty trucks 3,751 lbs and greater loaded vehicle weight, 1.7 grams per vehicle mile (1.1 grams per vehicle kilometer).

(C) A manufacturer may elect to include all or some of its light-duty truck engine families in the NO_x averaging program, provided that trucks produced for sale in California or in designated high-altitude areas may be averaged only within each of those areas. Diesel and gasoline-fueled engine families may not be averaged together. If the manufacturer elects to average together NO_x emissions of light-duty trucks subject to the standards of paragraphs (a)(1)(iii)(A) and (a)(1)(iii)(B) of this section, its composite NO_x standard applies to the combined fleets of light-duty trucks up to and including, and over, 3,750 lbs loaded vehicle weight included in the average and is calculated as defined in §86.088–2.

(iv) *Particulate emissions* (diesel light-duty trucks only). 0.26 gram per vehicle mile (0.16 gram per vehicle kilometer). A manufacturer may elect to include all or some of its diesel light-duty truck engine families in the particulate averaging program, provided that trucks produced for sale in California or in designated high-altitude areas may be averaged only within each of those areas. If the manufacturer elects to average both diesel light-duty vehicles and diesel light-duty trucks together in the particulate averaging program, its composite particulate standard applies to the combined set of diesel light-duty vehicles and diesel light-duty trucks included in the average and is calculated as defined in § 86.085–2.

(2) The standards set forth in paragraph (a)(1)(i), (a)(1)(ii)(A), (a)(1)(iii), and (a)(1)(iv) of this section refer to the exhaust emitted over a driving schedule as set forth in Subpart B of this part and measured and calculated in accordance with those procedures. The standard set forth in paragraph (a)(1)(ii)(B) of this section refers to the exhaust emitted at curb idle and measured and calculated in accordance with the procedures set forth in Subpart P of this part.

(b)(1) Fuel evaporative emissions from 1988 and later model year gasoline-fueled light-duty trucks shall not exceed:

(i) *Hydrocarbons.* 2.0 grams per test.

(2) The standard set forth in paragraph (b)(1) of this section refers to a composite sample of the fuel evaporative emissions collected under the conditions set forth in Subpart B of this part and measured in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any 1988 and later model year light-duty truck.

(d)(1) Model year 1988 and later light-duty trucks sold for principal use at a designated high-altitude location shall be capable of meeting the following exhaust emission standards when tested under high-altitude conditions:

(i) *Hydrocarbons.* 1.0 grams per vehicle mile (0.62 grams per vehicle kilometer);

(ii) *Carbon Monoxide.* (A) 14 grams per vehicle mile (8.7 grams per vehicle kilometer).

(B) 0.50 percent of exhaust gas flow at curb idle (gasoline-fueled light-duty trucks only).

(iii) *Oxides of Nitrogen.* (A) For light-duty trucks up to and including 3,750 lbs loaded vehicle weight, 1.2 grams per vehicle mile (0.75 grams per vehicle kilometer).

(B) For light-duty trucks 3,751 lbs and greater loaded vehicle weight, 1.7 grams per vehicle mile (1.1 grams per vehicle kilometer).

(iv) *Particulate emissions* (diesel light-duty trucks only). 0.26 gram per vehicle mile (0.16 gram per vehicle kilometer).

(2) The standards set forth in paragraph (d)(1)(i), (d)(1)(ii)(A), (d)(1)(iii), and (d)(1)(iv) of this section refer to the exhaust emitted over a driving schedule as set forth in Subpart B of this part and measured and calculated in accordance with those procedures. The standard set forth in paragraph (d)(1)(ii)(B) of this section refers to the exhaust emitted at curb idle and measured and calculated in accordance with the procedures set forth in Subpart P of this part.

(e)(1) Fuel evaporative emissions from 1988 and later model year gasoline-fueled light-duty trucks sold for principal use at a designated high-altitude location shall not exceed 2.6 grams per test when tested under high-altitude conditions.

(2) The standard set forth in paragraph (e)(1) of this section refers to a composite sample of the fuel evaporative emissions collected under the conditions set forth in Subpart B of this part and measured in accordance with those procedures.

(f) No crankcase emissions shall be discharged into the ambient atmosphere from any 1988 and later model year light-duty trucks sold for principal use at a designated high-altitude location.

(g)(1) Any light-duty truck that a manufacturer wishes to certify for sale at low altitude must be capable of meeting high-altitude emission standards (specified in paragraphs (d) through (f) of this section). The manufacturer may specify vehicle adjustments or modifications to allow the vehicle to meet high-altitude standards but these adjustments or modifications may not alter the vehicle's basic engine, inertia weight class, transmission configuration, and axle ratio.

(i) A manufacturer may certify unique configurations to meet the high-altitude standards but is not required to certify these vehicle configurations to meet the low-altitude standards.

(ii) Any adjustments or modifications that are recommended to be performed on vehicles to satisfy the requirements of paragraph (g)(1) of this section:

(A) Shall be capable of being effectively performed by commercial repair facilities, and

(B) Must be included in the manufacturer's application for certification.

(2) The manufacturer may exempt 1985 and later model year vehicles from compliance with the high-altitude emission standards set forth in paragraphs (d) and (e) of this section if the vehicles are not intended for sale at high altitude and if the following requirements are met. A vehicle configuration shall only be considered eligible for exemption if the requirements of either paragraph (g)(2)(i), (ii), (iii), or (iv) of this section are met.

(i) Its design parameters (displacement-to-weight ratio (D/W) and engine speed-to-vehicle-speed ratio (N/V)) fall within the exempted range for that manufacturer for that year. The exempted range is determined according to the following procedure:

(A) The manufacturer shall graphically display the D/W and N/V data of all vehicle configurations it will offer for the model year in question. The axis of the abscissa shall be D/W (where (D) is the engine displacement expressed in cubic centimeters and (W) is the gross vehicle weight (GVW) expressed in pounds), and the axis of the ordinate shall be N/V (where (N) is the crankshaft speed expressed in revolutions per minute and (V) is the vehicle speed expressed in miles per hour). At the manufacturer's option, either the 1:1 transmission gear ratio or the lowest numerical gear ratio available in the transmission will be used to determine N-V. The gear selection must be the same for all N/V data points on the manufacturer's graph. For each transmission/axle ratio combination, only the lowest N/V value shall be used in the graphical display.

(B) The product line is then defined by the equation, $N/V = C(D/W)^{-0.9}$, where the constant, C, is determined by the requirement that all the vehicle data points either fall on the line or lie to the upper right of the line as displayed on the graphs.

(C) The exemption line is then defined by the equation, $N/V = C(0.84\ D/W)^{-0.9}$, where the constant, C is the same as that found in paragraph (g)(2)(i)(B) of this section.

(D) The exempted range includes all values of N/V and D/W which simultaneously fall to the lower left of the exemption line as drawn on the graph.

(ii) Its design parameters fall within the alternate exempted range for that manufacturer that year. The alternate exempted range is determined by substituting rated horsepower (hp) for displacement (D) in the exemption procedure described in paragraph (g)(2)(i) of this section and by using the product line $N/V = C(hp/W)^{-0.9}$.

(A) Rated horsepower shall be determined by using the Society of Automotive Engineers Test Procedure J 1349, or any subsequent version of that test procedure. Any of the horsepower determinants within that test procedure may be used, as long as it is used consistently throughout the manufacturer's product line in any model year.

(B) No exemptions will be allowed under paragraph (g)(2)(ii) of this section to any manufacturer that has exempted vehicle configurations as set forth in paragraph (g)(2)(i) of this section.

(iii) Its acceleration time (the time it takes a vehicle to accelerate from 0 to a speed not less than 40 miles per hour and not greater than 50 miles per hour) under high-altitude conditions is greater than the largest acceleration time under low-altitude conditions for that manufacturer for that year. The procedure to be followed in making this determination is:

(A) The manufacturer shall list the vehicle configuration and acceleration time under low-altitude conditions of that vehicle configuration which has the highest acceleration time under low-altitude conditions of all the vehicle configurations it will offer for the model year in question. The manufacturer shall also submit a description of the methodology used to make this determination.

(B) The manufacturer shall then list the vehicle configurations and acceleration times under high-altitude conditions of all those vehicle configurations which have higher acceleration times under high-altitude conditions than the highest acceleration time at low altitude identified in paragraph (g)(2)(iii)(A) of this section.

(iv) In lieu of performing the test procedure of paragraph (g)(2)(iii) of this section, its acceleration time can be estimated based on the manufacturer's engineering evaluation, in accordance with good engineering practice, to meet the exemption criteria of paragraph (g)(2)(iii) of this section.

(3) The sale of a vehicle for principal use at a designated high-altitude location that has been exempted as set forth in paragraph (g)(2) of this section will be considered a violation of Section 203(a)(1) of the Clean Air Act.

7. A new § 86.088-10 is added, to read as follows:

§ 86.088-10 Emission standards for 1988 and later model year gasoline-fueled heavy-duty engines and vehicles.

(a)(1) Exhaust emissions from new 1988 and later model year gasoline-fueled heavy-duty engines shall not exceed:

(i) For engines intended for use in all vehicles except as provided in paragraph (a)(3) of this paragraph,

(A) *Hydrocarbons.* 1.1 grams per brake horsepower-hour, as measured under transient operating conditions.

(B) *Carbon monoxide.* (*1*) 14.4 grams per brake horsepower-hour, as measured under transient operating conditions.

(*2*) *Gasoline-fueled heavy-duty engines utilizing aftertreatment technology.* 0.50 percent of exhause gas flow at curb idle.

(C) *Oxides of nitrogen.* 6.0 grams per brake horsepower-hour, as measured under transient operating conditions.

(ii) For engines intended for use only in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds.

(A) *Hydrocarbons.* 1.9 grams per brake horsepower-hour, as measured under transient operating conditions.

(B) *Carbon Monoxide.* (*1*) 37.1 grams per brake horsepower-hour as measured under transient operating conditions.

(*2*) *Gasoline-fueled heavy-duty engines utilizing aftertreatment technology.* 0.50 percent of exhaust gas flow at curb idle.

(C) *Oxides of nitrogen.* 6.0 grams per brake horsepower-hour, as measured under transient operating conditions.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(1) of Appendix I to this part, and measured and calculated in accordance with the procedures set forth in Subparts N or P.

(3)(i) A manufacturer may certify one or more gasoline-fueled heavy-duty engine configurations intended for use in all vehicles to the emission standards set forth in paragraph (a)(1)(ii) of this paragraph: *Provided,* that the total model year sales of such configuration(s) being certified to the emission standards in paragraph (a)(1)(ii) of this section represent no more than 5 percent of total model year sales of all gasoline-fueled heavy-duty engines intended for use in vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds by the manufacturer.

(ii) The configurations certified to the emission standards of paragraph (a)(1)(ii) of this section under the provisions of paragraph (a)(3)(i) of this section shall still be required to meet the evaporative emission standards set forth in paragraphs (b)(1)(i)(A) and (b)(2)(i) of this section.

(b)(1) Evaporative emissions from 1988 and later model year gasoline-fueled heavy-duty vehicles shall not exceed:

(i) *Hydrocarbons.* (A) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds, 3.0 grams per test.

(B) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds, 4.0 grams per test.

(2)(i) For vehicles with a Gross Vehicle Weight Rating of up to 26,000 pounds, the standards set forth in paragraph (b)(1) of this section refer to a composite sample of fuel evaporative emissions collected under the conditions set forth in Subpart M and measured in accordance with those procedures.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 26,000 pounds, the standard set forth in paragraph (b)(1)(i)(B) of this section refers to the manufacturer's engineering design evaluation using good engineering practice (a statement of which is required in § 86.088–23(b)(4)(ii)).

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1988 or later model year gasoline-fueled heavy-duty engine.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in Subparts N or P of this part to ascertain that such test engines meet the requirements of paragraphs (a) and (c) of this section.

8. A new § 86.091–10 is added, to read as follows:

§ 86.091–10 Emission standards for 1991 and later model year gasoline-fueled heavy-duty engines and vehicles.

(a)(1) Exhaust emissions from new 1991 and later model year gasoline-fueled heavy-duty engines shall not exceed:

(i) For engines intended for use in all vehicles except as provided in paragraph (a)(3) of this paragraph.

(A) *Hydrocarbons.* 1.1 grams per brake horsepower-hour, as measured under transient operating conditions.

(B) *Carbon monoxide.* (*1*) 14.4 grams per brake horsepower-hour, as measured under transient operating conditions.

(*2*) *Gasoline-fueled heavy-duty engines utilizing aftertreatment technology.* 0.50 percent of exhaust gas flow at curb idle.

(C) *Oxides of nitrogen.* (*1*) 5.0 grams per brake horsepower-hour, as measured under transient operating conditions.

(*2*) A manufacturer may elect to include some or all of its gasoline-fueled heavy-duty engine families in the heavy-duty engine NO_x averaging program, provided that engines produced for sale in California or in 49-state areas may be averaged only within each of those areas. Averaging is limited to within engine types (gasoline-fueled or diesel). If the manufacturer elects to participate in the NO_x averaging program, individual family NO_x emission limits may not exceed 6.0 grams per brake horsepower-hour.

(ii) For engines intended for use only in vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds.

(A) *Hydrocarbons.* 1.9 grams per brake horsepower-hour, as measured under transient operating conditions.

(B) *Carbon Monoxide.* (*1*) 37.1 grams per brake horsepower-hour as measured under transient operating conditions.

(*2*) *Gasoline-fueled heavy-duty engines utilizing aftertreatment technology.* 0.50 percent of exhaust gas flow at curb idle.

(C) *Oxides of nitrogen.* (*1*) 5.0 grams per brake horsepower-hour, as measured under transient operating conditions.

(*2*) A manufacturer may elect to include some or all of its gasoline-fueled heavy-duty engine families in the heavy-duty engine NO_x averaging program, provided that engines produced for sale in California or in 49-state areas may be averaged only within each of those areas. Averaging is limited to within engine types (gasoline-fueled or diesel). If the manufacturer elects to participate in the NO_x averaging program, individual family NO_x emission limits may not exceed 6.0 grams per brake horsepower-hour.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(1) of Appendix I to this part, and measured and calculated in accordance with the procedures set forth in Subpart N or P.

(3)(i) A manufacturer may certify one or more gasoline-fueled heavy-duty engine configurations intended for use in all vehicles to the emission standards set forth in paragraph (a)(1)(ii) of this paragraph: *Provided,* that the total model year sales of such configuration(s) being certified to the emission standards in paragraph (a)(1)(ii) of this section represent no more than 5 percent of total model year sales of all gasoline-fueled heavy-duty engines intended for use in vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds by the manufacturer.

(ii) The configurations certified to the emission standards of paragraph (a)(1)(ii) of this section under the provisions of paragraph (a)(3)(i) of this section shall still be required to meet the evaporative emission standards set forth in paragraphs (b)(1)(i)(A) and (b)(2)(i) of this section.

(b)(1) Evaporative emissions from 1991 and later model year gasoline-fueled heavy-duty vehicles shall not exceed:

(i) *Hydrocarbons.* (A) For vehicles with a Gross Vehicle Weight Rating of up to 14,000 pounds, 3.0 grams per test.

(B) For vehicles with a Gross Vehicle Weight Rating of greater than 14,000 pounds, 4.0 grams per test.

(2)(i) For vehicles with a Gross Vehicle Weight Rating of up to 26,000 pounds, the standards set forth in paragraph (b)(1) of this section refer to a composite sample of fuel evaporative emissions collected under the conditions set forth in Subpart M and measured in accordance with those procedures.

(ii) For vehicles with a Gross Vehicle Weight Rating of greater than 26,000 pounds, the standard set forth in paragraph (b)(1)(i)(B) of this section refers to the manufacturer's engineering design evaluation using good engineering practice (a statement of which is required in § 86.088–23(b)(4)(ii)).

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1991 or later model year gasoline-fueled heavy-duty engine.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in Subpart N or P of this part to ascertain that such test engines meet the requirements of paragraphs (a) and (c) of this section.

9. A new § 86.088–11 is added, to read as follows:

§ 86.088–11 Emission standards for 1988 and later model year diesel heavy-duty engines.

(a)(1) Exhaust emissions from new 1988 and later model year diesel heavy-duty engines shall not exceed the following:

(i) *Hydrocarbons.* 1.3 grams per brake horsepower-hour, as measured under transient operating conditions.

(ii) *Carbon monoxide.* 15.5 grams per brake horsepower-hour, as measured under transient operating conditions.

(iii) *Oxides of nitrogen.* 6.0 grams per brake horsepower-hour, as measured under transient operating conditions.

(iv) *Particulate emissions.* 0.60 gram per brake horsepower-hour, as measured under transient operating conditions.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over the operating schedule set forth in paragraph (f)(2) of Appendix I to this part, and measured and calculated in accordance with the procedures set forth in Subpart N of this part, except as noted in § 86.088–23(c)(2)(i) and (ii).

(b)(1) The opacity of spoke emission from new 1988 and later model year diesel heavy-duty engines shall not exceed:

(i) 20 percent during the engine acceleration mode.

(ii) 15 percent during the engine lugging mode.

(iii) 50 percent during the peaks in either mode.

(2) The standards set forth in paragraph (b)(1) of this section refer to exhaust smoke emissions generated under the conditions set forth in Subpart I of this part and measured and calculated in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the atmosphere from any new 1988 model year naturally aspirated diesel heavy-duty engine. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in Subpart I or N of this part to ascertain that such test engines meet the requirements of (a), (b), and (c) of this section.

10. A new § 86.091–11 is added, to read as follows:

§ 86.091–11 Emission standards for 1991 and later model year diesel heavy-duty engines.

(a)(1) Exhaust emissions from new 1991 and later model year diesel heavy-duty engines shall not exceed the following:

(i) *Hydrocarbons.* 1.3 grams per brake horsepower-hour, as measured under transient operating conditions.

(ii) *Carbon monoxide.* 15.5 grams per brake horsepower-hour, as measured under transient operating conditions.

(iii) *Oxides of nitrogen.* (A) 5.0 grams per brake horsepower-hour, as measured under transient operating conditions.

(B) A manufacturer may elect to include some or all of its diesel heavy-duty engine families in the heavy-duty engine NO_x averaging program, provided that engines produced for sale in California or in 49-state areas may be averaged only within each of those areas. Averaging is limited to within engine types (gasoline-fueled or diesel). Averaging is limited to engines within a given primary service class as defined in § 86.085–2. Averaging across primary service classes is not permitted. If the manufacturer elects to participate in the NO_x averaging program, individual family NO_x emission limits may not exceed 6.0 grams per brake horsepower-hour.

(iv) *Particulate emissions.* (A) For engines to be used in urban buses, 0.10 gram per brake horsepower-hour, as measured under transient operating conditions.

(B) For all other engines, 0.25 gram per brake horsepower-hour, as measured under transient operating conditions.

(C) A manufacturer may elect to include all or some of its heavy-duty diesel engine families, exclusive of engines to be used in urban buses, in the heavy-duty particulate averaging program, provided that engines produced for sale in California or in 49-state areas may be averaged only within each of those areas. Engines for use in urban buses may not be included in the heavy-duty particulate averaging program. Averaging is limited to engines within a given primary service class as defined in § 86.085–2. Averaging across primary service classes is not permitted. If the manufacturer elects to participate in the averaging program, individual family particulate limits may not exceed 0.60 gram per brake horsepower-hour.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over operating schedules as set forth in paragraph (f)(2) of Appendix I of this part, and measured and calculated in accordance with the procedures set forth in Subpart N of this part, except as noted in § 86.091–23(c)(2)(i) and (iii).

(b)(1) The opacity of smoke emission from new 1991 and later model year diesel heavy-duty engines shall not exceed:

(i) 20 percent during the engine acceleration mode.

(ii) 15 percent during the engine lugging mode.

(iii) 50 percent during the peaks in either mode.

(2) The standards set forth in paragraph (b)(1) of this section refer to exhaust smoke emissions generated under the conditions set forth in Subpart I of this part and measured and calculated in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1991 model year naturally-aspirated diesel heavy-duty engine. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in Subpart I or N of this part to ascertain that such test engines meet the requirements of paragraphs (a), (b), and (c) and (d) of this section.

11. A new § 86.094–11 is added, to read as follows:

§ 86.094–11 Emission standards for 1994 and later model year diesel heavy-duty engines.

(a)(1) Exhaust emissions from new 1994 and later model year diesel heavy-duty engines shall not exceed the following:

(i) *Hydrocarbons.* 1.3 grams per brake horsepower-hour, as measured under transient operating conditions.

(ii) *Carbon monoxide.* 15.5 grams per brake horsepower-hour, as measured under transient operating conditions.

(iii) *Oxides of nitrogen.* [Reserved]

(iv) *Particulate emissions.* (A) 0.10 gram per brake horsepower-hour, as measured under transient operating conditions.

(B) A manufacturer may elect to include all or some of its heavy-duty diesel engine families, exclusive of engines to be used in urban buses, in the heavy-duty particulate averaging program, provided that engines produced for sale in California or in 49-state areas may be averaged only within each of those areas. Engines for use in urban buses may not be included in the heavy-duty particulate averaging program. Averaging is limited to engines within a given primary service class as defined in § 86.085–2. Averaging across primary service classes is not permitted. If the manufacturer elects to participate in the averaging program, individual family particulate limits may not exceed 0.60 gram per brake horsepower-hour.

(2) The standards set forth in paragraph (a)(1) of this section refer to the exhaust emitted over operating schedules as set forth in paragraph (f)(2) of Appendix I of this part, and measured and calculated in accordance with the procedures set forth in Subpart N of this part, except as noted in § 86.091–23(c)(2)(i) and (iii).

(b)(1) The opacity of smoke emission from new 1994 and later model year diesel heavy-duty engines shall not exceed:

(i) 20 percent during the engine acceleration mode.

(ii) 15 percent during the engine lugging mode.

(iii) 50 percent during the peaks in either mode.

(2) The standards set forth in paragraph (b)(1) of this section refer to exhaust smoke emissions generated under the conditions set forth in Subpart I of this part and measured and calculated in accordance with those procedures.

(c) No crankcase emissions shall be discharged into the ambient atmosphere from any new 1994 model year naturally-aspirated diesel heavy-duty engine. This provision does not apply to engines using turbochargers, pumps, blowers, or superchargers for air induction.

(d) Every manufacturer of new motor vehicle engines subject to the standards prescribed in this section shall, prior to taking any of the actions specified in section 203(a)(1) of the Act, test or cause to be tested motor vehicle engines in accordance with applicable procedures in Subpart I or N of this part to ascertain that such test engines meet the requirements of paragraphs (a), (b), and (c) and (d) of this section.

12. A new § 86.088–21 is added, to read as follows:

§ 86.088–21 Application for certification.

(a) A separate application for a certificate of conformity shall be made for each set of standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) and each class of new motor vehicles or new motor vehicle engines. Such application shall be made to the Administrator by the manufacturer and shall be updated and corrected by amendment.

(b) The application shall be in writing, signed by an authorized representative of the manufacturer, and shall include the following:

(1)(i) Identification and description of the vehicles (or engines) covered by the application and a description of their engine (vehicles only), emission control system and fuel system components. This shall include a detailed description of each auxiliary emission control device (AECD) to be installed in or on any certification test vehicle (or certification test engine).

(ii)(A) The manufacturer shall provide to the administrator in the application for certification:

(*1*) A list of those parameters which are physically capable of being adjusted (including those adjustable parameters for which access is difficult) and that, if adjusted to settings other than the manufacturer's recommended setting, may affect emissions;

(*2*) A specification of the manufacturer's intended physically adjustable range of each such parameter, and the production tolerances of the limits or stops used to establish the physically adjustable range;

(*3*) A description of the limits or stops used to establish the manufacturer's intended physically adjustable range of each adjustable parameter, or any other means used to inhibit adjustment;

(*4*) The nominal or recommended setting, and the associated production tolerances, for each such parameter.

(B) The manufacturer may provide, in the application for certification, information relating to why certain parameters are not expected to be adjusted in actual use and to why the physical limits or stops used to establish the physically adjustable range of each parameter, or any other means used to inhibit adjustment, are expected to be effective in preventing adjustment of parameters on in-use vehicles to settings outside the manufacturer's intended physically adjustable ranges. This may include results of any tests to determine the difficulty of gaining access to an adjustment or exceeding a limit as intended or recommended by the manufacturer.

(C) The Administrator may require to be provided detailed drawings and descriptions of the various emission-related components, and/or hardware samples of such components, for the purpose of making his determination of which vehicle or engine parameter will be subject to adjustment for new certification and Selective Enforcement Audit testing and of the physically adjustable range for each such vehicle or engine parameter.

(2) Projected U.S. sales data sufficient to enable the Administrator to select a test fleet representative of the vehicles (or engines) for which certification is requested. The sales data shall also include the altitude of intended sale for light-duty trucks.

(3) A description of the test equipment and fuel proposed to be used.

(4)(i) For light-duty vehicles and light-duty trucks, a description of the test procedures to be used to establish the evaporative emission deterioration factors required to be determined and supplied in § 86.088–23(b)(2).

(ii) For gasoline-fueled heavy-duty vehicles, the Administrator does not assume that each evaporative emission family-evaporative emission control system combination will deteriorate in a unique manner during the useful life of the vehicle. The manufacturer shall therefore identify those evaporative emission deterioration factors which shall be applied to the various evaporative emission family-

evaporative emission control system combinations which are expected to exhibit similar deterioration characteristics during the useful life of the vehicle.

(iii)(A) a description of the test procedures to be used to establish the durability data or the exhaust emission deterioration factors required to be determined and supplied in § 86.088-23(b)(1).

(B)(*1*) For engine families provided an alternative useful-life period under paragraph (f) of this section, a statement of that alternative period and a brief synopsis of the justification.

(*2*) For heavy-duty diesel engine families, a statement of the primary intended service class (light, medium, or heavy) and an explanation as to why that service class was selected. Each diesel engine family shall be certified under one primary intended service class only. After reviewing the guidance in § 86.085-2, the class shall be determined on the basis of which class best represents the majority of the sales of their engine family.

(C)(*1*) A statement of recommended maintenance and procedures necessary to assure that the vehicles (or engines) covered by a certificate of conformity in operation conform to the regulations, and a description of the program for training of personnel for such maintenance, and the equipment required.

(*2*) A description of vehicle adjustments or modifications necessary, if any, to assure that light-duty vehicles and light-duty trucks covered by a certificate of conformity conform to the regulations while being operated at any altitude locations, and a statement of the altitude at which the adjustments or modifications apply.

(D) At the option of the manufacturer, the proposed composition of the emission-data test fleet or (where applicable) the durability-data test fleet.

(5)(i)(A) If the manufacturer elects to participate in the particulate averaging program for diesel light-duty vehicles and/or diesel light-duty trucks, the application must list the family particulate emission limit and the projected U.S. production volume of the family for the model year.

(B) The manufacturer shall choose the level of the family particulate emission limits, accurate to one-hundredth of a gram per mile.

(C) The manufacturer may at any time during production elect to change the level of any family diesel particulate emission limit(s) by submitting the new limit(s) to the Administrator and by demonstrating compliance with the limit(s) as described in § 86.085-2 and § 86.088-28(b)(5)(i).

(ii)(A) If the manufacturer elects to participate in the NO_x averaging program for light-duty trucks, the application must list the family NO_x emission limit and the projected U.S. production volume of the family for the model year.

(B) The manufacturer shall choose the level of the family NO_x emission limits, accurate to one-tenth of a gram per mile.

(C) The manufacturer may at any time during production elect to change the level of any family NO_x emission limit(s) by submitting the new limits to the Administrator and by demonstrating compliance with the limit(s) as described in § 86.088-2 and § 86.088-28(b)(5)(ii).

(6)(i) For gasoline-fueled heavy-duty engines, the application must state whether the engine family is being certified for use in all vehicles regardless of their Gross Vehicle Weight Rating (see § 86.088-10 (a)(1)(i) and (a)(3)(i)), or, only for use in vehicles with a Gross Vehicle Weight Rating greater than 14,000 pounds.

(ii) If the engine family is being certified for use in all vehicles and, is being certified to the emission standards applicable to gasoline-fueled heavy-duty engines for use only in vehicles with a Gross Vehicle Weight Rating over 14,000 pounds under the provisions of paragraph (a)(3) of § 86.088-10, then the application must also attest that the engine family, together with all other engine families being certified under the provisions of paragraph (a)(3) of § 86.088-10, represent no more than 5 percent of model year sales of the manufacturer of all gasoline-fueled heavy-duty engines for use in vehicles with Gross Vehicle Weight Ratings of up to 14,000 pounds.

(iii)(A) A description of the test procedures to be used to establish the durability data or the exhaust emission deterioration factors required to be determined and supplied in § 86.088-23(b)(1).

(B)(*1*) A statement of the useful life of use of each light-duty truck engine family and heavy-duty engine family.

(*2*) For engine families provided an alternative useful life period under paragraph (f) of this section, a statement of that alternative period and a brief synopsis of the justification.

(*3*) For heavy-duty diesel engine families, a statement of the primary intended service class (light, medium, or heavy) and an explanation as to why that service class was selected. Each diesel engine family shall be certified under one primary intended service class only. After reviewing the guidance in § 86.085-2, the class shall be determined on the basis of which class best represents the majority of the sales of that engine family.

(c) Complete copies of the application and of any amendments thereto, and all notifications under § 86.079-32, § 86.079-33, and § 86.082-34 shall be submitted in such multiple copies as the Administrator may require.

(d) Incomplete light-duty trucks shall have a maximum completed curb weight and maximum completed frontal area specified by the manufacturer.

(e) For gasoline-fueled heavy-duty vehicles the manufacturer shall specify a maximum nominal fuel tank capacity for each evaporative emission family-evaporative emission control system combination.

(f) Light-duty truck and heavy-duty engine manufacturers who believe that the useful life periods of § 86.085-2 are significantly unrepresentative for one or more engine families (either too long or too short), may petition the Administrator to provide an alternative useful-life period. This petition must include the full rationale behind the request together with any supporting data and other evidence. Based on this or other information the Administrator may assign an alternative useful-life period. Any petition should be submitted in a timely manner, to allow adequate time for a thorough evaluation.

13. A new § 86.091-21 is added, to read as follows:

§ 86.091-21 Application for certification.

(a) A separate application for a certificate of conformity shall be made for each set of standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) and each class of new motor vehicles or new motor vehicle engines. Such application shall be made to the Administrator by the manufacturer and shall be updated and corrected by amendment.

(b) The application shall be in writing, signed by an authorized representative of the manufacturer, and shall include the following:

(1)(i) Identification and description of the vehicles (or engines) covered by the application and a description of their engine (vehicles only), emission control system and fuel system components. This shall include a detailed description of each auxiliary emission control device (AECD) to be installed in or on any certification test vehicle (or certification test engine).

(ii)(A) The manufacturer shall provide to the Administrator in the preliminary application for certification:

(*1*) A list of those parameters which are physically capable of being adjusted (including those adjustable parameters for which access is difficult) and that, if adjusted to settings other than the manufacturer's recommended setting, may affect emissions;

(*2*) A specification of the manufacturer's intended physically adjustable range of each such parameter, and the production tolerances of the limits or stops used to establish the physically adjustable range;

(*3*) A description of the limits or stops used to establish the manufacturer's intended physically adjustable range of each adjustable parameter, or any other means used to inhibit adjustment;

(*4*) The nominal or recommended setting, and the associated production tolerances, for each such parameter.

(B) The manufacturer may provide, in the preliminary application for certification, information relating to why certain parameters are not expected to be adjusted in actual use and to why the physical limits or stops used to establish the physically adjustable range of each parameter, or any other means used to inhibit adjustment, are expected to be effective in preventing adjustment of parameters on in-use vehicles to settings outside the manufacturer's intended physically adjustable ranges. This may include results of any tests to determine the difficulty of gaining access to an adjustment or exceeding a limit as intended or recommended by the manufacturer.

(C) The Administrator may require to be provided detailed drawings and descriptions of the various emission related components, and/or hardware samples of such components, for the purpose of making his determination of which vehicle or engine parameter will be subject to adjustment for new certification and Selective Enforcement Audit testing and of the physically adjustable range for each such vehicle or engine parameter.

(2) Projected U.S. sales data sufficient to enable the Administrator to select a test fleet representative of the vehicles (or engines) for which certification is requested. The sales data shall also include the altitude of intended sale for light-duty trucks.

(3) A description of the test equipment and fuel proposed to be used.

(4)(i) For light-duty vehicles and light-duty trucks, a description of the test procedures to be used to establish the evaporative emission deterioration factors required to be determined and supplied in § 86.088–23(b)(2).

(ii) For gasoline-fueled heavy-duty vehicles, the Administrator does not assume that each evaporative emission family-evaporative emission control system combination will deteriorate in a unique manner during the useful life of the vehicle. The manufacturer shall therefore identify those evaporative emission deterioration factors which shall be applied to the various evaporative emission family-evaporative emission control system combinations which are expected to exhibit similar deterioration characteristics during the useful life of the vehicle.

(iii)(A) A description of the test procedures to be used to establish the durability data or the exhaust emission deterioration factors required to be determined and supplied in § 86.091–23(b)(1).

(B)(*1*) For engine families provided an alternative useful-life period under paragraph (f) of this section, a statement of that alternative period and a brief synopsis of the justification.

(*2*) For heavy-duty diesel engine families, a statement of the primary intended service class (light, medium, or heavy) and an explanation as to why that service class was selected. Each diesel engine family shall be certified under one primary intended service class only. After reviewing the guidance in § 86.085–2, the class shall be determined on the basis of which class best represents the majority of the sales of their engine family.

(C)(*1*) For each light-duty truck engine family and each heavy-duty engine family, a statement of recommended maintenance and procedures necessary to assure that the vehicles (or engines) covered by a certificate of conformity in operation conform to the regulations, and a description of the program for training of personnel for such maintenance, and the equipment required.

(*2*) A description of vehicle adjustments or modifications necessary, if any, to assure that light-duty trucks covered by a certificate of conformity conform to the regulations while being operated at any altitude locations, and a statement of the altitude at which the adjustments or modifications apply.

(D) At the option of the manufacturer, the proposed composition of the emission-data test fleet or (where applicable) the durability-data test fleet.

(5)(i)(A) If the manufacturer elects to participate in the particulate averaging program for diesel light-duty vehicles and/or diesel light-duty trucks, or the particulate averaging program for heavy-duty diesel engines, the application must list the family particulate emission limit and the projected U.S. production volume of the family for the model year.

(B) The manufacturer shall choose the level of the family particulate emission limits, accurate to one-hundredth of a gram per mile for light-duty vehicles and light-duty trucks, or, to one-hundredth of a gram per brake horsepower-hour for heavy-duty engines.

(C) The manufacturer may at any time during production elect to change the level of any family diesel particulate emission limit(s) by submitting the new limit(s) to the Administrator and by demonstrating compliance with the limit(s) as described in § 86.085–2 and § 86.091–28(b)(5)(i).

(ii)(A) If the manufacturer elects to participate in the NO_x averaging program for light-duty trucks, or the NO_x averaging program for heavy-duty engines, the application must list the family NO_x emission limit and the projected U.S. production volume of the family for the model year.

(B) The manufacturer shall choose the level of the family NO_x emission limits, accurate to one-tenth of a gram per mile for light-duty trucks, or, to one-tenth of a gram per brake horsepower-hour for heavy-duty engines.

(C) The manufacturer may at any time during production elect to change the level of any family NO_x emission limit(s) by submitting the new limits to the Administrator and by demonstrating compliance with the limit(s) as described in § 86.088–2 and § 86.091–28(b)(5)(ii).

(6)(i) For gasoline-fueled heavy-duty engines, the application must state whether the engine family is being certified for use in all vehicles regardless of their Gross Vehicle Weight Rating (see § 86.091–10(a)(1)(i) and (a)(3)(i)), or, only for use in vehicles with a Gross Vehicle Weight Rating greater than 14,000 pounds.

(ii) If the engine family is being certified for use in all vehicles and, is being certified to the emission standards applicable to gasoline-fueled heavy-duty engines for use only in vehicles with a Gross Vehicle Weight Rating over 14,000 pounds under the provisions of paragraph (a)(3) of § 86.091–10, then the application must also attest that the engine family, together with all other engine families being certified under the provisions of paragraph (a)(3) of § 86.091–10, represent no more than 5 percent of model year sales of the manufacturer of all gasoline-fueled heavy-duty engines for use in vehicles with Gross Vehicle Weight Ratings of up to 14,000 pounds.

(iii)(A) A description of the test procedures to be used to establish the

durability data or the exhaust emission deterioration factors required to be determined and supplied in § 86.091-23(b)(1).

(B)(*1*) A statement of the useful life of use of each light-duty truck engine family and heavy-duty engine family.

(*2*) For engine families provided an alternative useful life period under paragraph (f) of this section, a statement of that alternative period and a brief synopsis of the justification.

(*3*) For heavy-duty diesel engine families, a statement of the primary intended service class (light, medium, or heavy) and an explanation as to why that service class was selected. Each diesel engine family shall be certified under one primary intended service class only. After reviewing the guidance in § 86.085-2, the class shall be determined on the basis of which class best represents the majority of the sales of that engine family.

(C)(*1*) For each light-duty truck engine family and each heavy-duty engine family, a statement of recommended maintenance and procedures necessary to assure that the vehicles (or engines) covered by a certificate of conformity in operation conform to the regulations, and a description of the program for training of personnel for such maintenance, and the equipment required.

(*2*) A description of vehicle adjustments or modifications necessary, if any, to assure that light-duty trucks covered by a certificate of conformity conform to the regulations while being operated at any altitude locations, and a statement of the altitude at which the adjustments or modifications apply.

(D) At the option of the manufacturer, the proposed composition of the emission-data test fleet or (where applicable) the durability-data test fleet.

(c) Complete copies of the application and of any amendments thereto, and all notifications under § 86.079-32, § 86.079-33, and § 86.082-34 shall be submitted in such multiple copies as the Administrator may require.

(d) Incomplete light-duty trucks shall have a maximum completed curb weight and maximum completed frontal area specified by the manufacturer.

(e) For gasoline-fueled heavy-duty vehicles the manufacturer shall specify a maximum nominal fuel tank capacity for each evaporative emission family-evaporative emission control system combination.

(f) Light-duty truck and heavy-duty engine manufacturers who believe that the useful life periods of § 86.085-2 are significantly unrepresentative for one or more engine families (either too long or too short), may petition the Administrator to provide an alternative useful-life period. This petition must include the full rationale behind the request together with any supporting data and other evidence. Based on this or other information the Administrator may assign an alternative useful-life period. Any petition should be submitted in a timely manner, to allow adequate time for a thorough evaluation.

14. Section 86.085-23 is amended by revising paragraph (d) and adding a new paragraph (f), to read as follows:

§ 86.085-23 Required data.

* * * * *

(d) A statement that the vehicles (or engines) for which certification is requested conform to the requirements in § 86.084-5(b), and that the descriptions of tests performed to ascertain compliance with the general standards in § 86.084-5(b), and the data derived from such tests, are available to the Administrator upon request.

* * * * *

(f) If the manufacturer elects to use a measurement procedure other than that specified in Subpart I to determine compliance with the standards of § 86.085-11(b), the manufacturer will:

(1) Determine the correlation between the alternative measurement procedure chosen and the procedure set forth in Subpart I for each of the opacity measurements required in § 86.085-11(b).

(2) Maintain a description of the procedure and test(s) used to determine the correlation and the data derived from such tests.

(3) Make available to the Administrator, upon request, any of the information or data required in paragraphs (f) (1) and (2), and

(4) For each engine family for which a certificate is requested:

(i) Provide a statement that the results obtained by the alternative measurement procedure correlate with the results which would be expected when determined by the procedure in Subpart I, and

(ii) Provide these results, adjusted if necessary with the applicable correlation offset, to be compared with the opacity standards of § 86.085-11(b).

15. Section 86.087-23 is amended by revising paragraph (d) and adding a new paragraph (g), to read as follows:

§ 86.087-23 Required data.

* * * * *

(d) A statement that the vehicles (or engines) for which certification is requested conform to the requirements in § 86.084-5(b), and that the descriptions of tests performed to ascertain compliance with the general standards in § 86.084-5(b), and the data derived from such tests, are available to the Administrator upon request.

* * * * *

(g) If the manufacturer elects to use a measurement procedure other than that specified in Subpart I to determine compliance with the standards of § 86.085-11(b), the manufacturer will:

(1) Determine the correlation between the alternative measurement procedure chosen and the procedure set forth in Subpart I for each of the opacity measurements required in § 86.085-11(b).

(2) Maintain a description of the procedure and test(s) used to determine the correlation and the data derived from such tests.

(3) Make available to the Administrator, upon request, any of the information or data required in paragraphs (g) (1) and (2), and

(4) For each engine family for which a certificate is requested:

(i) Provide a statement that the results obtained by the alternative measurement procedure correlate with the results which would be expected when determined by the procedure in Subpart I, and

(ii) Provide these results, adjusted if necessary with the applicable correlation offset, to be compared with the opacity standards of § 86.085-11(b).

16. A new § 86.088-23 is added, to read as follows:

§ 86.088-23 Required data.

(a) The manufacturer shall perform the tests required by the applicable test procedures, and submit to the Administrator the following information: *Provided, however,* that if requested by the manufacturer, the Administrator may waive any requirement of this section for testing of vehicles (or engines) for which emission data are available or will be made available under the provisions of § 86.088-29.

(b)(1)(i) Exhaust emission durability data on such light-duty vehicles tested in accordance with applicable test procedures and in such numbers as specified, which will show the performance of the systems installed on or incorporated in the vehicle for extended mileage, as well as a record of all pertinent maintenance performed on the test vehicles.

(ii) Exhaust emission deterioration factors for light-duty trucks and heavy-duty engines and all test data that are derived from the testing described under § 86.088-21(b)(4)(iii)(A) as well as a record of all pertinent maintenance. Such testing shall be designed and conducted in accordance with good

engineering practice to assure that the engines covered by a certificate issued under § 86.088–30 will meet the emission standards (or family particulate emission limits or family NO_x emission limits, as appropriate) in § 86.088–9, § 86.088–10, or § 86.088–11 as appropriate, in actual use for the useful life of the engine.

(2) For light-duty vehicles and light-duty trucks, evaporative emission deterioration factors for each evapporative emission family-evaporative emission control system combination and all test data that are derived from testing described under § 86.088–21(b)(4)(i) designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under § 86.088–30 will meet the evaporative emission standards in § 86.087–8 or § 86.088–9, as appropriate, for the useful life of the vehicle.

(3) For gasoline-fueled heavy-duty vehicles, evaporative emission deterioration factors for each evaporative emission family-evaporative emission control system combination identified in accordance with § 86.088–21(b)(4)(ii). Furthermore, a statement that the test procedure(s) used to derive the deterioration factors includes, but need not be limited to, a consideration of the ambient effects of ozone and temperature fluctuations, and the service accumulation effects of vibration, time, and vapor saturation and purge cycling. The deterioration factor test procedure shall be designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under § 86.088–30 will meet the evaporative emission standards in § 86.088–10 in actual use for the useful life of the engine. Furthermore, a statement that a description of the test procedure, as well as all data, analyses and evaluations, is available to the Administrator upon request.

(4)(i) For gasoline-fueled heavy-duty vehicles with a Gross Vehicle Weight Rating of up to 26,000 pounds, a written statement to the Administrator certifying that the manufacturer's vehicles meet the standards of § 86.088–10 as determined by the provisions of § 86.088–28. Furthermore, a written statement to the Administrator that all data, analyses, test procedures, evaluations, and other documents, on which the above statement is based, are available to the Administrator upon request.

(ii) For gasoline-fueled, heavy-duty vehicles with a Gross Vehicle Weight Rating of greater than 26,000 pounds, a written statement to the Administrator certifying that the manufacturer's evaporative emission control systems are designed, using good engineering practice, to meet the standards of § 86.088–10 as determined by the provisions of § 86.088–28. Furthermore, a written statement to the Administrator that all data, analyses, test procedures, evaluations, and other documents, on which the above statement is based, are available to the Administrator upon request.

(c) *Emission data.* (1) Emission data on such vehicles tested in acordance with applicable test procedures and in such numbers as specified. These data shall include zero-mile data, if generated, and emission data generated for certification as required under § 86.084–26(a)(3)(i) or § 86.084–26(a)(3)(ii).

(2) *Certification engines.* (i) Emission data on such engines tested in accordance with applicable emission test procedures of this subpart and in such numbers as specified. These data shall include zero-hour data, if generated, and emission data generated for certification as required under § 86.084–26(c)(4). In lieu of providing emission data on CO emissions from diesel certification engines the Administrator may, on request of the manufacturer, allow the manufacturer to demonstrate (on the basis of previous emission tests, development tests, or other information) that the engine will conform with the CO emission standard of § 86.088–11.

(ii) For heavy-duty diesel engines, a manufacturer may submit hot-start data only, in accordance with Subpart N, when making application for certification. However, for conformity SEA and recall testing by the Agency, both the cold-start and hot-start test data, as specified in Subpart N, will be included in the official results.

(d) A statement that the vehicles (or engines) for which certification is requested conform to the requirements in § 86.084–5(b), and that the descriptions of tests performed to ascertain compliance with the general standards in § 86.084–5(b), and the data derived from such tests, are available to the Administrator upon request.

(e)(1) A statement that the test vehicles (or test engines) with respect to which data are submitted to demonstrate compliance with the applicable standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) of this subpart are in all material respects as described in the manufacturer's application for certification, have been tested in accordance with the applicable test procedures utilizing the fuels and equipment described in the application for certification and that on the basis of such tests the vehicles (or engines) conform to the requirements of this part. If such statements cannot be made with respect to any vehicle (or engine) tested, the vehicle (or engine) shall be identified, and all pertinent data relating thereto shall be supplied to the Administrator. If, on the basis of the data supplied and any additional data as required by the Administrator, the Administrator determines that the test vehicles (or test engine) was not as described in the application for certification or was not tested in accordance with the applicable test procedures utilizing the fuels and equipment as described in the application for certification, the Administrator may make the determination that the vehicle (or engine) does not meet the applicable standards (or family particulate emission limits, or family NO_x emission limits, as appropriate). The provisions of § 86.088–30(b) shall then be followed.

(2) For evaporative emission durability, or light-duty truck or heavy-duty engine exhaust emission durability, a statement of compliance with paragraph (b)(1)(ii), (b)(2), or (b)(3) of this section, as applicable.

(f) Additionally, manufacturers participating in the diesel particulate averaging program shall submit:

(1) In the application for certification, a statement that the vehicles for which certification is requested will not, to the best of the manufacturer's belief, when included in the manufacturer's production-weighted average emission level, cause the applicable particulate standard(s) to be exceeded.

(2) No longer than 90 days after the end of a given model year of production of engine families included in the diesel particulate averaging program, the number of vehicles produced in each engine family at each certified family diesel particulate emission limit, along with the resulting production-weighted average particulate emission level.

(g) Additionally, manufacturers participating in the light-duty truck NO_x averaging program shall submit:

(1) In the application for certification, a statement that the vehicles for which certification is requested will not, to the best of the manufacturer's belief, when included in the manufacturer's production-weighted average emission level, cause the applicable NO_x standard(s) to be exceeded.

(2) No longer than 90 days after the end of a given model year of production of engine families included in the light-duty truck NO_x averaging program, the

number of vehicles produced in each engine family at each certified family NO_x particulate emission limit, along with the resulting production-weighted average NO_x emission level.

17. A new § 86.091-23 is added, to read as follows:

§ 86.091-23 Required data.

(a) The manufacturer shall perform the tests required by the applicable test procedures, and submit to the Administrator the following information: *Provided, however,* that if requested by the manufacturer, the Administrator may waive any requirement of this section for testing of vehicle (or engine) for which emission data are available or will be made available under the provisions of § 86.091-29.

(b)(1)(i) Exhaust emission durability data on such light-duty vehicles tested in accordance with applicable test procedures and in such numbers as specified, which will show the performance of the systems installed on or incorporated in the vehicle for extended mileage, as well as a record of all pertinent maintenance performed on the test vehicles.

(ii) Exhaust emission deterioration factors for light-duty trucks and heavy-duty engines and all test data that are derived from the testing described under § 86.091-21(b)(4)(iii)(A) as well as a record of all pertinent maintenance. Such testing shall be designed and conducted in accordance with good engineering practice to assure that the engines covered by a certificate issued under § 86.091-30 will meet the emission standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) in § 86.088-9, § 86.091-10, or § 86.091-11 as appropriate, in actual use for the useful life of the engine.

(2) For light-duty vehicles and light-duty trucks, evaporative emission deterioration factors for each evaporative emission family-evaporative emission control system combination and all test data that are derived from testing described under § 86.091-21(b)(4)(i) designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under § 86.091-30 will meet the evaporative emission standards in § 86.087-8 or § 86.088-9, as appropriate, for the useful life of the vehicle.

(3) For gasoline-fueled heavy-duty vehicles, evaporative emission deterioration factors for each evaporative emission family-evaporative emission control system combination identified in accordance with § 86.091-21(b)(4)(ii). Furthermore, a statement that the test procedure(s) used to derive the deterioration factors includes, but need not be limited to, a consideration of the ambient effects of ozone and temperature fluctuations, and the service accumulation effects of vibration, time, and vapor saturation and purge cycling. The deterioration factor test procedure shall be designed and conducted in accordance with good engineering practice to assure that the vehicles covered by a certificate issued under § 86.091-30 will meet the evaporative emission standards in § 86.091-10 in actual use for the useful life of the engine. Furthermore, a statement that a description of the test procedure, as well as all data, analyses and evaluations, is available to the Administrator upon request.

(4)(i) For gasoline-fueled heavy-duty vehicles with a Gross Vehicle Weight Rating of up to 26,000 pounds, a written statement to the Administrator certifying that the manufacturer's vehicles meet the standards of § 86.091-10 as determined by the provisions of § 86.091-28. Furthermore, a written statement to the Administrator that all data, analyses, test procedures, evaluations, and other documents, on which the above statement is based, are available to the Administrator upon request.

(ii) For gasoline-fueled, heavy-duty vehicles with a Gross Vehicle Weight Rating of greater than 26,000 pounds, a written statement to the Administrator certifying that the manufacturer's evaporative emission control systems are designed, using good engineering practice, to meet the standards of § 86.091-01 as determined by the provisions of § 86.091-28. Furthermore, a written statement to the Administrator that all data, analyses, test procedures, evaluations, and other documents, on which the above statement is based, are available to the Administrator upon request.

(c) *Emission data.* (1) Emission data on such vehicles tested in accordance with applicable test procedures and in such numbers as specified. These data shall include zero-mile data, if generated, and emission data generated for certification as required under § 86.084-26(a)(3)(i) or § 86.084-26(a)(3)(ii).

(2) *Certification engines.* (i) Emission data on such engines tested in accordance with applicable emission test procedures of this subpart and in such numbers as specified. These data shall include zero-hour data, if generated, and emission data generated for certification as required under § 86.084-26(c)(4). In lieu of providing emission data on CO emissions from diesel certification engines the Administrator may, on request of the manufacturer, allow the manufacturer to demonstrate (on the basis of previous emission tests, development tests, or other information) that the engine will conform with the CO emission standard of § 86.091-11.

(ii) For heavy-duty diesel engines, a manufacturer may submit hot-start data only, in accordance with Subpart N, when making application for certification. However, for conformity SEA and recall testing by the Agency, both the cold-start and hot-start test data, as specified in Subpart N, will be included in the official results.

(d) A statement that the vehicles (or engines) for which certification is requested conform to the requirements in § 86.084-5(b), and that the descriptions of tests performed to ascertain compliance with the general standards in § 86.084-5(b), and the data derived from such tests, are available to the Administrator upon request.

(e)(1) A statement that the text vehicles (or test engines) with respect to which data are submitted to demonstrate compliance with the applicable standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) of this subpart are in all material respects as described in the manufacturer's application for certification, have been tested in accordance with the applicable test procedures utilizing the fuels and equipment described in the application for certification and that on the basis of such tests the vehicles (or engines) conform to the requirements of this part. If such statements cannot be made with respect to any vehicle (or engine) tested, the vehicle (or engine) shall be identified, and all pertinent data relating thereto shall be supplied to the Administrator. If, on the basis of the data supplied and any additional data as required by the Administrator, the Administrator determines that the test vehicles (or test engine) was not as described in the applicable for certification or was not tested in accordance with the application test procedures utilizing the fuels and equipment as described in the application for certification, the Administrator may make the determination that the vehicle (or engine) does not meet the applicable standards (or family particulate emission limits, or family NO_x emission limits, as appropriate). The provisions of § 86.091-30(b) shall then be followed.

(2) For evaporative emission durability, or light-duty truck or heavy-duty engine exhaust emission durability,

a statement of compliance with paragraph (b)(1)(ii), (b)(2), or (b)(3) of this section, as applicable.

(f) Additionally, manufacturers participating in any of the diesel particulate averaging programs shall submit:

(1) In the application for certification, a statement that the vehicles (or engines) for which certification is requested will not, to the best of the manufacturer's belief, when included in the manufacturer's production-weighted average emission level, cause the applicable particulate standard(s) to be exceeded.

(2) No longer than 90 days after the end of a given model year of production of engine families included in one of the diesel particulate averaging programs, the number of vehicles (or engines) produced in each engine family at each certified family diesel particulate emission limit, along with the resulting production-weighted average particulate emission level.

(g) Additionally, manufacturers participating in the light-duty truck or heavy-duty engine NO_x averaging programs shall submit:

(1) In the application for certification, a statement that the vehicles (or engines) for which certification is required will not, to the best of the manufacturer's belief, when included in the manufacturer's production-weighted average emission level, cause the applicable NO_x standard(s) to be exceeded.

(2) No longer than 90 days after the end of a given model year of production of engine families included in one of the NO_x averaging programs, the number of vehicles (or engines) produced in each engine family at each certified family NO_x particulate emission limit, along with the resulting production-weighted average NO_x emission level.

18. A new § 86.087-25 is added, to read as follows:

§ 86.087-25 Maintenance.

(a) *Applicability.* This section applies to light-duty vehicles, light-duty trucks, and heavy-duty engines. Manufacturers of light-duty vehicles may elect the option of complying with § 86.085-25(a) for any engine family.

(1) Maintenance performed on vehicles, engines, subsystems, or components used to determine exhaust or evaporative emission deterioration factors is classified as either emission-related or non emission-related and each of these can be classified as either scheduled or unscheduled.

(b) This section specifies emission-related scheduled maintenance for purposes of obtaining durability data and for inclusion in maintenance instructions furnished to purchasers of new motor vehicles and new motor vehicle engines under § 86.087-38.

(1) All emission-related scheduled maintenance for purposes of obtaining durability data must occur at the same mileage intervals (or equivalent intervals if engines, subsystems, or components are used) that will be specified in the manufacturer's maintenance instructions furnished to the ultimate purchaser of the motor vehicle or engine under § 86.087-38. This maintenance schedule may be updated as necessary throughout the testing of the vehicle/engine provided that no maintenance operation is delected from the maintenance schedule after the operation has been performed on the test vehicle or engine.

(2) Any emission-related maintenance which is performed on vehicles, engines, subsystems, or components must be technologically necessary to assure in-use compliance with the emission standards. The manufacturer must submit data which demonstrate to the Administrator that all of the emission-related scheduled maintenance which is to be performed is technologically necessary. Scheduled maintenance must be approved by the Administrator prior to being performed or being included in the maintenance instructions provided to purchasers under § 86.087-38. As provided below, EPA has determined that emission-related maintenance at shorter intervals than that outlined in paragraphs (b)(3) and (b)(4) of this section is not technologically necessary to ensure in-use compliance. However, the Administrator may determine that maintenance even more restrictive (*e.g.*, long intervals) than that listed in paragraphs (b)(3) and (b)(4) of this section is also not technologically necessary.

(3) For gasoline-fueled light-duty vehicles, light-duty trucks and heavy-duty engines, emission-related maintenance in addition to, or at shorter intervals than, the following will not be accepted as technologically necessary, except as provided in paragraph (b)(7) of this section.

(i)(A) The cleaning or replacement of light-duty vehicle or light-duty truck spark plugs at 30,000 miles of use and at 30,000-mile intervals thereafter.

(B) The cleaning or replacement of gasoline-fueled heavy-duty engine spark plugs at 12,000 miles (or 360 hours) of use and at 12,000-mile (or 360-hour) intervals thereafter, for engine certified for use with leaded fuel.

(C) The cleaning or replacement of gasoline-fueled heavy-duty engine spark plugs at 25,000 miles (or 750 hours) of use and at 25,000-mile (or 750-hour) intervals thereafter, for engines certified for use with unleaded fuel only.

(ii) For light-duty vehicles, the adjustment, cleaning, repair, or replacement of the following may not be performed within the 50,000-mile useful life of the vehicle:

(A) Positive crankcase ventilation valve.

(B) Emission-related hoses and tubes.

(C) Ignition wires.

(D) Carburetors (including idle mixture).

(E) Catalytic converter.

(F) Exhaust gas recirculation system (including all related filters and control valves).

(G) Air injection system components.

(H) Fuel injectors.

(I) Electronic engine control unit and its associated sensors (including oxygen sensor) and actuators.

(J) Evaporative emission canister.

(K) Turbochargers.

(iii) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter:

(A) Positive crankcase ventilation valve.

(B) Emission-related hoses and tubes.

(C) Ignition wires.

(D) Idle mixture.

(E) Oxygen sensor.

(iv) [Reserved]

(v) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 100,000 miles (or 3,000 hours) of use and at 100,000-mile (or 3,000-hour) intervals thereafter:

(A) Catalytic converter.

(B) Fuel injectors.

(vi)(A) For heavy-duty engines certified for use with leaded fuel, the adjustment, cleaning, repair, or replacement of the exhaust gas recirculation (EGR) system (including all related filters and control valves) at 24,000 miles (or 720 hours) of use and at 24,000-mile (or 720-hour) intervals thereafter.

(B) For light-duty trucks, and for heavy-duty engines certified for use with unleaded fuel only, the adjustment, cleaning, repair, or replacement of the EGR system (including all related filters and control valves) at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter.

(4) For diesel powered light-duty vehicles, light-duty trucks, and heavy-duty engines, emission-related maintenance in addition to, or at shorter intervals than, the following will not be

accepted as technologically necessary, except as provided in paragraph (b)(7) of this section.

(i) For light-duty vehicles, the adjustment, cleaning, repair, or replacement of the following may not be performed within the 50,000-mile useful life of the vehicle:

(A) Exhaust gas recirculation system (including all related filters and control valves).

(B) Positive crankcase ventilation valve.

(C) Fuel injectors.

(D) Turbocharger.

(ii) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter:

(A) Exhaust gas recirculation system (including all related filters and control valves).

(B) Positive crankcase ventilation valve.

(C) Fuel injector tip (cleaning *only*).

(iii) The adjustment, cleaning, repair, or replacement of the following at 100,000 miles (or 3,000 hours) of use and at 100,000-mile (or 3,000-hour) intervals thereafter for light-duty trucks and light heavy-duty engines, or, at 150,000 miles (or 4,500 hours) of use and at 150,000-mile (or 4,500-hours) intervals thereafter for medium and heavy heavy-duty engine:

(A) Turbocharger.

(B) Fuel injectors.

(5) Manufacturers may schedule service to the EGR system at the intervals indicated in paragraph (b) of this section only if a visible signal, approved by the Administrator, alerts the engine operator to the need for EGR maintenance at each of those mileage points.

(6) [Reserved]

(7) *Changes to scheduled maintenance.*

(i) For maintenance practices that existed prior to the 1980 model year, only the maintenance items listed in paragraphs (b)(3) and (b)(4) of this section are currently considered by EPA to be emission-related. The Administrator may, however, determine additional scheduled maintenance items that existed prior to the 1980 model year to be emission-related by announcement in a **Federal Register** Notice. In no event may this notification occur later than September 1 of the calendar year two years prior to the affected model year.

(ii) In the case of any new scheduled maintenance, the manufacturer must submit a request for approval to the Administrator for any maintenance that it wishes to recommend to purchasers and perform during durability determination. New scheduled maintenance is that maintenance which did not exist prior to the 1980 model year, including that which is a direct result of the implementation of new technology not found in production prior to the 1980 model year. The manufacturer must also include its recommendations as to the category (*i.e.*, emission-related or non-emission-related) of the subject maintenance, and, for suggested emission-related maintenance, the maximum feasible maintenance interval. Such requests must include detailed evidence supporting the need for the maintenance requested, and supporting data or other substantiation for the recommended maintenance category and for the interval suggested for emission-related maintenance. Requests for new scheduled maintenance must be approved prior to the introduction of the new maintenance. The Administrator will then designate the maintenance as emission-related or non-emission-related. For each maintenance item designated as emission-related, the Administrator will also establish a technologically necessary maintenance interval, based on industry data and any other information available to EPA. Designations of emission-related maintenance items and establishment of technologically necessary maintenance intervals, will be announced in the **Federal Register.**

(iii) Any manufacturer may request a hearing on the Administrator's determinations in paragraph (b)(7) of this section. The request shall be in writing, signed by an authorized representative of the manufacturer, and shall include a statement specifying the manufacturer's objections to the Administrator's determinations, and data in support of such objections. If, after review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with § 86.078–6 with respect to such issue.

(c) Non-emission-related scheduled maintenance which is reasonable and technologically necessary (*e.g.*, oil change, oil filter change, fuel filter change, air filter change, cooling system maintenance, adjustment of idle speed, governor, engine bolt torque, valve lash, injector lash, timing, etc.) may be performed on durability-data vehicles at the intervals recommended by the manufacturer to the ultimate purchaser.

(d) *Unscheduled maintenance on light-duty durability data vehicles.*

(1) Unscheduled maintenance may be performed during the testing used to determine deterioration factors, except as provided in paragraph (d)(2) and (d)(3) of this section, only under the following provisions:

(i) A fuel injector or spark plug may be changed if a persistent misfire is detected.

(ii) Readjustment of a gasoline-fueled vehicle cold-start enrichment system may be performed if there is a problem of stalling.

(iii) Readjustment of the engine idle speed (curb idle and fast idle) may be performed in addition to that performed as scheduled maintenance under paragraph (c) of this section, if the idle speed exceeds the manufacturer's recommended idle speed by 300 rpm or more, or if there is a problem of stalling.

(2) Any other unscheduled vehicle, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement during testing to determine deterioration factors shall be performed only with the advance approval of the Administrator. Such approval will be given if the Administrator:

(i) Has made a preliminary determination that the part failure or system malfunction, or the repair of such failure or malfunction, does not render the vehicle or engine unrepresentative of vehicles or engines in-use, and does not require direct access to the combustion chamber, except for spark plug, fuel injection component, or removable prechamber removal or replacement; and,

(ii) Has made a determination that the need for maintenance or repairs is indicated by an overt indication of malfunction such as persistent misfiring, engine stalling, overheating, fluid leakage, loss of oil pressure, excessive fuel consumption or excessive power loss. The Administrator shall be given the opportunity to verify the existence of an overt indication of part failure and/or vehicle/engine malfunction (*e.g.*, misfirng, stalling, black smoke), or an activation of an audible and/or visible signal, prior to the performance of any maintenance to which such overt indication or signal is relevant under the provisions of this section.

(3) Emission measurement may not be used as a means of determining the need for unscheduled maintenance under paragraph (d)(2) of this section, except under the following conditions:

(i) The Administrator may approve unscheduled maintenance on durability-data vehicles based upon a significant change in emission levels that indicates a vehicle or engine malfunction. In these

cases the Administrator may first approve specific diagnostic procedures to identify the source of the problem. The Administrator may further approve of specific corrections to the problem after the problem has been identified. The Administrator may only approve the corrective action after it is determined that:

(A) The malfunction was caused by nonproduction build practices or by a previously undetected design problem,

(B) The malfunction will not occur in production vehicles or engines in-use, *and*

(C) The deterioration factor generated by the durability-data vehicle or engine will remain unaffected by the malfunction or by the corrective action (*e.g.* the malfunction was present for only a short period of time before detection, replacement parts are functionally representative of the proper mileage or hours, etc.).

(ii) Following any unscheduled maintenance approved under paragraph (d)(3)(i) of this section, the manufacturer shall perform and after-maintenance emissions test. If the Administrator determines that the after-maintenance emission levels for any pollutant indicates that the deterioration factor is no longer representative of production, the Administrator may disqualify the durability-data vehicle or engine.

(4) If the Administrator determines that part failure or system malfunction occurrence and/or repair rendered the vehicle/engine unrepresentative of vehicles in-use, the vehicle/engine shall not be used for determining deterioration factors.

(5) Repairs to vehicle components of a durability data vehicle other than the engine, emission control system, or fuel system, shall be performed only as a result of part failure, vehicle system malfunction, or with the advance approval of the Administrator.

(e) *Maintenance on emission data vehicles and engines.* (1) Adjustment of engine idle speed on emission data vehicles may be performed once before the low-mileage/low-hour emission test point. Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on emission data vehicles shall be performed only with the advance approval of the Administrator.

(2) Maintenance on light-duty truck emission-data vehicles selected under § 86.085–24(b)(1) (v) or (viii), and permitted to be tested for purposes of § 86.087–23(c)(1)(i) under the provisions of § 86.085–24(b)(2), may be performed in conjunction with emission control system modifications at the low-mileage test point, and shall be performed in accordance with the maintenance instructions to be provided to the ultimate purchaser required under § 86.087–38.

(3) Maintenance on those light-duty truck emission-data vehicles selected under § 86.085–24(b)(1)(v) which are not capable of being modified in the field for the purpose of complying with emission standards at an altitude other than that intended by the original design, may be performed in conjunction with the emission control system modifications at the low-mileage test point, and shall be approved in advance by the Administrator.

(4) Repairs to vehicle components of an emission data vehicle other than the engine, emission control system, or fuel system, shall be performed only as a result of part failure, vehcile system malfunction, or with the advance approval of the Administrator.

(f) Equipment, instruments, or tools may not be used to identify malfunctioning, maladjusted, or defective engine components unless the same or equivalent equipment, instruments, or tools will be available to dealerships and other service outlets and:

(1) Are used in conjunction with scheduled maintenance on such components, or

(2) Are used subsequent to the identification of a vehicle or engine malfunction, as provided in paragraph (d)(2) of this section for durability data vehicles or in paragraph (e)(1) of this section for emission-data vehicles, or

(3) Unless specifically authorized by the Administrator.

(g)(1) Paragraph (g) of this section applies to light-duty vehicles.

(2) Complete emission tests (see §§ 86.106 through 86.145) are required, unless waived by the Administrator, before and after scheduled maintenance approved for durability data vehicles. The manufacturer may perform emission tests before unscheduled maintenance. Complete emission tests are required after unscheduled maintenance which may reasonably be expected to affect emissions. The Administrator may waive the requirement to test after unscheduled maintenance. These test data may be submitted weekly to the Administrator, but shall be air posted or delivered within 7 days after completion of the tests, along with a complete record of all pertinent maintenance, including a preliminary engineering report of any malfunction diagnosis and the corrective action taken. A complete engineering report shall be delivered to the Administrator concurrently with the manufacturer's application for certification.

(h) All test data, maintenance reports, and required engineering reports shall be compiled and provided to the Administrator in accordance with § 86.087–23.

19. A new § 86.088–25 is added, to read as follows:

§ 86.088–25 Maintenance.

(a) *Applicability.* This section applies to light-duty vehicles, light-duty trucks, and heavy-duty engines.

(1) Maintenance performed on vehicles, engines, subsystems, or components used to determine exhaust or evaporative emission deterioration factors is classified as either emission-related or non-emission-related and each of these can be classified as either scheduled or unscheduled. Further, some emission-related maintenance is also classified as critical emission-related maintenance.

(b) This section specifies emission-related scheduled maintenance for purposes of obtaining durability data and for inclusion in maintenance instructions furnished to purchasers of new motor vehicles and new motor vehicle engines under § 86.087–38.

(1) All emission-related scheduled maintenance for purposes of obtaining durability data must occur at the same mileage intervals (or equivalent intervals if engines, subsystems, or components are used) that will be specified in the manufacturer's maintenance instructions furnished to the ultimate purchaser of the motor vehicle or engine under § 86.088–35. This maintenance schedule may be updated as necessary throughout the testing of the vehicle/engine provided that no maintenance operation is deleted from the maintenance schedule after the operation has been performed on the test vehicle or engine.

(2) Any emission-related maintenance which is performed on vehicles, engines, subsystems, or components must be technologically necessary to assure in-use compliance with the emission standards. The manufacturer must submit data which demonstrate to the Administrator that all of the emission-related scheduled maintenance which is to be performed is technologically necessary. Scheduled maintenance must be approved by the Administrator prior to being performed or being included in the maintenance instructions provided to purchasers under § 86.087–38. As provided below, EPA has determined that emission-related maintenance at shorter intervals than that outlined in paragraphs (b)(3) and (b)(4) of this

section is not technologically necessary to ensure in-use compliance. However, the Administrator may determine that maintenance even more restrictive (*e.g.*, longer intervals) than that listed in paragraphs (b)(3) and (b)(4) of this section is also not technologically necessary.

(3) For gasoline-fueled light-duty vehicles, light-duty trucks and heavy-duty engines, emission-related maintenance in addition to, or at shorter intervals than, the following will not be accepted as technologically necessary, except as provided in paragraph (b)(7) of this section.

(i)(A) The cleaning or replacement of light-duty vehicle or light-duty truck spark plugs at 30,000 miles of use and at 30,000-mile intervals thereafter.

(B) The cleaning or replacement of gasoline-fueled heavy-duty engine spark plugs at 12,000 miles (or 360 hours) of use and at 12,000-mile (or 360-hour) intervals thereafter, for engine certified for use with leaded fuel.

(C) The cleaning or replacement of gasoline-fueled heavy-duty engine spark plugs at 25,000 miles (or 750 hours) of use and at 25,000-mile intervals (or 750-hour) intervals thereafter, for engines certified for use with unleaded fuel only.

(ii) For light-duty vehicles, the adjustment, cleaning, repair, or replacement of the following may not be performed within the 50,000-mile useful life of the vehicle:

(A) Positive crankcase ventilation valve.

(B) Emission-related hoses and tubes.

(C) Ignition wires.

(D) Carburetors (including idle mixture).

(E) Catalytic converter.

(F) Exhaust gas recirculation system (including all related filters and control valves).

(G) Air injection system components.

(H) Fuel injectors.

(I) Electronic engine control unit and its associated sensors (including oxygen sensor) and actuators.

(J) Evaporative emission canister.

(K) Turbochargers.

(iii) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter:

(A) Positive crankcase ventilation valve.

(B) Emission-related hoses and tubes.

(C) Ignition wires.

(D) Idle mixture.

(iv) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 80,000-miles (or 2,400-hours) of use and at 80,000-mile (or 2,400-hour) intervals thereafter:

(A) Oxygen sensor.

(v) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 100,000 miles (or 3,000 hours) of use and at 100,000-mile (or 3,000-hour) intervals thereafter:

(A) Catalytic converter.

(B) Air injection system components.

(C) Fuel injectors.

(D) Electronic engine control unit and its associated sensors (except oxygen sensor) and actuators.

(E) Evaporative emission canister.

(F) Turbochargers.

(G) Carburetors.

(vi)(A) For heavy-duty engines certified for use with leaded fuel, the adjustment, cleaning, repair, or replacement of the exhaust gas recirculation (EGR) system (including all related filters and control valves) at 24,000 miles (or 720 hours) of use and at 24,000-mile (or 720-hour) intervals thereafter.

(B) For light-duty trucks, and for heavy-duty engines certified for use with unleaded fuel only, the adjustment, cleaning, repair, or replacement of the EGR system (including all related filters and control valves) at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter.

(4) For diesel powered light-duty vehicles, light-duty trucks, and heavy-duty engines, emission-related maintenance in addition to, or at shorter intervals than, the following will not be accepted as technologically necessary, except as provided in paragraph (b)(7) of this section.

(i) For light-duty vehicles, the adjustment, cleaning, repair, or replacement of the following may not be performed within the 50,000-mile useful life of the vehicle:

(A) Exhaust gas recirculation system (including all related filters and control valves).

(B) Positive crankcase ventilation valve.

(C) Fuel injectors.

(D) Turbocharger.

(E) Electronic engine control unit and its associated sensors and actuators.

(F) Particulate trap or trap-oxidizer system (including related components).

(ii) For light-duty trucks and heavy-duty engines, the adjustment, cleaning, repair, or replacement of the following at 50,000 miles (or 1,500 hours) of use and at 50,000-mile (or 1,500-hour) intervals thereafter:

(A) Exhaust gas recirculation system (including all related filters and control valves).

(B) Positive crankcase ventilation valve.

(C) Fuel injector tip (cleaning *only*).

(iii) The following maintenance at 100,000 miles (or 3,000 hours) of use and at 100,000-mile (or 3,000-hour) intervals thereafter for light-duty trucks and light heavy-duty engines, or, at 150,000 miles (or 4,500 hours) of use and at 150,000-mile (or 4,500-hour) intervals thereafter for medium and heavy heavy-duty engines: The adjustment, cleaning, repair, or replacement of:

(A) Fuel injectors.

(B) Turbocharger.

(C) Electronic engine control unit and its associated sensors and actuators.

(D) Particulate trap or trap-oxidizer system (including related components).

(5) [Reserved]

(6)(i) The following components are currently defined as critical emission-related components:

(A) Catalytic converter.

(B) Air injection system components.

(C) Electronic engine control unit and its associated sensor (including oxygen sensor if installed) and actuators.

(D) Exhaust gas recirculation system (including all related filters and control valves).

(E) Positive crankcase ventilation valve.

(F) Evaporative emission system (excluding canister air filter).

(G) Particulate trap or trap-oxidizer system.

(ii) All critical emission-related scheduled maintenance must have a reasonable likelihood of being performed in-use. The manufacturer shall be required to show the reasonable likelihood of such maintenance being performed in-use, and such showing shall be made prior to the performance of the maintenance on the durability data vehicle. Critical emission-related scheduled maintenance items which satisfy one of the following conditions will be accepted as having a reasonable likelihood of the maintenance item being performed in-use:

(A) Data are presented which establish for the Administrator a connection between emissions and vehicle performance such that as emissions increase due to lack of maintenance, vehicle performance will simultaneously deteriorate to a point unacceptable for typical driving.

(B) Survey data are submitted which adequately demonstrate to the Administrator that, at an 80 percent confidence level, 80 percent of such engines already have this critical maintenance item performed in-use at the recommended interval(s).

(C) A clearly displayed visible signal system approved by the Administrator is installed to alert the vehicle driver that maintenance is due. A signal bearing the message "maintenance needed" or "check engine," or a similar message approved by the Administrator, shall be actuated at the appropriate mileage point or by component failure. This signal must be continuous while the engine is in operation, and not be easily eliminated without performance of the required maintenance. Resetting the signal shall be a required step in the maintenance operation. The method for resetting the signal system shall be approved by the Administrator.

(D) A manufacturer may desire to demonstrate through a survey that a critical maintenance item is likely to be performed without a visible signal on a maintenance item for which there is no prior in-use experience without the signal. To that end, the manufacturer may in a given model year market up to 200 randomly selected vehicles per critical emission related maintenance item without such visible signals, and monitor the performance of the critical maintenance item by the owners to show compliance with paragraphs (b)(6)(ii)(B) of this section. This option is restricted to two consecutive model years and may not be repeated until any previous survey has been completed. If the critical maintenance involves more than one engine family, the sample will be sales weighted to ensure that it is representative of all the families in question.

(E) The manufacturer provides the maintenance free of charge, and clearly informs the customer that the maintenance is free in the instructions provided under § 86.087–38.

(F) Any other method which the Administrator approves as establishing a reasonable likelihood that the critical maintenance will be performed in-use.

(iii) Visible signal systems used under paragraph (b)(6)(ii)(C) of this section are considered an element of design of the emission control system. Therefore, disabling, resetting, or otherwise rendering such signals inoperative without also performing the indicated maintenance procedure is a prohibited act under Section 203(a)(3) of the Clean Air Act, as amended in August 1977 (42 U.S.C. 7522(a)(3)).

(7) *Changes to scheduled maintenance.* (i) For maintenance practices that existed prior to the 1980 model year, only the maintenance items listed in paragraphs (b)(3) and (b)(4) of this section are currently considered by EPA to be emission-related. The Administrator may, however, determine additional scheduled maintenance items that existed prior to the 1980 model year to be emission-related by announcmeent in a **Federal Register** Notice. In no event may this notification occur later than September 1 of the calendar year two years prior to the affected model year.

(ii) In the case of any new scheduled maintenance, the manufacturer must submit a request for approval to the Administrator for any maintenance that it wishes to recommend to purchasers and perform during durability determination. New scheduled maintenance is that maintenance which did not exist prior to the 1980 model year, including that which is a direct result of the implementation of new technology not found in production prior to the 1980 model year. The manufacturer must also include its recommendations as to the category (*i.e.*, emission-related or non-emission-related, critical or non-critical) of the subject maintenance and, for suggested emission-related maintenance, the maximum feasible maintenance interval. Such requests must include detailed evidence supporting the need for the maintenance requested, and supporting data or other substantiation for the recommended maintenance category and for the interval suggested for emission-related maintenance. Requests for new scheduled maintenance must be approved prior to the introduction of the new maintenance. The Administrator will then designate the maintenance as emission-related or non-emission-related. For maintenance items established as emission-related, the Administrator will further designate the maintenance as critical if the component which receives the maintenance is a critical component under paragraph (b)(6) of this section. For each maintenance item designated as emission-related, the Administrator will also establish a technologically necessary maintenance interval, based on industry data and any other information available to EPA. Designations of emission-related maintenance items, along with their identification as critical or non-critical, and establishment of technologically necessary maintenance intervals, will be announced in the **Federal Register**.

(iii) Any manufacturer may request a hearing on the Administrator's determinations in paragraph (b)(7) of this section. The request shall be in writing, signed by an authorized representative of the manufacturer, and shall include a statement specifying the manufacturer's objections to the Administrator's determinations, and data in support of such objections. If, after review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with § 86.078–6 with respect to such issue.

(c) Non-emission-related scheduled maintenance which is reasonable and technologically necessary (*e.g.*, oil change, oil filter change, fuel filter change, air filter change, cooling system maintenance, adjustment of idle speed, governor, engine bolt torque, valve lash, injector lash, timing, etc.) may be performed on durability-data vehicles at the intervals recommended by the manufacturer to the ultimate purchaser.

(d) *Unscheduled maintenance on light-duty durability data vehicles.* (1) Unscheduled maintenance may be performed during the testing used to determine deterioration factors, except as provided in paragraph (d)(2) and (d)(3) of this section, only under the following provisions:

(i) A fuel injector or spark plug may be changed if a persistent misfire is detected.

(ii) Readjustment of a gasoline-fueled vehicle cold-start enrichment system may be performed if there is a problem of stalling.

(iii) Readjustment of the engine idle speed (curb idle and fast idle) may be performed in addition to that performed as scheduled maintenance under paragraph (c) of this section, if the idle speed exceeds the manufacturer's recommended idle speed by 300 rpm or more, or if there is a problem of stalling.

(2) Any other unscheduled vehicle, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement during testing to determine deterioration factors shall be performed only with the advance approval of the Administrator. Such approval will be given if the Administrator:

(i) Has made a preliminary determination that the part failure or system malfunction, or the repair of such failure or malfunction, does not render the vehicle or engine unrepresentative of vehicles or engines in-use, and does not require direct access to the combustion chamber, except for spark plug, fuel injection component, or removable prechamber removal or replacement; and,

(ii) Has made a determination that the need for maintenance or repairs is indicated by an overt indication of malfunction such as persistent misfiring, engine stalling, overheating, fluid leakage, loss of oil pressure, excessive fuel consumption or excessive power loss. The Administrator shall be given the opportunity to verify the existence of

an overt indication of part failure and/or vehicle/engine malfunction (*e.g.*, misfiring, stalling, black smoke), or an activation of an audible and/or visible signal, prior to the performance of any maintenance to which such overt indication or signal is relevant under the provisions of this section.

(3) Emission measurement may not be used as a means of determining the need for unscheduled maintenance under paragraph (d)(2) of this section, except under the following conditions:

(i) The Administrator may approve unscheduled maintenance on durability-data vehicles based upon a significant change in emission levels that indicates a vehicle or engine malfunction. In these cases the Administrator may first approve specific diagnostic procedures to identify the source of the problem. The Administrator may further approve of specific corrections to the problem after the problem has been identified. The Administrator may only approve the corrective action after it is determined that:

(A) The malfunction was caused by nonproduction build practices or by a previously undetected design problem,

(B) The malfunction will not occur in production vehicles or engines in-use, *and*

(C) The deterioration factor generated by the durability-data vehicle or engine will remain unaffected by the malfunction or by the corrective action (*e.g.*, the malfunction was present for only a short period of time before detection, replacement parts are functionally representative of the proper mileage or hours, etc.).

(ii) Following any unscheduled maintenance approved under paragraph (d)(3)(i) of this section, the manufacturer shall perform an after-maintenance emissions test. If the Administrator determines that the after-maintenance emission levels for any pollutant indicates that the deterioration factor is no longer representative of production, the Administrator may disqualify the durability-data vehicle or engine.

(4) If the Administrator determines that part failure or system malfunction occurrence and/or repair rendered the vehicle/engine unrepresentative of vehicles in-use, the vehicle/engine shall not be used for determining deterioration factors.

(5) Repairs to vehicle components of a durability data vehicle other than the engine, emission control system, or fuel system, shall be performed only as a result of part failure, vehicle system malfunction, or with the advance approval of the Administrator.

(e) *Maintenance on emission data vehicles and engines.*

(1) Adjustment of engine idle speed on emission data vehicles may be performed once before the low-mileage/low-hour emission test point. Any other engine, emission control system, or fuel system adjustment, repair, removal, disassembly, cleaning, or replacement on emission data vehicles shall be performed only with the advance approval of the Administrator.

(2) Maintenance on light-duty truck emission-data vehicles selected under § 86.085–24(b)(1) (v) or (vii), and permitted to be tested for purposes of § 86.088–23(c)(1)(ii) under the provisions of § 86.085–24(b)(2), may be performed in conjunction with emission control system modifications at the low-mileage test point, and shall be performed in accordance with the maintenance instructions to be provided to the ultimate purchaser required under § 86.087–38.

(3) Maintenance on those light-duty truck emission-data vehicles selected under § 86.085–24(b)(1)(v) which are not capable of being modified in the field for the purpose of complying with emission standards at an altitude other than that intended by the original design, may be performed in conjunction with the emission control system modifications at the low-mileage test point, and shall be approved in advance by the Administrator.

(4) Repairs to vehicle components of an emission data vehicle other than the engine, emission control system, or fuel system, shall be performed only as a result of part failure, vehicle system malfunction, or with the advance approval of the Administrator.

(f) Equipment, instruments, or tools may not be used to identify malfunctioning, maladjusted, or defective engine components unless the same or equivalent equipment, instruments, or tools will be available to dealerships and other service outlets and:

(1) Are used in conjuction with scheduled maintenance on such components, or

(2) Are used subsequent to the identification of a vehicle or engine malfunction, as provided in paragraph (d)(2) of this section for durability data vehicles or in paragraph (e)(1) of this section for emission-data vehicles, or

(3) Unless specifically authorized by the Administrator.

(g)(1) Paragraph (g) of this section applies to light-duty vehicles.

(2) Complete emission tests (see §§ 86.106 through 86.145) are required, unless waived by the Administrator, before and after scheduled maintenance approved for durability data vehicles. The manufacturer may perform emission tests before unscheduled maintenance. Complete emission tests are required after unscheduled maintenance which may reasonably be expected to affect emissions. The Administrator may waive the requirement to test after unscheduled maintenance. These test data may be submitted weekly to the Administrator, but shall be air posted or delivered within 7 days after completion of the tests, along with a complete record of all pertinent maintenance, including a preliminary engineering report of any malfunction diagnosis and the corrective action taken. A complete engineering report shall be delivered to the Administrator concurrently with the manufacturer's application for certification.

(h) All test data, maintenance reports, and required engineering reports shall be compiled and provided to the Administrator in accordance with § 86.088–23.

20. Section 86.087–28 is amended by revising paragraph (b)(6)(ii)(C), to read as follows:

§ 86.087–28 Compliance with emission standards.

* * * * *

(b) * * *

(6) * * *

(ii) * * *

(C) *Line crossing.* For the purposes of paragraph (b)(5) of this section, line crossing occurs when either of the interpolated 4,000- and 120,000-mile points of the best fit straight line exceed the applicable emission standard and at least one applicable data point exceeds the standard.

* * * * *

21. A new § 86.088–28 is added, to read as follows:

§ 86.088–28 Compliance with emission standards.

(a)(1) Paragraph (a) of this section applies to light-duty vehicles.

(2) The applicable exhaust and fuel evaporative emission standards (and family particulate emission limits, as appropriate) of this subpart apply to the emissions of vehicles for their useful life.

(3) Since it is expected that emission control efficiency will change with mileage accumulation on the vehicle, the emission level of a vehicle which has accumulated 50,000 miles will be used as the basis for determining compliance with the standards (or family particulate emission limit, as appropriate).

(4) The procedure for determining compliance of a new motor vehicle with exhaust emission standards (or family particulate emission limit, as appropriate) is as follows, except where

specified by paragraph (a)(7) of this section for the Alternative Durability Program:

(i) Separate emission deterioration factors shall be determined from the exhaust emission results of the durability-data vehicle(s) for each engine-system combination. A separate factor shall be established for exhaust HC, exhaust CO, exhaust NO_x, and exhaust particulate (diesel vehicles only) for each engine-system combination. A separate evaporative emission deterioration factor shall be determined for each evaporative emission family-evaporative emission control system combination from the testing conducted by the manufacturer (gasoline-fueled vehicles only).

(A) The applicable results to be used unless excluded by paragraph (a)(4)(i)(A)(*4*) of this section in determining the exhaust emission deterioration factors for each engine-system combination shall be:

(*1*) All valid exhaust emission data from the tests required under § 86.084-26(a)(4) except the zero-mile tests. This shall include the official test results, as determined in § 86.088-29 for all tests conducted on all durability-data vehicles of the combination selected under § 86.085-24(c) (including all vehicles elected to be operated by the manufacturer under § 86.085-24(c)(1)(ii)).

(*2*) All exhaust emission data from the tests conducted before and after the scheduled maintenance provided in § 86.088-25.

(*3*) All exhaust emission data from tests required by maintenance approved under § 86.088-25, in those cases where the Administrator conditioned his approval for the performance of such maintenance on the inclusion of such data in the deterioration factor calculation.

(*4*) The manufacturer has the option of applying an outlier test point procedure to completed durability data within its certification testing program for a given model year. The outlier procedure will be specified by the Administrator. For any pollutant, durability-data test points that are identified as outliers shall not be included in the determination of deterioration factors if the manufacturer has elected this option. The manufacturer shall specify to the Administrator before the certification of the first engine family for that model year, if it intends to use the outlier procedure. The manufacturer may not change procedures after the first engine family of the model year is certified. Where the manufacturer chooses to apply both the outlier procedure and averaging (as allowed under § 86.084-26(a)(6)(i)) to the same data set, the outlier procedure shall be completed prior to applying the averaging procedure.

(B) All applicable exhaust emission results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The data will be acceptable for use in the calculation of the deterioration factor only if the interpolated 4,000-mile and 50,000-mile points on this line are within the low-altitude standards provided in § 86.087-8. Exceptions to this where data are still acceptable are when a best fit straight line crosses an applicable standard but no data points exceeded the standard, or the best fit straight line crosses an applicable standard with a negative slope (the 4,000-mile interpolated point is higher than the 50,000-mile interpolated point) but the 50,000-mile actual data point is below the standard. A multiplicative exhaust emission deterioration factor shall be calculated for each engine-system combination as follows:

Factor = Exhaust emissions interpolated to 50,000 miles divided by exhaust emissions interpolated to 4,000 miles.

These interpolated values shall be carried out to a minimum of four places to the right of the decimal point before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29-67.

(C) An evaporative emissions deterioration factor (gasoline-fueled vehicles only) shall be determined from the testing conducted as described in § 86.088-21(b)(4)(i), for each evaporative emission family-evaporative emission control system combination to indicate the evaporative emission level at 50,000 miles relative to the evaporative emission level at 4,000 miles as follows:

Factor = Evaporative emission level at 50,000 miles minus the evaporative emission level at 4,000 miles.

The factor shall be established to a minimum of two places to the right of the decimal.

(ii)(A) The official exhaust emission test results for each emission-data vehicle at the selected test point shall be multiplied by the appropriate deterioration factor: *Provided*, that if a deterioration factor as computed in paragraph (a)(4)(i)(B) of this section is less than one, that deterioration factor shall be one for the purposes of this paragraph.

(B) The official evaporative emission test results (gasoline-fueled vehicles only) for each evaporative emission-data vehicle at the selected test point shall be adjusted by addition of the appropriate deterioration factor: *Provided*, that if a deterioration factor as computed in paragraph (a)(4)(i)(C) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

(iii) The emissions to compare with the standard (or the family particulate emission limit, as appropriate) shall be the adjusted emissions of paragraphs (a)(4)(ii) (A) and (B) of this section for each emission-data vehicle. Before any emission value is compared with the standard (or the family particulate emission limit, as appropriate), it shall be rounded, in accordance with ASTM E 29-67, to two significant figures. The rounded emission values may not exceed the standard (or the family particulate emission limit, as appropriate).

(iv) Every test vehicle of an engine family must comply with the exhaust emission standards (or the family particulate emission limit, as appropriate), as determined in paragraph (a)(4)(iii) of this section, before any vehicle in that family may be certified.

(v) Every test vehicle of an evaporative emission family must comply with the evaporative emission standard, as determined in paragraph (a)(4)(iii) of this section, before any vehicle in that family may be certified.

(5) If a manufacturer chooses to change the level of any family particulate emission limit(s) in the particulate averaging program, compliance with the new limit(s) must be based upon existing certification data.

(6) If a manufacturer chooses to participate in the diesel particulate averaging program, the production-weighted average of the family particulate emission limits of all affected engine families must comply with the particulate standard in § 86.087-8(a)(1)(iv), or the composite particulate standard defined in § 86.085-2, as appropriate, at the end of the production year.

(7) The procedure to determine the compliance of new motor vehicles in the Alternative Durability Program (described in § 86.085-13) is the same as described in paragraphs (a)(4)(iii) through (a)(4)(v) of this section. For the engine families that are included in the Alternative Durability Program, the exhaust emission deterioration factors used to determine compliance shall be those that the Administrator has approved under § 86.085-13(c). The

evaporative emission deterioration factor for each evaporative emission family shall be determined and applied according to paragraph (a)(4) of this section. The procedures to determine the minimum exhaust emissions deterioration factors required under § 86.085–13(d) are as follows:

(i) Separate deterioration factors shall be determined from the exhaust emission results of the durability-data vehicles for each engine family group. A separate factor shall be established for exhaust HC, exhaust CO, and exhaust NOx for each engine family group. The evaporative emission deterioration factor for each evaporative family will be determined and applied in accordance with paragraph (a)(4) of this section.

(ii) The deterioration factors for each engine family group shall be determined by the Administrator using historical durability data from as many as three previous model years. These data will consist of deterioration factors generated by durability-data vehicles representing certified engine families and of deterioration factors from vehicles selected under § 86.085–24(h). The Administrator shall determine how these data will be combined for each engine family group.

(A) The test results to be used in the calculation of each deterioration factor to be combined for each engine family group shall be those test results specified in paragraph (a)(4)(i)(A) of this section.

(B) For each durability-data vehicles selected under § 86.085–24(h), all applicable exhaust emissions results shall be plotted as a function of the mileage on the system rounded to the nearest mile, and the best fit straight lines, fitted by method of least squares, shall be drawn through all these data points. The exhaust deterioration factor for each durability-data vehicles shall be calculated as specified in paragraph (a)(4)(i)(B) of this section.

(C) *Line-crossing.* For the purposes of paragraph (a)(5) of this section, line crossing occurs when either of the interpolated 4,000- and 50,000-mile points of the best fit straight line exceeds the applicable emission standard and at least one applicable data point exceeds the standard.

(*1*) The Administrator will not accept for certification line-crossing data from preproduction durability-data vehicles selected under § 86.085–24(c), § 86.085–24(h)(2), or (h)(3).

(*2*) The Administrator will not accept for certification line-crossing data from production durability-data vehicles selected under § 86.085–24(h)(1) unless the 4,000-mile test result multiplied by the engine family group deterioration factor does not exceed the applicable emission standards. The deterioration factors used for this purpose shall be those that were used in the certification of the production vehicle. Manufacturers may calculate this product immediately after the 4,000-mile test of the vehicle. If the product exceeds the applicable standards, the manufacturer may, with the approval of the Administrator, discontinue the vehicle and substitute a new vehicle. The manufacturer may continue the original vehicle, but the data will not be acceptable if line crossing occurs.

(b)(1) Paragraph (b) of this section applies to light-duty trucks.

(2) The exhaust and fuel evaporative emission standards (and family particulate emission limits, and family NO_x emisssion limits, as appropriate) of § 86.088–9 apply to the emissions of vehicles for their useful life.

(3) Since emission control efficiency generally decreases with the accumulation of mileage on the vehicle, deterioration factors will be used in combination with emission-data vehicle test results as the basis for determining compliance with the standards (or family particulate emission limit, or family NO_x emission limit, as appropriate).

(4)(i) Paragraph (b)(4) of this section describes the procedure for determining compliance of a new vehicle with exhaust emission standards (or family particulate emission limit, or family NO_x emission limit, as appropriate), based on deterioration factors supplied by the manufacturers, except where specified by paragraph (b)(5) of this section for the Alternative Durability Program.

(ii) Separate exhaust emission deterioration factors, determined from tests of vehicles, engines, subsystems, or components conducted by the manufacturer, shall be supplied for each engine-system combination. Separate factors shall be established for transient HC, CO, and NO_x, idle CO (gasoline vehicles only), and exhaust particulate (diesel vehicles only).

(iii) For transient HC, CO, and NO_x, idle CO (gasoline vehicles only), and exhaust particulate (diesel vehicles only), the official exhaust emission results for each emission-data vehicle at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(iv) The emission values to compare with the standards (or family particulate emission limit, or family NO_x emission limit, as appropriate) shall be the adjusted emission values of paragraph (b)(4)(iii) of this section rounded to two significant figures in accordance with ASTM E 29–67 for each emission-data engine.

(5)(i) Paragraph (b)(5)(i) of this section applies only to manufacturers electing to participate in the particulate averaging program.

(A) If a manufacturer chooses to change the level of any family particulate emission limit(s), compliance with the new limit(s) must be based upon existing certification data.

(B) The production-weighted average of the family particulate emission limits of all applicable engine families, rounded to two significant figures in accordance with ASTM E 29–67, must comply with the particulate standards in § 86.088–9 (a)(1)(iv) or (d)(1)(iv), or the composite particulate standard defined in § 86.085–2, as appropriate, at the end of the product year.

(ii) Paragraph (b)(5)(ii) of this section applies only to manufacturers electing to participate in the NO_x averaging program.

(A) If a manufacturer chooses to change the level of any family NO_x emission limit(s), compliance with the new limit(s) must be based upon existing certification data.

(B) The production-weighted average of the family NO_x emission limits of all applicable engine families, rounded to two significant figures in accordance with ASTM E 29–67, must comply with the NO_x emission standards of § 86.088–9(a)(1)(iii) (A) or (B), or of § 86.088–9(d)(1)(iii) (A) or (B), or the composite NO_x standard as defined in § 86.088–2, at the end of the product year.

(6) The procedure to determine the compliance of new motor vehicles in the Alternative Durability Program (described in § 86.085–13) is the same as described in paragraphs (b)(4)(iv), (b)(7)(iv) and (b)(8) of this section. For the engine families that are included in the Alternative Durability Program, the exhaust emission deterioration factors used to determine compliance shall be those that the Administrator has approved under § 86.085–13(c). The evaporative emission deterioration factor for each evaporative emission family shall be determined and applied according to paragraph (b)(7) of this section. The procedures to determine the minimum exhaust emissions deterioration factors required under § 86.085–13(d) are as follows:

(i) Separate deterioration factors shall be determined from the exhaust emission results of the durability-data vehicles for each engine family group. A separate factor shall be established for

exhaust HC, exhaust CO, and exhaust NO_x for each engine family group. The evaporative emission deterioration factor for each evaporative family will be determined and applied in accordance with paragraph (b)(6) of this section.

(ii) The deterioration factors for each engine family group shall be determined by the Administrator using historical durability data from as many as three previous model years. These data will consist of deterioration factors generated by durability-data vehicles representing certified engine families and of deterioration factors from vehicles selected under § 86.085–24(h). The Administrator shall determine how these data will be combined for each engine family group.

(A) The test results to be used in the calculations of each deterioration factor to be combined for each engine family group shall be those test results specified in paragraph (a)(4)(i)(A) of this section.

(B) For each durability-data vehicle selected under § 86.085–24(h), all applicable exhaust emission results shall be plotted as a function of the mileage on the system rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The exhaust deterioration factor for each durability-data vehicle shall be calculated as specified in paragraph (a)(4)(i)(B) of this section.

(C) *Line crossing.* For the purposes of paragraph (b)(5) of this section, line crossing occurs when either of the interpolated 4,000– and 120,000 mile points of the best fit straight line exceeds the applicable emission standard and at least one applicable data point exceeds the standard.

(*1*) The Administrator will not accept for certification line-crossing data from preproduction durability-data vehicles selected under § 86.085–24(c)(1), or § 86.085–24(h)(2) or (h)(3).

(*2*) The Administrator will not accept for certification line-crossing data from production durability-data vehicles selected under § 86.085–24(h)(1) unless the 4,000-mile test result multiplied by the engine family group deterioration factor does not exceed the applicable emission standard. The deterioration factors used for this purpose shall be those that were used in the certification of the production vehicle. Manufacturers may calculate this product immediately after the 4,000-mile test of the vehicle. If the product exceeds the applicable standard, the manufacturer may, with the approval of the Administrator, discontinue the vehicle and substitute a new vehicle. The manufacturer may continue the original vehicle, but the data will not be acceptable if line crossing occurs.

(7)(i) Paragraph (b)(7) of this section describes the procedure for determining compliance of a new vehicle with fuel evaporative emission standards. The procedure described here shall be used for all vehicles in all model years.

(ii) The manufacturer shall determine, based on testing described in § 86.088–21(b)(4)(i), and supply an evaporative emission deterioration factor for each evaporative emission family-evaporative emission control system combination. The factor shall be calculated by subtracting the emission level at the selected test point from the emission level at the useful life point.

(iii) The official evaporative emission test results for each evaporative emission-data vehicle at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(iv) The emission value to compare with the standards shall be the adjusted emission value of paragraph (b)(7)(iii) of this section rounded to two significant figures in accordance with ASTM E 29–67 for each evaporative emission-data vehicle.

(8) Every test vehicle of an engine family must comply with all applicable standards (and family particulate emission limits, and family NO_x emission limits, as appropriate), as determined in paragraphs (b)(4)(iv) and (b)(7)(iv) of this section, before any vehicle in that family will be certified.

(c)(1) Paragraph (c) of this section applies to heavy-duty engines.

(2) The exhaust emission standards for gasoline-fueled engines in § 86.088–10 or for diesel engines in § 86.088–11 apply to the emissions of engines for their useful life.

(3) Since emission control efficiency generally decreases with the accumulation of service on the engine, deterioration factors will be used in combination with emission-data engine test results as the basis for determining compliance with the standards.

(4)(i) Paragraph (c)(4) of this section describes the procedure for determining compliance of an engine with emission standards, based on deterioration factors supplied by the manufacturer.

(ii) Separate exhaust emission deterioration factors, determined from tests of engines, subsystems, or components conducted by the manufacturer, shall be supplied for each engine-system combination. For gasoline engines, separate factors shall be established for transient HC, CO, and NO_x; and for idle CO, for those engines utilizing aftertreatment technology (*e.g.*, catalytic converters). For diesel engines, separate factors shall be established for transient HC, CO, NO_x, and exhaust particulate. For diesel smoke testing, separate factors shall also be established for the acceleration mode (designated as "A"), the lugging mode (designated as "B"), and peak opacity (designated as "C").

(iii)(A) Paragraph (c)(4)(iii)(A) of this section applies to gasoline-fueled heavy-duty engines.

(*1*) *Gasoline-fueled heavy-duty engines not utilizing aftertreatment technology (e.g., catalytic converters).* For transient HC, CO, and NO_x, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(*2*) *Gasoline-fueled heavy-duty engines utilizing aftertreatment technology (e.g., catalytic converters).* For transient HC, CO, and NO_x, and for idle CO, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(B) Paragraph (c)(4)(iii)(B) of this section applies to diesel heavy-duty engines.

(*1*) *Diesel heavy-duty engines not utilizing aftertreatment technology e.g., particulate traps).* For transient HC, CO, NO_x, and particulate, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(*2*) *Diesel heavy-duty engines utilizing aftertreatment technology (e.g., particulate traps).* For transient HC, CO, NO_x, and particulate, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(3) For acceleration smoke ("A"), lugging smoke ("B"), and peak smoke ("C"), the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(iv) The emission values to compare with the standards shall be the adjusted emission values of paragraph (c)(4)(iii) of this section rounded to two significant figures in accordance with ASTM E 29-67 for each emission-data engine.

(5) [Reserved]

(6) [Reserved]

(7) Every test engine of an engine family must comply with all applicable standards, as determined in paragraph (c)(4)(iv) of this section, before any engine in that family will be certified.

(d)(1) Paragraph (d) of this section applies to gasoline-fueled heavy-duty vehicles.

(2) The applicable fuel evaporative emission standard in § 86.088-10 applies to the emissions of vehicles for their useful life.

(3)(i) For vehicles with a GVWR of up to 26,000 pounds, because it is expected that emission control efficiency will change during the useful life of the vehicle, an evaporative emission deterioration factor shall be determined from the testing described in § 86.088-23(b)(3) for each evaporative emission family-evaporative emission control system combination to indicate the evaporative emission control system deterioration during the useful life of the vehicle (minimum 50,000 miles). The factor shall be established to a minimum of two places to the right of the decimal.

(ii) For vehicles with a GVWR of greater than 26,000 pounds, because it is expected that emission control efficiency will change during the useful life of the vehicle, each manufacturer's statement as required in § 86.088-23(b)(4)(ii) shall include, in accordance with good engineering practice, consideration of control system deterioration.

(4) The evaporative emission test results, if any, shall be adjusted by the addition of the appropriate deterioration factor: *Provided*, that if the deterioration factor as computed in paragraph (d)(3) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

(5) The emission level to compare with the standard shall be the adjusted emission level of paragraph (d)(4) of this section. Before any emission value is compared with the standard, it shall be rounded, in accordance with ASTM E 29-67, to two significant figures. The rounded emission values may not exceed the standard.

(6) Every test vehicle of an evaporative emission family must comply with the evaporative emission standard, as determined in paragraph (d)(5) of this section, before any vehicle in that family may be certified.

22. A new § 86.091-28 is added, to read as follows:

§ 86.091-28 Compliance with emission standards.

(a)(1) Paragraph (a) of this section applies to light-duty vehicles.

(2) The applicable exhaust and fuel evaporative emissions standards (and family particulate emission limits, as appropriate) of this subpart apply to the emissions of vehicles for their useful life.

(3) Since it is expected that emission control efficiency will change with mileage accumulation on the vehicle, the emission level of a vehicle which has accumulated 50,000 miles will be used as the basis for determining compliance with the standards (or family particulate emission limit, as appropriate).

(4) The procedure for determining compliance of a new motor vehicle with exhaust emission standards (or family particulate emission limit, as appropriate) is as follows, except where specified by paragraph (a)(7) of this section for the Alternative Durability Program:

(i) Separate emission deterioration factors shall be determined from the exhaust emission results of the durability-data vehicle(s) for each engine-system combination. A separate factor shall be established for exhaust HC, exhaust CO, exhaust No_x, and exhaust particulate (Diesel vehicles only) for each engine-system combination. A separate evaporative emission deterioration factor shall be determined for each evaporative emission family-evaporative emission control system combination from the testing conducted by the manufacturer (gasoline fueled vehicles only).

(A) The applicable results to be used unless excluded by paragraph (a)(4)(i)(A)(*4*) of this section in determining the exhaust emission deterioration factors for each engine-system combination shall be:

(*1*) All valid exhaust emission data from the tests required under § 86.084-26(a)(4) except the zero-mile tests. This shall include the official test results, as determined in § 86.091-29 for all tests conducted on all durability-data vehicles of the combination selected under § 86.085-24(c) (including all vehicles elected to be operated by the manufacturer under § 86.085-24(c)(1)(ii)).

(*2*) All exhaust emission data from the tests conducted before and after the scheduled maintenance provided in § 86.088-25.

(*3*) All exhaust emission data from tests required by maintenance approved under § 86.088-25, in those cases where the Administrator conditioned his approval for the performance of such maintenance on the inclusion of such data in the deterioration factor calculation.

(*4*) The manufacturer has the option of applying an outlier test point procedure to completed durability data within its certification testing program for a given model year. The outlier procedure will be specified by the Administrator. For any pollutant, durability-data test points that are identified as outliers shall not be included in the determination of deterioration factors if the manufacturer has elected this option. The manufacturer shall specify to the Administrator before the certification of the first engine family for that model year, if it intends to use the outlier procedure. The manufacturer may not change procedures after the first engine family of the model year is certified. Where the manufacturer chooses to apply both the outlier procedure and averaging (as allowed under § 86.084-26(a)(6)(i)) to the same data set, the outlier procedure shall be completed prior to applying the averaging procedure.

(B) All applicable exhaust emission results shall be plotted as a function of the mileage on the system, rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The data will be acceptable for use in the calculation of the deterioration factor only if the interpolated 4,000-mile and 50,000-mile points on this line are within the low-altitude standards provided in § 86.087-8. Exceptions to this where data are still acceptable are when a best fit straight line crosses an applicable standard but no data points exceeded the standard, or the best fit straight line crosses an applicable standard with a negative slope (the 4,000-mile interpolated point is higher than the 50,000-mile interpolated point) but the 50,000-mile actual data point is below the standard. An multiplicative exhaust emission deterioration factor shall be calculated for each engine-system combination as follows:

Factor = Exhaust emissions interpolated to 50,000 miles divided by exhaust emissions interpolated to 4,000 miles.

These interpolated values shall be carried out to a minimum of four places to the right of the decimal point before dividing one by the other to determine the deterioration factor. The results shall be rounded to three places to the right of the decimal point in accordance with ASTM E 29–67.

(C) An evaporative emissions deterioration factor (gasoline-fueled vehicles only) shall be determined from the testing conducted as described in § 86.091–21(b)(4)(i), for each evaporative emission family-evaporative emission control system combination to indicate the evaporative emission level at 50,000 miles relative to the evaporative emission level at 4,000 miles as follows:

Factor = Evaporative emission level at 50,000 miles minus the evaporative emission level at 4,000 miles.

The factor shall be established to a minimum of two places to the right of the decimal.

(ii)(A) The official exhaust emission test results for each emission-data vehicle at the selected test point shall be multiplied by the appropriate deterioration factor: *Provided*, that if a deterioration factor as computed in paragraph(a)(4)(i)(B) of this section is less than one, that deterioration factor shall be one for the purposes of this paragraph.

(B) The official evaporative emission test results (gasoline-fueled vehicles only) for each evaporative emission-data vehicle at the selected test point shall be adjusted by addition of the appropriate deterioration factor: *Provided*, that if a deterioration factor as computed in paragraph (a)(4)(i)(C) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

(iii) The emissions to compare with the standard (or the family particulate emission limit, as appropriate) shall be the adjusted emissions of paragraphs (a)(4)(ii) (A) and (B) of this section for each emission-data vehicle. Before any emission value is compared with the standard (or the family particulate emission limit, as appropriate), it shall be rounded, in accordance with ASTM E 29–67, to two significant figures. The rounded emission values may not exceed the standard (or the family particulate emission limit, as appropriate).

(iv) Every test vehicle of an engine family must comply with the exhaust emission standards (or the family particulate emission limit, as appropriate), as determined in paragraph (a)(4)(iii) of this section, before any vehicle in that family may be certified.

(v) Every test vehicle of an evaporative emission family must comply with the evaporative emission standard, as determined in paragraph (a)(4)(iii) of this section, before any vehicle in that family may be certified.

(5) If a manufacturer chooses to change the level of any family particulate emission limit(s) in the particulate averaging program, compliance with the new limit(s) must be based upon existing certification data.

(6) If a manufacturer chooses to participate in the diesel particulate averaging program, the production-weighted average of the family particulate emission limits of all affected engine families must comply with the particulate standards in § 86.087–8(a)(1)(iv), or the composite particulate standard defined in § 86.085–2, as appropriate, at the end of the production year.

(7) The procedure to determine the compliance of new motor vehicles in the Alternative Durability Program (described in § 86.085–13) is the same as described in paragraphs (a)(4)(iii) through (a)(4)(v) of this section. For the engine families that are included in the Alternative Durability Program, the exhaust emission deterioration factors used to determine compliance shall be those that the Administrator has approved under § 86.085–13(c). The evaporative emission deterioration factor for each evaporative emission family shall be determined and applied according to paragraph (a)(4) of this section. The procedures to determine the minimum exhaust emissions deterioration factors required under § 86.085–13(d) are as follows:

(i) Separate deterioration factors shall be determined from the exhaust emission results of the durability-data vehicles for each engine family group. A separate factor shall be established for exhaust HC, exhaust CO, and exhaust NO_x for each engine family group. The evaporative emission deterioration factor for each evaporative family will be determined and applied in accordance with paragraph (a)(4) of this section.

(ii) The deterioration factors for each engine family group shall be determined by the Administrator using historical durability data from as many as three previous model years. These data will consist of deterioration factors generated by durability-data vehicles representing certified engine families and of deterioration factors from vehicles selected under § 86.085–24(h). The Administrator shall determine how these data will be combined for each engine family group.

(A) The test result to be used in the calculation of each deterioration factor to be combined for each engine family group shall be those test results specified in paragraph (a)(4)(i)(A) of this section.

(B) For each durability-data vehicles selected under § 86.085–24(h), all applicable exhaust emissions results shall be plotted as a function of the mileage on the system rounded to the nearest mile, and the best fit straight lines, fitted by method of least squares, shall be drawn through all these data points. The exhaust deterioration factor for each durability-data vehicles shall be calculated as specified in paragraph (a)(4)(i)(B) of this section.

(C) *Line-crossing*. For the purposes of paragraph (a)(5) of this section, line crossing occurs when either of the interpolated 4,000- and 50,000-mile points of the best fit straight line exceeds the applicable emission standard and at least one applicable data point exceeds the standard.

(*1*) The Administrator will not accept for certification line-crossing data from preproduction durability-data vehicles selected under § 86.085–24(c), § 86.085–24(h)(2), or (h)(3).

(*2*) The Administrator will not accept for certification line-crossing data from production durability-data vehicles selected under § 86.085–24(h)(1) unless the 4,000-mile test result multiplied by the engine family group deterioration factor does not exceed the applicable emission standards. The deterioration factors used for this purpose shall be those that were used in the certification of the production vehicle. Manufacturers may calculate this product immediately after the 4,000-mile test of the vehicle. If the product exceeds the applicable standards, the manufacturer may, with the approval of the Administrator, discontinue the vehicle and substitute a new vehicle. The manufacturer may continue the original vehicle, but the data will not be acceptable if line crossing occurs.

(b)(1) Paragraph (b) of this section applies to light-duty trucks.

(2) The exhaust and fuel evaporative emission standards of § 86.088–9 (and the family particulate emission limits, and family NO_x emission limits, as appropriate) apply to the emissions of vehicles for their useful life.

(3) Since emission control efficiency generally decreases with the accumulation of mileage on the vehicle, deterioriation factors will be used in combination with emission-data vehicle test results as the basis for determining compliance with the standards (or the family particulate emission limit, or

family NO_x emission limit, as appropriate).

(4)(i) Paragraph (b)(4) of this section describes the prodedure for determining compliance of a new vehicle with exhaust emission standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate), based on deterioration factors supplied by the manufacturers, except where specified by paragraph (b)(5) of this section for the Alternative Durability Program.

(ii) Separate exhaust emission deterioration factors, determined from tests of vehicles, engines, subsystems, or components conducted by the manufacturer, shall be supplied for each engine-system combination. Separate factors shall be established for transient HC, CO, and NO_x, idle CO (gasoline vehicles only), and exhaust particulate (diesel vehicles only).

(iii) For transient HC, CO, and NO_x, idle CO (gasoline vehicles only), and exhaust particulate (diesel vehicles only), the official exhaust emission results for each emission-data vehicle at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purpose of this paragraph.

(iv) The emission values to compare with the standards (or family particulate emission limit, or family NO_x emission limit, as appropriate) shall be the adjusted emission values of paragraph (b)(4)(iii) of this section rounded to two significant figures in accordance with ASTM E 29-67 for each emission-data engine.

(5)(i) Paragraph (b)(5)(i) of this section applies only to manufacturers electing to participate in the particulate averaging program.

(A) If a manufacturer chooses to change the level of any family particulate emission limit(s), compliance with the new limit(s) must be based upon existing certification data.

(B) The production-weighted average of the family particulate emission limits of all applicable engine families, rounded to two significant figures in accordance with ASTM E 29-67, must comply with the particulate standards in § 86.088-9 (a)(1)(iv) or (d)(1)(iv), or the composite particulate standard as defined in § 86.085-2, as appropriate, at the end of the product year.

(ii) Paragraph (b)(5)(ii) of this section applies only to manufacturers electing to participate in the NO_x averaging program.

(A) If a manufacturer chooses to change the level of any family NO_x emission limit(s), compliance with the new limit(s) must be based upon existing certification data.

(B) The production-weighted average of the family NO_x emission limits of all applicable engine families, rounded to two significant figures in accordance with ASTM E 29-67, must comply with the NO_x emission standards of § 86.088-9(a)(1)(iii) (A) or (B), or of § 86.088-9(d)(1)(iii) (A) or (B), or the composite NO_x standard as defined in § 86.088-2, at the end of the product year.

(6) The procedure to determine the compliance of new motor vehicles in the Alternative Durability Program (described in § 86.085-13) is the same as described in paragraph (b)(4)(iv), (b)(7)(iv) and (b)(8) of this section. For the engine families that are included in the Alternative Durability Program, the exhause emission deterioration factors used to determine compliance shall be those that the Administrator has approved under § 86.085-13(c). The evaporative emission deterioration factor for each evaporative emission family shall be determined and applied according to paragraph (b)(7) of this section. The procedures to determine the minimum exhaust emissions deterioration factors required under § 86.085-13(d) are as follows:

(i) Separate deterioration factors shall be determined from the exhaust emission results of the durability-data vehicles for each engine family group. A separate factor shall be established for exhaust HC, exhaust CO, and exhaust NO_x for each engine family group. The evaporative emission deterioration factor for each evaporative family will be determined and applied in accordance with paragraph (b)(6) of this section.

(ii) The deterioration factors for each engine family group shall be determined by the Administrator using historical durability data from as many as three previous model years. These data will consist of deterioration factors generated by durability-data vehicles representing certified engine families and of deterioration factors from vehicles selected under § 86.085-24(h). The Administrator shall determine how these data will be combined for each engine family group.

(A) The test results to be used in the calculations of each deterioration factor to be combined for each engine family group shall be those test results specified in paragraph (a)(4)(i)(A) of this section.

(B) For each durability-data vehicle selected under § 86.085-24(h), all applicable exhaust emission results shall be plotted as a function of the mileage on the system rounded to the nearest mile, and the best fit straight lines, fitted by the method of least squares, shall be drawn through all these data points. The exhaust deterioration factor for each durability-data vehicle shall be calculated as specified in paragraph (a)(4)(i)(B) of this section.

(C) *Line crossing.* For the purposes of paragraph (b)(5) of this section, line crossing occurs when either of the interpolated 4,000- and 120,000-mile points of the best fit straight line exceeds the applicable emission standard and at least one applicable data point exceeds the standard.

(*1*) The Administrator will not accept for certification line-crossing data from preproduction durability-data vehicles selected under § 86.085-24(c)(1), or § 86.085-24 (h)(2) or (h)(3).

(*2*) The Administrator will not accept for certification line-crossing data from production durability-data vehicles selected under § 86.085-24(h)(1) unless the 4,000-mile test result multiplied by the engine family group deterioration factor does not exceed the applicable emission standard. The deterioration factors used for this purpose shall be those that were used in the certification of the production vehicle. Manufacturers may calculate this product immediately after the 4,000-mile test of the vehicle. If the product exceeds the applicable standard, the manufacturer may, with the approval of the Administrator, discontinue the vehicle and substitute a new vehicle. The manufacturer may continue the original vehicle, but the data will not be acceptable if line crossing occurs.

(7)(i) Paragraph (b)(7) of this section describes the procedure for determining compliance of a new vehicle with fuel evaporative emission standards. The procedure described here shall be used for all vehicles in all model years.

(ii) The manufacturer shall determine, based on testing described in § 86.091-21(b)(4)(i), and supply an evaporative emission deterioration factor for each evaporative emission family-evaporative emission control system combination. The factor shall be calculated by subtracting the emission level at the selected test point from the emission level at the useful life point.

(iii) The official evaporative emission test results for each evaporative emission-data vehicle at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(iv) The emission value to compare with the standards shall be the adjusted

emission value of paragraph (b)(7)(iii) of this section rounded to two significant figures in accordance with ASTM E 29-67 for each evaporative emission-data vehicle.

(8) Every test vehicle of an engine family must comply with all applicable standards (and family particulate emission limits, and family NO_x emission limits, as appropriate), as determined in paragraphs (b)(4)(iv) and (b)(7)(iv) of this section, before any vehicle in that family will be certified.

(c)(1) Paragraph (c) of this section applies to heavy-duty engines.

(2) The exhaust emission standards for gasoline fueled engines in § 86.091-10 or for diesel engines in § 86.091-11 apply to the emissions of engines for their useful life.

(3) Since emission control efficiency generally decreases with the accumulation of service on the engine, deterioration factors will be used in combination with emission-data engine test results as the basis for determining compliance with the standards.

(4)(i) Paragraph (c)(4) of this section describes the procedure for determining compliance of an engine with emission standards (or family particulate limits, or family NO_x emission limits, as appropriate), based on deterioration factors supplied by the manufacturer.

(ii) Separate exhaust emission deterioration factors, determined from tests of engines, subsystems, or components conducted by the manufacturer, shall be supplied for each engine-system combination. For gasoline-fueled engines, separate factors shall be established for transient HC, CO, and NO_x; and idle CO, for those engines utilizing aftertreatment technology (*e.g.*, catalytic converters). For diesel engines, separate factors shall be established for transient HC, CO, NO_x, and exhaust particulate. For diesel smoke testing, separate factors shall also be established for the acceleration mode (designated as "A"), the lugging mode (designated as "B"), and peak opacity (designated as "C").

(iii)(A) Paragraph (c)(4)(iii)(A) of this section applies to gasoline-fueled heavy-duty engines.

(*1*) *Gasoline-fueled heavy-duty engines not utilizing aftertreatment technology (e.g., catalytic converters).* For transient HC, CO, and NO_x, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(*2*) *Gasoline-fueled heavy-duty engines utilizing aftertreatment technology (e.g., catalytic converters).* For transient HC, CO, and NO_x, and for idle CO, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(B) Paragraph (c)(4)(iii)(B) of this section applies to diesel heavy-duty engines.

(*1*) *Diesel heavy-duty engines not utilizing aftertreatment technology (e.g., particulate traps).* For transient HC, CO, NO_x, and exhaust particulate, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(*2*) *Diesel heavy-duty engines utilizing aftertreatment technology (e.g., particulate traps).* For transient HC, CO, NO_x, and exhaust particulate, the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by multiplication by the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than one, it shall be one for the purposes of this paragraph.

(*3*) For acceleration smoke ("A"), lugging smoke ("B"), and peak smoke ("C"), the official exhaust emission results for each emission-data engine at the selected test point shall be adjusted by the addition of the appropriate deterioration factor. However, if the deterioration factor supplied by the manufacturer is less than zero, it shall be zero for the purposes of this paragraph.

(iv) The emission values to compare with the standards (or family particulate emission limits, or family NO_x, emission limits, as appropriate) shall be the adjusted emission values of paragraph (c)(4)(iii) of this section rounded to two significant figures in accordance with ASTM E 29-67 for each emission-data engine.

(5) [Reserved]

(6) [Reserved]

(7) Every test engine of an engine family must comply with all applicable standards (or family particulate emission limits, or family NO_x emission limits, as appropriate), as determined in paragraph (c)(4)(iv) of this section, before any engine in that family will be certified.

(d)(1) Paragraph (d) of this section applies to gasoline-fueled heavy-duty vehicles.

(2) The applicable fuel evaporative emission standard in § 86.088-10 applies to the emissions of vehicles for their useful life.

(3)(i) For vehicles with a GVWR of up to 26,000 pounds, because it is expected that emission control efficiency will change during the useful life of the vehicle, an evaporative emission deterioration factor shall be determined from the testing described in § 86.088-23(b)(3) for each evaporative emission family-evaporative emission control system combination to indicate the evaporative emission control system deterioration during the useful life of the vehicle (minimum 50,000 miles). The factor shall be established to a minimum of two places to the right of the decimal.

(ii) For vehicles with a GVWR of greater than 26,000 pounds, because it is expected that emission control efficiency will change during the useful life of the vehicle, each manufacturer's statement as required in § 86.088-23(b)(4)(ii) shall include, in accordance with good engineering practice, consideration of control system deterioration.

(4) The evaporative emission test results, if any, shall be adjusted by the addition of the appropriate deterioration factor: *Provided*, that if the deterioration factor as computed in paragraph (d)(3) of this section is less than zero, that deterioration factor shall be zero for the purposes of this paragraph.

(5) The emission level to compare with the standard shall be the adjusted emission level of paragraph (d)(4) of this section. Before any emission value is compared with the standard, it shall be rounded, in accordance with ASTM E 29-67, to two significant figures. The rounded emission values may not exceed the standard.

(6) Every test vehicle of an evaporative emission family must comply with the evaporative emission standard, as determined in paragraph (d)(5) of this section, before any vehicle in that family may be certified.

23. A new § 86.088-29 is added, to read as follows:

§ 86.088-29 Testing by the Administrator.

(a)(1) Paragraph (a) of this section applies to light-duty vehicles and light-duty trucks.

(2) The Administrator may require that any one or more of the test vehicles be submitted to him, at such place or places as he may designate, for the

purposes of conducting emissions tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(3)(i) Whenever the Administrator conducts a test on a test vehicle, the results of that test shall, unless subsequently invalidated by the Administrator, comprise the official data for the vehicle at the prescribed test point and the manufacturer's data for that prescribed test point shall not be used in determining compliance with emission standards (or family particulate emission limits, or family NO_x emission limits, as appropriate).

(ii) Whenever the Administrator does not conduct a test on a test vehicle at a test point, the manufacturer's test data will be accepted as the official data for that point: *Provided*, that if the Administrator makes a determination based on testing under paragraph (a)(2) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufacturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer, *and further provided*, that if the Administrator has reasonable basis to believe that any test data submitted by the manufacturer is not accurate or has been obtained in violation of any provisions of this part, the Administrator may refuse to accept that data as the official data pending retesting or submission or further information. If the manufacturer conducts more than one test on a vehicle, as authorized under § 86.084-26(a)(3)(i)(A) or (b)(4)(i)(A), the data from the last test in that series of tests on that vehicle, will constitute the official data.

(iii)(A)(*1*) The Administrator may adjust or cause to be adjusted any adjustable parameter of an emission data vehicle or engine which the Administrator has determined to be subject to adjustment for certification and Selective Enforcement Audit testing in accordance with § 86.085-22(e)(1), to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.085-22(e)(3)(i), prior to the performance of any tests to determine whether such vehicle or engine conforms to applicable emission standards, including tests performed by the manufacturer under § 86.088-23(c)(1). However, if the idle speed parameter is one which the Administrator has determined to be subject to adjustment, the Administrator shall not adjust it to a setting which causes a higher engine idle speed than would have been possible within the physically adjustable range of the idle speed parameter on the engine before it accumulated any dynamometer service, all other parameters being identically adjusted for the purpose of the comparison. The Administrator, in making or specifying such adjustments, will consider the effect of the deviation from the manufacturer's recommended setting on emissions performance characteristics as well as the likelihood that similar settings will occur on in-use light-duty vehicles or light-duty trucks. In determining likelihood, the Administrator will consider factors such as, but not limited to, the effect of the adjustment on vehicle performance characteristics and surveillance information from similar in-use vehicles.

(*2*) For those vehicles or engine parameters which the Administrator has not determined to be subject to adjustment during certification and Selective Enforcement Audit testing in accordance with § 86.085-22(e)(1), the emission-data vehicle presented to the Administrator for testing shall be calibrated within the production tolerances applicable to the manufacturer's specifications to be shown on the vehicle label (see § 86.088-35(a)(1)(iii)(D) or (a)(2)(iii)(D)) as specified in the application for certification. If the Administrator determines that a vehicle is not within such tolerances, the vehicle will be adjusted, at the facility designated by the Administrator, prior to the test and an engineering report shall be submitted to the Administrator describing the corrective action taken. Based on the engineering report, the Administrator will determine if the vehicle will be used as an emission-data vehicle.

(B) If the Administrator determines that the test data developed on an emission-data vehicle under paragraph (a)(3)(i) of this section would cause that vehicle to fail due to excessive 4,000-mile emissions or by application of the appropriate deterioration factor, then the following procedure shall be observed:

(*1*) The manufacturer may request a retest. Before the retest, those vehicle or engine parameters which the Administrator has not determined to be subject to adjustment for certification and Selective Enforcement Audit testing in accordance with § 86.085-22(e)(1) may be readjusted to manufacturer's specification, if these adjustments were made incorrectly prior to the first test. The Administrator may adjust or cause to be adjusted any parameter which the Administrator has determined to be subject to adjustment to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.085-22(e)(3)(i). Other maintenance or repairs may be performed in accordance with § 86.088-25. All work on the vehicle shall be done at such location and under such conditions as the Administrator may prescribe.

(*2*) The vehicle will be retested by the Administrator and the results of this test shall comprise the official data for the emission-data vehicle.

(iv) If sufficient durability data are not available at the time of any emission test conducted under paragraph (a)(2) of this section to enable the Administrator to determine whether an emission-data vehicle would fail, the manufacturer may request a retest in accordance with the provisions of paragraphs (a)(3)(iii)(A) and (B) of this section. If the manufacturer does not promptly make such request, he shall be deemed to have waived the right to a retest. A request for retest must be made before the manufacturer removes the vehicle from the test premises.

(b)(1) Paragraph (b) of this section applies to heavy-duty engines.

(2) The Administrator may require that any one or more of the test engines be submitted to him, at such place or places as he may designate, for the purpose of conducting emissions tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(3)(i) Whenever the Administrator conducts a test on a test engine the results of that test, unless subsequently invalidated by the Administrator, shall comprise the official data for the engine at that prescribed test point and the manufacturer's data for that prescribed test point shall not be used in determining compliance with emission standards.

(ii) Whenever the Administrator does not conduct a test on a test engine at a test point, the manufacturer's test data

will be accepted as the official data for that test point: *Provided*, that if the Administrator makes a determination based on testing under paragraph (b)(2) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufactuturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer, *and further provided*, that if the Administrator has reasonable basis to believe that any test data submitted by the manufacturer is not accurate or has been obtained in violation of any provision of this part, the Administrator may refuse to accept that data as the official data pending retesting or submission of further information.

(iii)(A)(*1*) The Administrator may adjust or cause to be adjusted any adjustable parameter of an emission-data engine which the Administrator has determined to be subject to adjustment for certification testing in accordance with § 86.085–22(e)(1), to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.085–22(e)(3)(i), prior to the performance of any tests to determine whether such engine conforms to applicable emission standards, including tests performed by the manufacturer under § 86.088–23(c)(2). The Administrator, in making or specifying such adjustments, may consider the effect of the deviation from the manufacturer's recommended setting on emissions performance characteristics as well as the likelihood that similar settings will occur on in-use heavy-duty engines. In determining likelihood, the Administrator may consider factors such as, but not limited to, the effect of the adjustment on engine performance characteristics and surveillance information from similar in-use engines.

(*2*) For those engine parameters which the Administrator has not determined to be subject to adjustment for certification testing in accordance with § 86.085–22(e)(1), the emission-data engine presented to the Administrator for testing shall be calibrated within the production tolerances applicable to the manufacturer's specifications to be shown on the engine label (see § 86.088–35(a)(3)(iii)) as specified in the application for certification. If the Administrator determines that an engine is not within such tolerances, the engine shall be adjusted at the facility designated by the Administrator prior to the test and an engineering report shall be submitted to the Administrator describing the corrective action taken. Based on the engineering report, the Administrator will determine if the engine shall be used as an emission-data engine.

(B) If the Administrator determines that the test data developed under paragraph (b)(3)(iii)(A) of this section would cause the emission-data engine to fail due to excessive 125-hour emission values or by the application of the appropriate deterioration factor, then the following procedure shall be observed:

(*1*) The manufacturer may request a retest. Before the retest, those engine parameters which the Administrator has not determined to be subject to adjustment for certification testing in accordance with § 86.085–22(e)(1) may be readjusted to the manufacturer's specifications, if these adjustments were made incorrectly prior to the first test. The Administrator may adjust or cause to be adjusted any parameter which the Administrator has determined to be subject to adjustment in accordance with § 86.085–22(e)(3)(i). However, if the idle speed parameter is one which the Administrator has determined to be subject to adjustment, the Administrator shall not adjust it to a setting which causes a higher engine idle speed than would have been possible within the physically adjustable range of the idle speed parameter on the engine before if accumulated any dynamometer service, all other parameters being identically adjusted for the purpose of the comparison. Other maintenance or repairs may be performed in accordance with § 86.088–25. All work on the vehicle shall be done at such location and under such conditions as the Administrator may prescribe.

(*2*) The engine will be retested by the Administrator and the results of this test shall comprise the official data for the emission-data engine.

(iv) If sufficient durability data are not available at the time of any emission test conducted under paragraph (b)(2) of this section to enable the Administrator to determine whether an emission-data engine would fail, the manufacturer may request a retest in accordance with the provisions of paragraph (b)(3)(iii)(B) (1) and (2) of this section. If the manufacturer does not promptly make such request, he shall be deemed to have waived the right to a retest. A request for retest must be made before the manufacturer removes the engine from the test premises.

(c)(1) Paragraph (c) of this section applies to gasoline-fueled heavy-duty vehicles.

(2) The Administrator may require that any one or more of the evaporative emission family-system combinations included in the manufacturer's statement(s) of compliance be installed on an appropriate vehicle and such vehicle be submitted to him, at such place or places as he may designate, for the purpose of conducting emissions tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(3)(i) Whenever the Administrator conducts a test on an evaporative emission family-system combination the results of that test, unless subsequently invalidated by the Administrator, shall comprise the official data for the evaporative emission family-system combination and the manufacturer's data, analyses, etc., shall not be used in determining compliance with emission standards.

(ii) Whenever the Administrator does not conduct a test on an evaporative emission family-system combination, the manufacturer's test data will be accepted as the official data: *Provided*, that if the Administrator makes a determination, based on testing under paragraph (c)(2) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufacturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer, *and further provided*, that if the Administrator has reasonable basis to believe that any test data, analyses, or other information submitted by the manufacturer is not accurate or has been obtained in violation of any provision of this part, the Administrator may refuse to accept those data, analyses, etc., as the official data pending retesting or submission of further information.

24. A new § 86.091–29 is added, to read as follows:

§ 86.091–29 Testing by the Administrator.

(a)(1) Paragraph (a) of this section applies to light-duty vehicles and light-duty trucks.

(2) The Administrator may require that any one or more of the test vehicles be submitted to him, at such place or places as he may designate, for the purposes of conducting emissions tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(3)(i) Whenever the Administrator conducts a test on a test vehicle, the results of that test shall, unless subsequently invalidated by the Administrator, comprise the official data for the vehicle at the prescribed test point and the manufacturer's data for that prescribed test point shall not be used in determining compliance with emission standards (or family particulate emission limits, or family NO_x emission limits, as appropriate).

(ii) Whenever the Administrator does not conduct a test on a test vehicle at a test point, the manufacturer's test data will be accepted as the official data for that point: *Provided*, that if the Administrator makes a determination based on testing under paragraph (a)(2) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufacturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer, *and further provided*, that if the Administrator has reasonable basis to believe that any test data submitted by the manufacturer is not accurate or has been obtained in violation of any provisions of this part, the Administrator may refuse to accept that data as the official data pending retesting or submission or further information. If the manufacturer conducts more than one test on a vehicle, as authorized under § 86.084–26 (a)(3)(i)(A) or (b)(4)(i)(A), the data from the last test in that series of tests on that vehicle, will constitute the official data.

(iii)(A)(*1*) The Administrator may adjust or cause to be adjusted any adjustable parameter of an emission-data vehicle or engine which the Administrator has determined to be subject to adjustment for certification and Selective Enforcement Audit testing in accordance with § 86.085–22(e)(1), to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.085–22(e)(3)(i), prior to the performance of any tests to determine whether such vehicle or engine conforms to applicable emission standards, including tests performed by the manufacturer under § 86.091–23(c)(1). However, if the idle speed parameter is one which the Administrator has determined to be subject to adjustment, the Administrator shall not adjust it to a setting which causes a higher engine idle speed than would have been possible within the physically adjustable range of the idle speed parameter on the engine before it accumulated any dynamometer service, all other parameters being identically adjusted for the purpose of the comparison. The Administrator, in making or specifying such adjustments, will consider the effect of the deviation from the manufacturer's recommended setting on emissions performance characteristics as well as the likelihood that similar settings will occur on in-use light-duty vehicles or light-duty trucks. In determining likelihood, the Administrator will consider factors such as, but not limited to, the effect of the adjustment on vehicle performance characteristics and surveillance information from similar in-use vehicles.

(*2*) For those vehicles or engine parameters which the Administrator has not determined to be subject to adjustment during certification and Selective Enforcement Audit testing in accordance with § 86.085–22(e)(1), the emission-data vehicle presented to the Administrator for testing shall be calibrated within the production tolerances applicable to the manufacturer's specifications to be shown on the vehicle label (see § 86.091–35 (a)(1)(iii)(D) or (a)(2)(iii)(D)) as specified in the application for certification. If the Administrator determines that a vehicle is not within such tolerances, the vehicle will be adjusted, at the facility designated by the Administrator, prior to the test and an engineering report shall be submitted to the Administrator describing the corrective action taken. Based on the engineering report, the Administrator will determine if the vehicle will be used as an emission-data vehicle.

(B) If the Administrator determines that the test data developed on an emission-data vehicle under paragraph (a)(3)(i) of this section would cause that vehicle to fail due to excessive 4,000-mile emissions or by application of the appropriate deterioration factor, then the following procedure shall be observed:

(*1*) The manufacturer may request a retest. Before the retest, those vehicle or engine parameters which the Administrator has not determined to be subject to adjustment for certification and Selective Enforcement Audit testing in accordance with § 86.085–22(e)(1) may be readjusted to manufacturer's specification, if these adjustments were made incorrectly prior to the first test. The Administrator may adjust or cause to be adjusted any parameter which the Administrator has determined to be subject to adjustment to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.085–22(e)(3)(i). Other maintenance or repairs may be performed in accordance with § 86.088–25. All work on the vehicle shall be done at such location and under such conditions as the Administrator may prescribe.

(*2*) The vehicle will be retested by the Administrator and the results of this test shall comprise the official data for the emission-data vehicle.

(iv) If sufficient durability data are not available at the time of any emission test conducted under paragraph (a)(2) of this section to enable the Administrator to determine whether an emission-data vehicle would fail, the manufacturer may request a retest in accordance with the provisions of paragraphs (a)(3)(iii)(A) and (B) of this section. If the manufacturer does not promptly make such request, he shall be deemed to have waived the right to a retest. A request for retest must be made before the manufacturer removes the vehicle from the test premises.

(b)(1) Paragraph (b) of this section applies to heavy-duty engines.

(2) The Administrator may require that any one or more of the test engines be submitted to him, at such place or places as he may designate, for the purpose of conducting emissions tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(3)(i) Whenever the Administrator conducts a test on a test engine the results of that test, unless subsequently invalidated by the Administrator, shall comprise the official data for the engine at that prescribed test point and the manufacturer's data for that prescribed test point shall not be used in determining compliance with emission

standards (or family particulate emission limits, or family NO_x emission limits, as appropriate).

(ii) Whenever the Administrator does not conduct a test on a test engine at a test point, the manufacturer's test data will be accepted as the official data for that test point: *Provided*, that if the Administrator makes a determination based on testing under paragraph (b)(2) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufacturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer, *and further provided*, that if the Administrator has reasonable basis to believe that any test data submitted by the manufacturer is not accurate or has been obtained in violation of any provision of this part, the Administrator may refuse to accept that data as the official data pending retesting or submission of further information.

(iii)(A)(*1*) The Administrator may adjust or cause to be adjusted any adjustable parameter of an emission-data engine which the Administrator has determined to be subject to adjustment for certification testing in accordance with § 86.085–22(e)(1), to any setting within the physically adjustable range of that parameter, as determined by the Administrator in accordance with § 86.085–22(e)(3)(i), prior to the performance of any tests to determine whether such engine conforms to applicable emission standards, including tests performed by the manufacturer under § 86.088–23(c)(2). The Administrator, in making or specifying such adjustments, may consider the effect of the deviation from the manufacturer's recommended setting on emissions performance characteristics as well as the likelihood that similar settings will occur on in-use heavy-duty engines. In determining likelihood, the Administrator may consider factors such as, but not limited to, the effect of the adjustment on engine performance characteristics and surveillance information from similar in-use engines.

(*2*) For those engine parameters which the Administrator has not determined to be subject to adjustment for certification testing in accordance with § 86.085–22(e)(1), the emission-data engine presented to the Administrator for testing shall be calibrated within the production tolerances applicable to the manufacturer's specifications to be shown on the engine label (see § 86.091–35(a)(3)(iii)) as specified in the application for certification. If the Administrator determines that an engine is not within such tolerances, the engine shall be adjusted at the facility designated by the Administrator prior to the test and an engineering report shall be submitted to the Administrator describing the corrective action taken. Based on the engineering report, the Administrator will determine if the engine shall be used as an emission-data engine.

(B) If the Administrator determines that the test data developed under paragraph (b)(3)(iii)(A) of this section would cause the emission-data engine to fail due to excessive 125-hour emission values or by the application of the appropriate deterioration factor, then the following procedure shall be observed:

(*1*) The manufacturer may request a retest. Before the retest, those engine parameters which the Administrator has not determined to be subject to adjustment for certification testing in accordance with § 86.085–22(e)(1) may be readjusted to the manufacturer's specifications, if these adjustments were made incorrectly prior to the first test. The Administrator may adjust or cause to be adjusted any parameter which the Administrator has determined to be subject to adjustment in accordance with § 86.085–22(e)(3)(i). However, if the idle speed parameter is one which the Administrator has determined to be subject to adjustment, the Administrator shall not adjust it to a setting which causes a higher engine idle speed than would have been possible within the physically adjustable range of the idle speed parameter on the engine before it accumulated any dynamometer service, all other parameters being identically adjusted for the purpose of the comparison. Other maintenance or repairs may be performed in accordance with § 86.088–25. All work on the vehicle shall be done at such location and under such conditions as the Administrator may prescribe.

(*2*) The engine will be retested by the Administrator and the results of this test shall comprise the official data for the emission-data engine.

(iv) If sufficient durability data are not available at the time of any emission test conducted under paragraph (b)(2) of this section to enable the Administrator to determine whether an emission-data engine would fail, the manufacturer may request a retest in accordance with the provisions of paragraph (b)(3)(iii)(B) (1) and (2) of this section. If the manufacturer does not promptly make such request, he shall be deemed to have waived the right to a retest. A request for retest must be made before the manufacturer removes the engine from the test premises.

(c)(1) Paragraph (c) of this section applies to gasoline-fueled heavy-duty vehicles.

(2) The Administrator may require that any one or more of the evaporative emission family-system combinations included in the manufacturer's statement(s) of compliance be installed on an appropriate vehicle and such vehicle be submitted to him, at such place or places as he may designate, for the purpose of conducting emissions tests. The Administrator may specify that he will conduct such testing at the manufacturer's facility, in which case instrumentation and equipment specified by the Administrator shall be made available by the manufacturer for test operations. Any testing conducted at a manufacturer's facility pursuant to this paragraph shall be scheduled by the manufacturer as promptly as possible.

(3)(i) Whenever the Administrator conducts a test on an evaporative emission family-system combination the results of that test, unless subsequently invalidated by the Administrator, shall comprise the official data for the evaporative emission family-system combination and the manufacturer's data, analyses, etc., shall not be used in determining compliance with emission standards.

(ii) Whenever the Administrator does not conduct a test on an evaporative emission family-system combination, the manufacturer's test data will be accepted as the official data: *Provided*, that if the Administrator makes a determination, based on testing under paragraph (c)(2) of this section, that there is a lack of correlation between the manufacturer's test equipment and the test equipment used by the Administrator, no manufacturer's test data will be accepted for purposes of certification until the reasons for the lack of correlation are determined and the validity of the data is established by the manufacturer, *and further provided*, that if the Administrator has reasonable basis to believe that any test data, analyses, or other information submitted by the manufacturer is not accurate or has been obtained in violation of any provision of this part, the Administrator may refuse to accept those data, analyses, etc., as the official data pending retesting or submission of further information.

25. A new § 86.088–30 is added, to read as follows:

§ 86.088-30 Certification.

(a)(1)(i) If, after a review of the test reports and data submitted by the manufacturer, data derived from any inspection carried out under § 86.078-7(c), and any other pertinent data or information, the Administrator determines that a test vehicle(s) (or test engine(s)) meet(s) the requirements of the Act and of this subpart, he will issue a certificate of conformity with respect to such vehicle(s) (or engine(s)) except in cases covered by paragraphs (a)(1)(ii) and (c) of this section.

(ii) *Gasoline-fueled heavy-duty vehicles.* If, after a review of the statement(s) of compliance submitted by the manufacturer under § 86.088-23(b)(4) and any other pertinent data or information, the Administrator determines that the requirements of the Act and this subpart have been met, he will issue one certificate of conformity per manufacturer with respect to the evaporative emission family(s) covered by such statement(s) except in cases covered by paragraph (c) of this section.

(2) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary or appropriate to assure that any new motor vehicle (or new motor vehicle engine) covered by the certificate will meet the requirements of the Act and of this part.

(3)(i) One such certificate will be issued for each engine family. For gasoline-fueled light-duty vehicles and light-duty trucks, one such certificate will be issued for each engine family-evaporative emission family combination.

(A) *Light-Duty Vehicles.* Each certificate will certify compliance with no more than one set of standards (or one family particulate emission limit, as appropriate).

(B) *Light-Duty Trucks.* Each certificate will certify compliance with no more than one set of standards (or one family particulate emission limit, or one family NO_x emission limit, as appropriate), except for low-altitude standards and high-altitude standards. The certificate shall state that it covers vehicles sold or delivered to an ultimate purchaser for principal use at a designated high-altitude location only if the vehicle conforms in all material respects to the design specifications that apply to those vehicles described in the application for certification at high altitude.

(ii) For gasoline-fueled heavy-duty vehicles, one such certificate will be issued for each manufacturer and will certify compliance for those vehicles previously identified in that manufacturer's statement(s) of compliance as required in § 86.088-23(b)(4) (i) and (ii).

(iii) For diesel light-duty vehicles and light-duty trucks included in the particulate averaging program, the manufacturer may at any time during production elect to change the level of any family particulate emission limit by demonstrating compliance with the new limit as described in §§ 86.088-28(a)(6) and 86.088-28(b)(5)(i). New certificates issued under this paragraph will be applicable only for vehicles produced subsequent to the date of issuance.

(iv) For light-duty trucks included in the NO_x averaging program, the manufacturer may at any time during production elect to change the level of any family NO_x emission limit by demonstrating compliance with the new limit as described in § 86.088-28(b)(5)(ii). New certificates issued under this paragraph will be applicable only for vehicles produced subsequent to the day of issue.

(4)(i) The adjustment or modification of any light-duty truck in accordance with instructions provided by the manufacturer for the altitude where the vehicle is principally used will not be considered a violation of Section 203(a)(3) of the Clean Air Act.

(ii) A violation of Section 203(a)(1) of the Clean Air Act occurs when a manufacturer sells or delivers to an ultimate purchaser any light-duty vehicle or light-duty truck, subject to the regulations under the Act, under any of the conditions specified in the remainder of this paragraph.

(A) When a light-duty vehicle or light-duty truck is not configured to meet high-altitude requirements:

(*1*) At a designated high-altitude location, unless such manufacturer has reason to believe that such vehicle will not be sold to an ultimate purchaser for principal use at a designated high-altitude location; or

(*2*) At a location other than a designated high-altitude location, when such manufacturer has reason to believe that such motor vehicle will be sold to an ultimate purchaser for principal use at a designated high-altitude location.

(B) When a light-duty vehicle is not configured to meet low-altitude requirements, as provided in § 86.087-8(i):

(*1*) At a designated low-altitude location, unless such manufacturer has reason to believe that such vehicle will not be sold to an ultimate purchaser for principal use at a designated low-altitude location; or

(*2*) At a location other than a designated low-altitude location, when such manufacturer has reason to believe that such motor vehicle will be sold to an ultimate purchaser for principal use at a designated low-altitude location.

(iii) A manufacturer shall be deemed to have reason to believe that a light-duty vehicle that has been exempted from compliance with emission standards at high altitude, or a light-duty truck which is not configured to meet high-altitude requirements, will not be sold to an ultimate purchaser for principal use at a designated high-altitude location if the manufacturer has informed its dealers and field representatives about the terms of these high-altitude regulations, has not caused the improper sale itself, and has taken reasonable action which shall include, but not be limited to, either paragraph (a)(4)(iii) (A) or (B), and (a)(4)(iii)(C) of this section:

(A) Requiring dealers in designated high-altitude locations to submit written statements to the manufacturer signed by the ultimate purchaser that a vehicle which is not configured to meet high-altitude requirements will not be used principally at a designated high-altitude location; requiring dealers in counties contiguous to designated high-altitude locations to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated high-altitude location, that a vehicle which is not configured to meet high-altitude requirements will not be used principally at a designated high-altitude location; and for each sale or delivery of fleets of ten or more such vehicles in a high-altitude location or in counties contiguous to high-altitude locations, requiring either the selling dealer or the delivering dealer to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated high-altitude location, that a vehicle which is not configured to meet high-altitude requirements will not be used principally at a designated high-altitude location. In addition, the manufacturer will make available to EPA, upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold), sales, warranty, or other information pertaining to sales of vehicles by the dealers described above maintained by the manufacturer in the normal course of business relating to the altitude configuration of vehicles and the locations of ultimate purchasers; or

(B) Implementing a system which monitors factory orders of low-altitude vehicles by high-altitude dealers, or through other means, identifies dealers that may have sold or delivered a vehicle not configured to meet the high-altitude requirements to an ultimate purchaser for principal use at a designated high-altitude location; and making such information available to EPA upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold); and

(C) Within a reasonable time after receiving written notice from EPA or a State or local government agency that a dealer may have improperly sold or delivered a vehicle not configured to meet the high-altitude requirements to an ultimate purchaser residing in a designated high-altitude location, or based on information obtained pursuant to paragraph (a)(4)(iii) of this section that a dealer may have improperly sold or delivered a significant number of such vehicles to ultimate purchasers so residing, reminding the dealer in writing of the requirements of these regulations, and, where appropriate, warning the dealer that sale by the dealer of vehicles not configured to meet high-altitude requirements may be contrary to the terms of its franchise agreement with the manufacturer and the dealer certification requirements of § 85.2108 of this chapter.

(iv) A manufacturer shall be deemed to have reason to believe that a light-duty vehicle which has been exempted from compliance with emission standards at low-altitude, as provided in § 86.087–8(i), will not be sold to an ultimate purchaser for principal use at a designated low-altitude location if the manufacturer has informed its dealers and field representatives about the terms of these high-altitude regulations, has not caused the improper sale itself, and has taken reasonable action which shall include, but not be limited to, either paragraph (a)(4)(iv) (A) or (B), and (a)(4)(iv)(C) of this section:

(A) Requiring dealers in designated low-altitude locations to submit written statements to the manufacturer signed by the ultimate purchaser that a vehicle which is not configured to meet low-altitude requirements will not be used principally at a designated low-altitude location; requiring dealers in counties contiguous to designated low-altitude locations to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated low-altitude location, that a vehicle which is not configured to meet low-altitude requirements will not be used principally at a designated low-altitude location; and for each sale or delivery of fleets of ten or more such vehicles in a low-altitude location or in counties contiguous to low-altitude locations, requiring either the selling dealer or the delivering dealer to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated low-altitude location, that a vehicle which is not configured to meet low-altitude requirements will not be used principally at a designated high-altitude location. In addition, the manufacturer will make available to EPA, upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold), sales, warranty, or other information pertaining to sales of vehicles by the dealers described above maintained by the manufacturer in the normal course of business relating to the altitude configuration of vehicles and the locations of ultimate purchasers; or

(B) Implementing a system which monitors factory orders of high-altitude vehicles by low-altitude dealers, or through other means, identifies dealers that may have sold or delivered a vehicle not configured to meet the low-altitude requirements to an ultimate purchaser for principal use at a designated low-altitude location; and making such information available to EPA upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold); and

(C) Within a reasonable time after receiving written notice from EPA or a state or local government agency that a dealer may have improperly sold or delivered a vehicle not configured to meet the low-altitude requirements to an ultimate purchaser residing in a designated low-altitude location, or based on information obtained pursuant to paragraph (a)(4)(iv) of this section that a dealer may have improperly sold or delivered a significant number of such vehicles to ultimate purchasers so residing, reminding the dealer in writing of the requirements of these regulations, and, where appropriate, warning the dealer that sale by the dealer of vehicles not configured to meet low-altitude requirements may be contrary to the terms of its franchise agreement with the manufacturer and the dealer certification requirements of § 85.2108 of this chapter.

(5)(i) For the purpose of paragraph (a) of this section, a "designated high-altitude location" is any county which has substantially all of its area located above 1,219 meters (4,000 feet) and:

(A) Requested an extension past the attainment date of December 31, 1982, for compliance with either the National Ambient Air Quality Standards for carbon monoxide or ozone, as indicated in Part 52 (Approval and Promulgation of Implementation Plans) of this title; or

(B) Is the same state as a county designated as a high-altitude location according to paragraph (a)(5)(i)(A) of this section.

(ii) The designated high-altitude locations defined in paragraph (a)(5)(i) of this section are listed below:

State of Colorado

Adams	Kit Carson
Alamosa	Lake
Arapahoe	La Plata
Archuleta	Larimer
Boulder	Las Animas
Chaffee	Lincoln
Cheyenne	Mesa
Clear Creek	Mineral
Conejos	Moffat
Costilla	Montezuma
Crowley	Montrose
Custer	Morgan
Delta	Otero
Denver	Ouray
Dolores	Park
Douglas	Pitkin
Eagle	Pueblo
Elbert	Rio Blanco
El Paso	Rio Grande
Fremont	Routt
Garfield	Saguache
Gilpin	San Juan
Grand	San Miguel
Gunnison	Summit
Hinsdale	Teller
Huerfano	Washington
Jackson	Weld
Jefferson	

State of Nevada

Carson City	Lyon
Douglas	Mineral
Elko	Nye
Esmeralda	Pershing
Eureka	Storey
Humboldt	Washoe
Lander	White Pine
Lincoln	

State of New Mexico

Bernalillo	Mora
Catron	Rio Arriba
Colfax	Roosevelt
Curry	Sandoval
De Baca	San Juan
Grant	San Miguel
Guadalupe	Santa Fe
Harding	Sierra
Hidalgo	Socorro
Lincoln	Taos
Los Alamos	Torrance
Luna	Union
McKinley	Valencia
Otero	

State of Utah

Beaver	Morgan
Box Elder	Piute
Cache	Rich
Carbon	Salt Lake
Daggett	San Juan
Davis	Sanpete
Duchesne	Sevier
Emery	Summit
Garfield	Tooele
Grand	Uintah
Iron	Utah
Juab	Wasatch
Kane	Wayne
Millard	Weber

(iii) For the purpose of paragraph (a) of this section, a "designated low-altitude location" is any county which has substantially all of its area located below 1,219 meters (4,000 feet).

(iv) The designated low-altitude locations so defined include all counties in the United States which are not listed in either paragraph (a)(5)(ii) of this section or in the list below:

State of Arizona

Apache	Navajo
Cochise	Yavapai
Coconino	

State of Idaho

Bannock	Franklin
Bear Lake	Fremont
Bingham	Jefferson
Blaine	Lemhi
Bonneville	Madison
Butte	Minidoka
Camas	Oneida
Caribou	Power
Cassia	Teton
Clark	Valley
Custer	

State of Montana

Beaverhead	Meagher
Deer Lodge	Park
Gallatin	Powell
Jefferson	Sivler Bow
Judith Basin	Wheatland
Madison	

State of Nebraska

Banner	Kimball
Cheyenne	Sioux

State of Oregon

Harney	Lake
Klamath	

State of Texas

Jeff Davis	Parmer
Hudspeth	

State of Wyoming

Albany	Natrona
Campbell	Niobrara
Carbon	Park
Converse	Platte
Fremont	Sublette
Goshen	Sweetwater
Hot Springs	Teton
Johnson	Uinta
Laramie	Washakie
Lincoln	Weston

(6) Catalyst-equipped vehicles, otherwise covered by a certificate, which are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of the catalysts. If these vehicles are imported or offered for importation without retrofit of the catalyst, they will be considered not to be within the coverage of the certificate unless included in a catalyst control program operated by a manufacturer or a United States Government agency and approved by the Administrator.

(7) For incomplete light-duty trucks, a certificate covers only those new motor vehicles which, when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in § 86.088-21(d).

(8) For heavy-duty engines, a certificate covers only those new motor vehicle engines installed in heavy-duty vehicles which conform to the minimum gross vehicle weight rating, curb weight, or frontal area limitations for heavy-duty vehicles described in § 86.082-2.

(9) For incomplete gasoline-fueled heavy-duty vehicles a certificate covers only those new motor vehicles which, when completed, conform to the nominal maximum fuel tank capacity limitations as described in the application for certification as required in § 86.088-21(e).

(10) For diesel light-duty vehicles and diesel light-duty truck familes which are included in particulate averaging program, the manufacturer's production-weighted average of the particulate emission limits of all engine families in a participating class or classes shall not exceed the applicable diesel particulate standard, or the composite particulate standard defined in § 86.085-2, as appropriate, at the end of the model year, as determined in accordance with 40 CFR Part 86. The certificate shall be void *ab initio* for those vehicles causing any exceedance of the particulate standard.

(11) For light-duty truck families which are included in the NO_x averaging program, the manufacturer's production-weighted average of the NO_x emission limits of all such engine families shall not exceed the applicable light-duty truck NO_x standard, or the composite NO_x standard defined in § 86.088-2, as appropriate, at the end of the model year, as determined in accordance with 40 CFR Part 86. The certificate shall be void *ab initio* for those vehicles causing any exceedance of the NO_x standard.

(b)(1) The Administrator will determine whether a vehicle (or engine) covered by the application complies with applicable standards (or family particulate emission limit, or family NO_x emission limit, as appropriate) by observing the following relationships:

(i) *Light-duty vehicles.* (A) The durability-data vehicle(s) selected under § 86.085-24(c)(1)(i) shall represent all vehicles of the same engine-system combination.

(B) The emission-data vehicle(s) selected under § 86.085-24(b)(1) (ii) through (iv) shall represent all vehicles of the same engine-system combination as applicable.

(C) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(vii) (A) and (B) shall represent all vehicles of the same evaporative control system within the evaporative family.

(ii) *Light-duty trucks.* (A) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(ii), shall represent all vehicles of the same engine-system combination as applicable.

(B) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(vii) (A) and (B) shall represent all vehicles of the same evaporative control system within the evaporative family.

(C) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(v) shall represent all vehicles of the same engine-system combination as applicable.

(D) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(viii) shall represent all vehicles of the same evaporative control system within the evaporative emission family, as applicable.

(iii) *Heavy-duty engines.* (A) A gasoline-fueled emission-data test engine selected under § 86.085-24(b)(2)(iv) shall represent all engines in the same family of the same engine displacement-exhaust emission control system combination.

(B) A gasoline-fueled emission-data test engine selected under § 86.085-24(b)(2)(iii) shall represent all engines in the same engine family of the same engine displacement-exhaust emission control system combination.

(C) A diesel emission-data test engine selected under § 86.085-24(b)(3)(ii) shall represent all engines in the same engine-system combination.

(D) A diesel emission-data test engine selected under § 86.085-24(b)(3)(iii) shall represent all engines of that emission control system at the rated fuel delivery of the test engine.

(iv) *Gasoline-fueled heavy-duty vehicles.* A statement of compliance submitted under § 86.088-23(b)(4) (i) or (ii) shall represent all vehicles in the same evaporative emission family-evaporative emission control system combination.

(2) The Administrator will proceed as in paragraph (a) of this section with respect to the vehicles (or engines) belonging to an engine family or engine family-evaporative emission family combination (as applicable), all of which comply with all applicable standards (or family emission limits, as appropriate).

(3) If, after a review of the test reports and data submitted by the manufacturer, data derived from any additional testing conducted pursuant to § 86.088–29, data or information derived from any inspection carried out under § 86.078–7(c) or any other pertinent data or information, the Administrator determines that one or more test vehicles (or test engines) of the certification test fleet do not meet applicable standards (or family particulate emission limits, as appropriate), he will notify the manufacturer in writing, setting forth the basis for his determination. Within 30 days following receipt of the notification, the manufacturer may request a hearing on the Administrator's determination. The request shall be in writing, signed by an authorized representative of the manufacturer and shall include a statement specifying the manufacturer's objections to the Administrator's determination and data in support of such objections. If, after a review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with § 86.078–6 with respect to such issue.

(4) For light-duty vehicles and light-duty trucks the manufacturer may, at its option, proceed with any of the following alternatives with respect to an emission-data vehicle determined not in compliance with all applicable standards (or family particulate emission limits or family NO_x emission limits, as appropriate) for which it was tested:

(i) Request a hearing under § 86.078–6; or

(ii) Remove the vehicle configuration (or evaporative vehicle configuration as applicable) which failed, from his application;

(A) If the failed vehicle was tested for compliance with exhaust emission standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) only: The Administrator may select, in place of the failed vehicle, in accordance with the selection criteria employed in selecting the failed vehicle, a new emission-data vehicle to be tested for exhaust emission compliance only.

(B) If the failed vehicle was tested for compliance with both exhaust and evaporative emission standards: The Administrator may select, in place of the failed vehicle, in accordance with the selection criteria employed in selecting the failed vehicle, a new emission-data vehicle which will be tested for compliance with both exhaust and evaporative emission standards. If one vehicle cannot be selected in accordance with the selection criteria employed in selecting the failed vehicle, then two vehicles may be selected (*i.e.*, one vehicle to satisfy the exhaust emission vehicle selection criteria and one vehicle to satisfy the evaporative emission vehicle selection criteria). The vehicle selected to satisfy the exhaust emission vehicle selection criteria will be tested for compliance with exhaust emission standards only. The vehicle selected to satisfy the evaporative emission vehicle selection criteria will be tested for compliance with both exhaust and evaporative emission standards; or

(iii) Remove the vehicle configuration (or evaporative vehicle configuration, as applicable) which failed from the application and add a vehicle configuration(s) (or evaporative vehicle configuration(s), as applicable) not previously listed. The Administrator may require, if applicable, that the failed vehicle be modified to the new engine code (or evaporative emission code, as applicable) and demonstrate by testing that it meets applicable standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) for which it was originally tested. In addition, the Administrator may select, in accordance with the vehicle selection criteria given in § 86.085–24(b), a new emission-data vehicle or vehicles. The vehicles selected to satisfy the exhaust emission vehicle selection criteria will be tested for compliance with exhaust emission standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) only. The vehicles selected to satisfy the evaporative emission vehicle selection criteria will be tested for compliance with both exhaust and evaporative emission standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate); or

(iv) Correct a component or system malfunction and show that with a correctly functioning system or component the failed vehicle meets applicable standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) for which it was originally tested. The Administrator may require a new emission-data vehicle, of identical vehicle configuration (or evaporative vehicle configuration, as applicable) to the failed vehicle, to be operated and tested for compliance with the applicable standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) for which the failed vehicle was originally tested.

(5) For heavy-duty engines the manufacturer may, at his option, proceed with any of the following alternatives with respect to any engine family represented by a test engine(s) determined not in compliance with applicable standards:

(i) Request a hearing under § 86.078–6; or

(ii) Delete from the application for certification the engines represented by the failing test engine. (Engines so deleted may be included in a later request for certification under § 86.079–32.) The Administrator may then select in place of each failing engine an alternate engine chosen in accordance with selection criteria employed in selecting the engine that failed; or

(iii) Modify the test engine and demonstrate by testing that it meets applicable standards. Another engine which is in all material respects the same as the first engine, as modified, may then be operated and tested in accordance with applicable test procedures.

(6) If the manufacturer does not request a hearing or present the required data under paragraph (b)(4) or (b)(5) of this section (as applicable) of this section, the Administrator will deny certification.

(c)(1) Notwithstanding the fact that any certification vehicle(s) (or certification engine(s)) may comply with other provisions of this subpart, the Administrator may withhold or deny the issuance of a certificate of conformity (or suspend or revoke any such certificate which has been issued) with respect to any such vehicle(s) (or engine(s)) if:

(i) The manufacturer submits false or incomplete information in his application for certification thereof;

(ii) The manufacturer renders inaccurate any test data which he submits pertaining thereto or otherwise circumvents the intent of the Act, or of this part with respect to such vehicle (or engine);

(iii) Any EPA Enforcement Officer is denied access on the terms specified in § 86.078–7(c) to any facility or portion thereof which contains any of the following:

(A) The vehicle (or engine)

(B) Any components used or considered for use in its modification or

buildup into a certification vehicle (or certification engine);

(C) Any production vehicle (or production engine) which is or will be claimed by the manufacturer to be covered by the certificate;

(D) Any step in the construction of a vehicle (or engine) described in paragraph (c)(iii)(C) of this section;

(E) Any records, documents, reports, or histories required by this part to be kept concerning any of the above;

(iv) Any EPA Enforcement Officer is denied "reasonable assistance" (as defined in § 86.078–7(c)) in examining any of the items listed in paragraph (c)(1)(iii) of this section.

(2) The sanctions of withholding, denying, revoking, or suspending of a certificate may be imposed for the reasons in paragraph (c)(1) (i), (ii), (iii), or (iv) of this section only when the infraction is substantial.

(3) In any case in which a manufacturer knowingly submits false or inaccurate information or knowingly renders inaccurate or invalid any test data or commits any other fraudulent acts and such acts contribute substantially to the Administrator's decision to issue a certificate of conformity, the Administrator may deem such certificate void *ab initio*.

(4) In any case in which certification of a vehicle (or engine) is proposed to be withheld, denied, revoked, or suspended under paragraph (c)(1) (iii) or (iv) of this section, and in which the Administrator has presented to the manufacturer involved, reasonable evidence that a violation of § 86.078–7(c) in fact occurred, the manufacturer, if he wishes to contend that, even though the violation occurred, the vehicle (or engine) in question was not involved in the violation to a degree that would warrant withholding denial, revocation, or suspension of certification under either paragraph (c)(1) (iii) or (iv) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(5) Any revocation or suspension of certification under paragraph (c)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.078–6 hereof.

(ii) Extend no further than to forbid the introduction into commerce of vehicles (or engines) previously covered by the certification which are still in the hands of the manufacturer, except in cases of such fraud or other misconduct as makes the certification invalid *ab initio*.

(6) The manufacturer may request in the form and manner specified in paragraph (b)(3) of this section that any determination made by the Administrator under paragraph (c)(1) of this section to withhold or deny certification be reviewed in a hearing conducted in accordance with § 86.078–6. If the Administrator finds, after a review of the request and supporting data, that the request raises a substantial factual issue, he will grant the request with respect to such issue.

(d)(1) *For light-duty vehicles.* Notwithstanding the fact that any vehicle configuration or engine family may be covered by a valid outstanding certificate of conformity, the Administrator may suspend such outstanding certificate of conformity in whole or in part with respect to such vehicle configuration or engine family if:

(i) The manufacturer refuses to comply with the provisions of a test order issued by the Administrator pursuant to § 86.603; or

(ii) The manufacturer refuses to comply with any of the requirements of § 86.603; or

(iii) The manufacturer submits false or incomplete information in any report or information provided pursuant to the requirements of § 86.609; or

(iv) The manufacturer renders inaccurate any test data which he submits pursuant to § 86.609; or

(v) Any EPA Enforcement Officer is denied access to a facility on the terms specified in § 86.606; or

(vi) Any EPA Enforcement Officer is denied the opportunity on the terms specified in § 86.606, to:

(A) Monitor vehicle selection pursuant to § 86.607, or

(B) Select vehicles for testing pursuant to § 86.607; or

(C) Monitor vehicle testing performed to satisfy any of the requirements of this part; or

(vii) Any EPA Enforcement Officer is denied "reasonable assistance" as defined in § 86.606 in examining any of the items listed in that section; or

(viii) The manufacturer refuses to comply with the requirements of §§ 86.604(a), 86.605, and 86.607, 86.608, 86.610, or 86.611.

(2) The sanction of suspending a certificate may not be imposed for the reasons in paragraph (d)(1) (i), (ii), or (viii) of this section where such refusal is caused by conditions and circumstances outside the control of the manufacturer which renders it impossible to comply with those requirements. Such conditions and circumstances shall include, but not be limited to, any uncontrollable factors which result in the temporary unavailability of equipment and personnel needed to conduct the required tests, such as equipment breakdown or failure or illness of personnel, but shall not include failure of the manufacturer to adequately plan for and provide the equipment and personnel needed to conduct the tests. The manufacturer will bear the burden of establishing the presence of the conditions and circumstances required by this paragraph.

(3) The sanctions of suspending a certificate may be imposed for the reasons in paragraph (d)(1) (iii), (iv), (v), (vi), or (vii) of this section only when the infraction is substantial.

(4) In any case in which a manufacturer knowingly submitted false or inaccurate information or knowingly rendered inaccurate any test data or committed any other fraudulent acts, and such acts contributed substantially to the Administrator's original decision not to suspend or revoke a certificate of conformity in whole or in part, the Administrator may deem such certificate void from the date of such fraudulent act.

(5) In any case in which certification of a vehicle is proposed to be suspended under paragraph (d)(1) (v), (vi), or (vii) of this section, and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.606 in fact occurred, the manufacturer, if he wishes to contend that even though the violation occurred, the vehicle configuration or engine family in question was not involved in the violation to the degree that would warrant suspension of certification under either paragraph (d)(1) (v), (vi), or (vii) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(6) Any suspension of certification under paragraph (d)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.613 hereof, and

(ii) Not apply to vehicles no longer in the hands of the manufacturer.

(e) *For light-duty trucks and heavy-duty engines.* (1) Notwithstanding the fact that any vehicle configuration or engine family may be covered by a valid outstanding certificate of conformity, the Administrator may suspend such outstanding certificate of conformity in whole or in part with respect to such vehicle or engine configuration or engine family if:

(i) The manufacturer refuses to comply with the provisions of a test order issued by the Administrator pursuant to § 86.1003; or

(ii) The manufacturer refuses to comply with any of the requirements of § 86.1003; or

(iii) The manufacturer submits false or incomplete information in any report or information provided pursuant to the requirements of § 86.1009; or

(iv) The manufacturer renders inaccurate any test data submitted pursuant to § 86.1009; or

(v) Any EPA Enforcement Officer is denied the opportunity to conduct activities related to entry and access as authorized in § 86.1006 of this part and in a warrant or court order presented to the manufacturer or the party in charge of a facility in question; or

(vi) EPA Enforcement Officers are unable to conduct activities related to entry and access as authorized in § 86.1006 of this part because a manufacturer has located a facility in a foreign jurisdiction where local law prohibits those activities; or

(vii) The manufacturer refuses to or in fact does not comply with the requirements of §§ 86.1004(a), 86.1005, 86.1007, 86.1008, 86.1010, 86.1011, or 86.1013.

(2) The sanction of suspending a certificate may not be imposed for the reasons in paragraphs (e)(1) (i), (ii), or (vii) of this section where such refusal or denial is caused by conditions and circumstances outside the control of the manufacturer which renders it impossible to comply with those requirements. Such conditions and circumstances shall include, but are not limited to, any uncontrollable factors which result in the temporary unavailability of equipment and personnel needed to conduct the required tests, such as equipment breakdown or failure or illness of personnel, but shall not include failure of the manufacturers to adequately plan for and provide the equipment and personnel needed to conduct the tests. The manufacturer will bear the burden of establishing the presence of the conditions and circumstances required by this paragraph.

(3) The sanction of suspending a certificate may be imposed for the reasons outlined in paragraph (e)(1) (iii), (iv), or (v) of this section only when the infraction is substantial.

(4) In any case in which a manufacturer knowingly submitted false or inaccurate information or knowingly rendered inaccurate any test data or committed any other fraudulent acts, and such acts contributed substantially to the Administrator's original decision not to suspend or revoke a certificate of conformity in whole or in part, the Administrator may deem such certificate void from the date of such fraudulent act.

(5) In any case in which certification of a light-duty truck or heavy-duty engine is proposed to be suspended under paragraph (e)(1)(v) of this section and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.1006 in fact occurred, if the manufacturer wishes to contend that, although the violation occurred, the vehicle or engine configuration or engine family in question was not involved in the violation to a degree that would warrant suspension of certification under paragraph (e)(1)(v) of this section, he shall have the burden of establishing that contention to the satisfaction of the Administrator.

(6) Any suspension of certification under paragraph (e)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.1014, and

(ii) Not apply to vehicles or engines no longer in the hands of the manufacturer.

(7) Any voiding of a certificate of conformity under paragraph (e)(4) of this section shall be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.1014.

26. A new § 86.091-30 is added, to read as follows:

§ 86.091-30 Certification.

(a)(1)(i) If, after a review of the test reports and data submitted by the manufacturer, data derived from any inspection carried out under § 86.078-7(c), and any other pertinent data or information, the Administrator determines that a test vehicle(s) (or test engine(s)) meet(s) the requirements of the Act and of this subpart, he will issue a certificate of conformity with respect to such vehicles(s) (or engine(s)) except in cases covered by paragraphs (a)(1)(ii) and (c) of this section.

(ii) *Gasoline-fueled heavy-duty vehicles.* If, after a review of the statement(s) of compliance submitted by the manufacturer under § 86.091-23(b)(4) and any other pertinent data or information, the Administrator determines that the requirements of the Act and this subpart have been met, he will issue one certificate of conformity per manufacturer with respect to the evaporative emission family(s) covered by such statement(s) except in cases covered by paragraph (c) of this section.

(2) Such certificate will be issued for such period not to exceed one model year as the Administrator may determine and upon such terms as he may deem necessary or appropriate to assure that any new motor vehicle (or new motor vehicle engine) covered by the certificate will meet the requirements of the Act and of this part.

(3)(i) One such certificate will be issued for each engine family. For gasoline-fueled light-duty vehicles and light-duty trucks, one such certificate will be issued for each engine family-evaporative emission family combination.

(A) *Light-Duty Vehicles.* Each certificate will certify compliance with no more than one set of standards (or one family particulate emission limit, as appropriate).

(B) *Light-Duty Trucks.* Each certificate will certify compliance with no more than one set of standards (or one family particulate emission limit, or one family NO_x emission limit, as appropriate), except for low-altitude standards and high-altitude standards. The certificate shall state that it covers vehicles sold or delivered to an ultimate purchaser for principal use at a designated high-altitude location only if the vehicle conforms in all material respects to the design specifications that apply to those vehicles described in the application for certification at high altitude.

(ii) For gasoline-fueled heavy-duty vehicles, one such certificate will be issued for each manufacturer and will certify compliance for those vehicles previously identified in that manufacturer's statement(s) of compliance as required in § 86.088-23(b)(4) (i) and (ii).

(iii) For diesel light-duty vehicles and light-duty trucks, or diesel heavy-duty engines, included in the applicable particulate averaging program, the manufacturer may at any time during production elect to change the level of any family particulate emission limit by demonstrating compliance with the new limit as described in §§ 86.091-28(a)(6) and 86.091-28(b)(5)(i). New certificates issued under this paragraph will be applicable only for vehicles (or engines) produced subsequent to the date of issuance.

(iv) For light-duty trucks or heavy-duty engines included in the applicable NO_x averaging program, the manufacturer may at any time during production elect to change the level of any family NO_x emission limit by demonstrating compliance with the new limit as described in § 86.091-28(b)(5)(ii) New certificates issued under this paragraph will be applicable only for

vehicles (or engines) produced subsequent to the day of issue.

(4)(i) The adjustment or modification of any light-duty truck in accordance with instructions provided by the manufacturer for the altitude where the vehicle is principally used will not be considered a violation of section 203(a)(3) of the Clean Air Act.

(ii) A violation of section 203(a)(1) of the Clean Air Act occurs when a manufacturer sells or delivers to an ultimate purchaser any light-duty vehicle or light-duty truck, subject to the regulations under the Act, under any of the conditions specified in the remainder of this paragraph.

(A) When a light-duty vehicle or light-duty truck is not configured to meet high-altitude requirements:

(*1*) At a designated high-altitude location, unless such manufacturer has reason to believe that such vehicle will not be sold to an ultimate purchaser for principal use at a designated high-altitude location; or

(*2*) At a location other than a designated high-altitude location, when such manufacturer has reason to believe that such motor vehicle will be sold to an ultimate purchaser for principal use at a designated high-altitude location.

(B) When a light-duty vehicle is not configured to meet low-altitude requirements, as provided in § 86.087-8(i):

(*1*) At a designated low-altitude location, unless such manufacturer has reason to believe that such vehicle will not be sold to an ultimate purchaser for principal use at a designated low-altitude location; or

(*2*) At a location other than a designated low-altitude location, when such manufacturer has reason to believe that such motor vehicle will be sold to an ultimate purchaser for principal use at a designated low-altitude location.

(iii) A manufacturer shall be deemed to have reason to believe that a light-duty vehicle that has been exempted from compliance with emission standards at high-altitude, or a light-duty truck which is not configured to meet high-altitude requirements, will not be sold to an ultimate purchaser for principal use at a designated high-altitude location if the manufacturer has informed its dealers and field representatives about the terms of these high-altitude regulations, has not caused the improper sale itself, and has taken reasonable action which shall include, but not be limited to, either paragraph (a)(4)(iii)(A) or (B), and (a)(4)(ii)(C) of this section:

(A) Requiring dealers in designated high-altitude locations to submit written statements to the manufacturer signed by the ultimate purchaser that a vehicle which is not configured to meet high-altitude requirements will not be used principally at a designated high-altitude location; requiring dealers in counties contiguous to designated high-altitude locations to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated high-altitude location, that a vehicle which is not configured to meet high-altitude requirements will not be used principally at a designated high-altitude location; and for each sale or delivery of fleets of ten or more such vehicles in a high-altitude location or in counties contiguous to high-altitude locations, requiring either the selling dealer or the delivering dealer to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated high-altitude location, that a vehicle which is not configured to meet high-altitude requirements will not be used principally at a designated high-altitude location. In addition, the manufacturer will make available to EPA, upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold), sales, warranty, or other information pertaining to sales of vehicles by the dealers described above maintained by the manufacturer in the normal course of business relating to the altitude configuration of vehicles and the locations of ultimate purchasers; or

(B) Implementing a system which monitors factory orders of low-altitude vehicles by high-altitude dealers, or through other means, identifies dealers that may have sold or delivered a vehicle not configured to meet the high-altitude requirements to an ultimate purchaser for principal use at a designated high-altitude location; and making such information available to EPA upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold); and

(C) Within a reasonable time after receiving written notice from EPA or a State or local government agency that a dealer may have improperly sold or delivered a vehicle not configured to meet the high-altitude requirements to an ultimate purchaser residing in a designated high-altitude location, or based on information obtained pursuant to paragraph (a)(4)(iii) of this section that a dealer may have improperly sold or delivered a significant number of such vehicles to ultimate purchasers so residing, reminding the dealer in writing of the requirements of these regulations, and, where appropriate, warning the dealer that sale by the dealer of vehicles not configured to meet high-altitude requirements may be contrary to the terms of its franchise agreement with the manufacturer and the dealer certification requirements of § 85.2108 of this chapter.

(iv) A manufacturer shall be deemed to have reason to believe that a light-duty vehicle which has been exempted from compliance with emission standards at low-altitude, as provided in § 86.087-8(i), will not be sold to an ultimate purchaser for principal use at a designated low-altitude location if the manufacturer has informed its dealers and field representatives about the terms of the high-altitude regulations, has not caused the improper sale itself, and has taken reasonable action which shall include, but not be limited to, either paragraph (a)(4)(iv) (A) or (B), and (a)(4)(iv)(C) of this section:

(A) Requiring dealers in designated low-altitude locations to submit written statements to the manufacturer signed by the ultimate purchaser that a vehicle which is not configured to meet low-altitude requirements will not be used principally at a designated low-altitude location; requiring dealers in counties contiguous to designated low-altitude locations to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated low-altitude location, that a vehicle which is not configured to meet low-altitude requirements will not be used principally at a designated low-altitude location; and for each sale or delivery of fleets of ten or more such vehicles in a low-altitude location or in counties contiguous to low-altitude locations, requiring either the selling dealer or the delivering dealer to submit written statements to the manufacturer, signed by the ultimate purchaser who represents to the dealer in the normal course of business that he or she resides in a designated low-altitude location, that a vehicle which is not configured to meet low-altitude requirements will not be used principally at a designated high-altitude location. In addition, the manufacturer will make available to EPA, upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been

sold), sales, warranty, or other information pertaining to sales of vehicles by the dealers described above maintained by the manufacturer in the normal course of business relating to the altitude configuration of vehicles and the locations of ultimate purchasers; or

(B) Implementing a system which monitors factory orders of high-altitude vehicles by low-altitude dealers, or through other means, identifies dealers that may have sold or delivered a vehicle not configured to meet the low-altitude requirements to an ultimate purchaser for principal use at a designated low-altitude location; and making such information available to EPA upon reasonable written request (but not more frequently than quarterly, unless EPA has demonstrated that it has substantial reason to believe that an improperly configured vehicle has been sold); and

(C) Within a reasonable time after receiving written notice from EPA or a state or local government agency that a dealer may have improperly sold or delivered a vehicle not configured to meet the low-altitude requirements to an ultimate purchaser residing in a designated low-altitude location, or based on information obtained pursuant to paragraph (a)(4)(iv) of this section that a dealer may have improperly sold or delivered a significant number of such vehicles to ultimate purchasers so residing, reminding the dealer in writing of the requirements of these regulations, and, where appropriate, warning the dealer that sale by the dealer of vehicles not configured to meet low-altitude requirements may be contrary to the terms of its franchise agreement with the manufacturer and the dealer certification requirements of § 85.2108 of this chapter.

(5)(i) For the purpose of paragraph (a) of this section, a "designated high-altitude location" is any county which has substantially all of its area located above 1,219 meters (4,000 feet) and:

(A) Requested and extension past the attainment date of December 31, 1982, for compliance with either the National Ambient Air Quality Standards for carbon monoxide or ozone, as indicated in Part 52 (Approval and Promulgation of Implementation Plans) of this title; or

(B) Is in the same state as a county designated as a high-altitude location according to paragraph (a)(5)(i)(A) of this section.

(ii) The designated high-altitude locations defined in paragraph (a)(5)(i) of this section are listed below:

State of Colorado

Adams	Alamosa
Arapahoe	Lake
Archuleta	La Plata
Boulder	Larimer
Chaffee	Las Animas
Cheyenne	Lincoln
Clear Creek	Mesa
Conejos	Mineral
Costilla	Moffat
Crowley	Montezuma
Custer	Montrose
Delta	Morgan
Denver	Otero
Dolores	Ouray
Douglas	Park
Eagle	Pitkin
Elbert	Pueblo
El Paso	Rio Blanco
Fremont	Rio Grande
Garfield	Routt
Gilpin	Saguache
Grand	San Juan
Gunnison	San Miguel
Hinsdale	Summit
Huerfano	Teller
Jackson	Washington
Jefferson	Weld
Kit Carson	

State of Nevada

Carson City	Lyon
Douglas	Mineral
Elko	Nye
Esmeralda	Pershing
Eureka	Storey
Humboldt	Washoe
Lander	White Pine
Lincoln	

State of New Mexico

Bernalillo	Otero
Catron	Rio Arriba
Colfax	Roosevelt
Curry	Sandoval
De Baca	San Juan
Grant	San Miguel
Guadalupe	Santa Fe
Harding	Sierra
Hidalgo	Socorro
Lincoln	Taos
Los Alamos	Torrance
Luna	Union
McKinley	Valencia
Mora	

State of Utah

Beaver	Morgan
Box Elder	Piute
Cache	Rich
Carbon	Salt Lake
Daggett	San Juan
Davis	Sanpete
Duchesne	Sevier
Emery	Summit
Garfield	Tooele
Grand	Uintah
Iron	Utah
Juab	Wasatch
Kane	Wayne
Millard	Weber

(iii) For the purpose of paragraph (a) of this section, a "designated low-altitude location" is any county which has substantially all of its area located below 1,219 meters (4,000 feet).

(iv) The designated low-altitude locations so defined include all counties in the United States which are not listed in eithir paragraph (a)(5)(ii) of this section or in the list below:

State of Arizona

Apache	Navajo
Cochise	Yavapai
Coconino	

State of Idaho

Bannock	Franklin
Bear Lake	Fremont
Bingham	Jefferson
Blaine	Lemhi
Bonneville	Madison
Butte	Minidoka
Camas	Oneida
Caribou	Power
Cassia	Treton
Clark	Valley
Custer	

State of Montana

Beaverhead	Meagher
Deer Lodge	Park
Gallatin	Powell
Jefferson	Silver Bow
Judith Basin	Wheatland
Madison	

State of Nebraska

Banner	Kimball
Cheyenne	Sioux

State of Oregon

Harney	Lake
Klamath	

State of Texas

Jeff Davis	Parmer
Hudspeth	

State of Wyoming

Albany	Natrona
Campbell	Niobrara
Carbon	Park
Converse	Platte
Fremont	Sublette
Goshen	Sweetwater
Hot Springs	Teton
Johnson	Uinta
Laramie	Washakie
Lincoln	Weston

(6) Catalyst-equipped vehicles, otherwise covered by a certificate, which are driven outside the United States, Canada, and Mexico will be presumed to have been operated on leaded gasoline resulting in deactivation of the catalysts. If these vehicles are imported or offered for importation without retrofit of the catalyst, they will be considered not to be within the coverage of the certificate unless included in a catalyst control program operated by a manufacturer or a United States Government agency and approved by the Administrator.

(7) For incomplete light-duty trucks, a certificate covers only those new motor vehicles which, when completed by having the primary load-carrying device or container attached, conform to the maximum curb weight and frontal area limitations described in the application for certification as required in § 86.091-21(d).

(8) For heavy-duty engines, a certificate covers only those new motor

vehicle engines installed in heavy-duty vehicles which conform to the minimum gross vehicle weight rating, curb weight, or frontal area limitations for heavy-duty vehicles described in § 86.082-2.

(9) For incomplete gasoline-fueled heavy-duty vehicles a certificate covers only those new motor vehicles which, when completed, conform to the nominal maximum fuel tank capacity limitations as described in the application for certification as required in § 86.091-21(e).

(10) For diesel light-duty vehicle and diesel light-duty truck families, or diesel heavy-duty engine familes, which are included in a particulate averaging program, the manufacturer's production-weighted average of the particulate emission limits of all engine families in a participating class or classes shall not exceed the applicable diesel particulate standard, or the composite particulate standard defined in § 86.085-2, as appropriate, at the end of the model year, as determined in accordance with 40 CFR Part 86. The certificate shall be void *ab initio* for those vehicles causing any exceedance of the particulate standard.

(11) For light-duty truck families, or heavy-duty engine families, which are included in a NO_x averaging program, the manufacturer's production-weighted average of the NO_x emission limits of all such engine families shall not exceed the applicable NO_x emission standard, or the composite NO_x emission standard defined in § 86.088-2, as appropriate, at the end of the model year, as determined in accordance with 40 CFR Part 86. The certificate shall be void *ab initio* for those vehicles causing any exceedance of the NO_x standard.

(b)(1) The Administrator will determine whether a vehicle (or engine) covered by the application complies with applicable standards (or family particulate emission limit, or family NO_x emission limit, as appropriate) by observing the following relationships:

(i) *Light-duty vehicles.* (A) The durability-data vehicle(s) selected under § 86.085-24(c)(1)(i) shall represent all vehicles of the same engine-system combination.

(B) The emission-data vehicle(s) selected under § 86.085-24(b)(1) (ii) through (iv) shall represent all vehicles of the same engine-system combination as applicable.

(C) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(vii) (A) and (B) shall represent all vehicles of the same evaporate control system within the evaporative family.

(ii) *Light-duty trucks.* (A) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(ii), shall represent all vehicles of the same engine-system combination as applicable.

(B) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(vii) (A) and (B) shall represent all vehicles of the same evaporative control system within the evaporative family.

(C) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(v) shall represent all vehicles of the same engine-system combination as applicable.

(D) The emission-data vehicle(s) selected under § 86.085-24(b)(1)(viii) shall represent all vehicles of the same evaporative control system within the evaporative emission family, as applicable.

(iii) *Heavy-duty engines.* (A) A gasoline-fueled emission-data test engine selected under § 86.085-24(b)(2)(iv) shall represent all engines in the same family of the same engine displacement-exhaust emission control system combination.

(B) A gasoline-fueled emission-data test engine selected under § 86.085-24(b)(2)(iii) shall represent all engines in the same engine family of the same engine displacement-exhaust emission control system combination.

(C) A diesel emission-data test engine selected under § 86.085-24(b)(3)(ii) shall represent all engines in the same engine-system combination.

(D) A diesel emission-data test engine selected under § 86.085-24(b)(3)(iii) shall represent all engines of that emission control system at the rated fuel delivery of the test engine.

(iv) *Gasoline-fueled heavy-duty vehicles.* A statement of compliance submitted under § 86.088-23(b)(4)(i) or (ii) shall represent all vehicles in the same evaporative emission family-evaporative emission control system combination.

(2) The Administrator will proceed as in paragraph (a) of this section with respect to the vehicles (or engines) belonging to an engine family or engine family-evaporative emission family combination (as applicable), all of which comply with all applicable standards (or family emission limits, as appropriate).

(3) If, after a review of the test reports and data submitted by the manufacturer, data derived from any additional testing conducted pursuant to § 86.091-29, data or information derived from any inspection carried out under § 86.078-7(c) or any other pertinent data or information, the Administrator determines that one or more test vehicles (or test engines) of the certification test fleet do not meet applicable standards (or family particulate emission limits, as appropriate), he will notify the manufacturer in writing, setting forth the basis for his determination. Within 30 days following receipt of the notification, the manufacturer may request a hearing on the Administrator's determination. The request shall be in writing, signed by an authorized representative of the manufacturer and shall include a statement specifying the manufacturer's objections to the Administrator's determination and data in support of such objections. If, after a review of the request and supporting data, the Administrator finds that the request raises a substantial factual issue, he shall provide the manufacturer a hearing in accordance with § 86.078-6 with respect to such issue.

(4) For light-duty vehicles and light-duty trucks the manufacturer may, at its option, proceed with any of the following alternatives with respect to an emission-data vehicle determined not in compliance with all applicable standard (or family particulate emission limits, or family NO_x emission limits, as appropriate) for which it was tested:

(i) Request a hearing under § 86.078-6; or

(ii) Remove the vehicle configuration (or evaporative vehicle configuration, as applicable) which failed, from his application:

(A) If the failed vehicle was tested for compliance with exhaust emission standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) only: The Administrator may select, in place of the failed vehicle, in accordance with the selection criteria employed in selecting the failed vehicle, a new emission-data vehicle to be tested for exhaust emission compliance only.

(B) If the failed vehicle was tested for compliance with both exhaust and evaporative emission standards: The Administrator may select, in place of the failed vehicle, in accordance with the selection criteria employed in selecting the failed vehicle, a new emission-data vehicle which will be tested for compliance with both exhaust and evaporative emission standards. If one vehicle cannot be selected in accordance with the selection criteria employed in selecting the failed vehicle, then two vehicles may be selected (*i.e.*, one vehicle to satisfy the exhaust emission vehicle selection criteria and one vehicle to satisfy the evaporative emission vehicle selection criteria). The vehicle selected to satisfy the exhaust emission vehicle selection criteria will be tested for compliance with exhaust emission standards (or family emission limits, as appropriate) only. The vehicle selected to satisfy the evaporative

emission vehicle selection criteria will be tested for compliance with both exhaust and evaporative emission standards; or

(iii) Remove the vehicle configuration (or evaporative vehicle configuration, as applicable) which failed from the application and add a vehicle configuration(s) (or evaporative vehicle configuration(s), as applicable) not previously listed. The Administrator may require, if applicable, that the failed vehicle be modified to the new engine code (or evaporative emission code, as applicable) and demonstrate by testing that it meets applicable standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) for which it was originally tested. In addition, the Administrator may select, in accordance with the vehicle selection criteria given in § 86.085–24(b), a new emission-data vehicle or vehicles. The vehicles selected to satisfy the exhaust emission vehicle selection criteria will be tested for compliance with exhaust emission standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) only. The vehicle selected to satisfy the evaporative emission vehicle selection criteria will be tested for compliance with both exhaust and evaporative emission standards (or the family particulate emisson limit, or the family NO_x emission limit, as appropriate); or

(iv) Correct a component or system malfunction and show that with a correctly functioning system or component the failed vehicle meets applicable standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) for which it was originally tested. The Administrator may require a new emission-data vehicle, of identical vehicle configuration (or evaporative vehicle configuration, as applicable) to the failed vehicle, to be operated and tested for compliance with the applicable standards (or the family particulate emission limit, or the family NO_x emission limit, as appropriate) for which the failed vehicle was originally tested.

(5) For heavy-duty engines the manufacturer may, at his option, proceed with any of the following alternatives with respect to any engine family represented by a test engine(s) determined not in complinace with applicable standards (or family emission limit, as appropriate):

(i) Request a hearing under § 86.078–6; or

(ii) Delete from the application for certification the engines represented by the failing test engine. (Engines so deleted may be included in a later request for certification under § 86.079–32.) The Administrator may then select in place of each failing engine an alternate engine chosen in accordance with selection criteria employed in selecting the engine that failed; or

(iii) Modify the test engine and demonstrate by testing that it meets applicable standards. Another engine which is in all material respect the same as the first engine, as modified, may then be operated and tested in accordance with applicable test procedures.

(6) If the manufacturer does not request a hearing or present the required data under paragraphs (b)(4) or (b)(5) of this section (as applicable) of this section, the Administrator will deny certification.

(c) (1) Notwithstanding the fact that any certification vehicle(s) (or certification engine(s)) may comply with other provisions of this subpart, the Administrator may withhold or deny the issuance of a certificate of conformity (or suspend or revoke any such certificate which has been issued) with respect to any such vehicle(s) (or engine(s)) if:

(i) The manufacturer submits false or incomplete information in his application for certification thereof;

(ii) The manufacturer renders inaccurate any test data which he submits pertaining thereto or otherwise circumvents the intent of the Act, or of this part with respect to such vehicle (or engine);

(iii) Any EPA Enforcement Officer is denied access on the terms specified in § 86.078–7(c) to any facility or portion thereof which contains any of the following:

(A) The vehicle (or engine);

(B) Any components used or considered for use in its modification or buildup into a certification vehicle (or certification engine);

(C) Any production vehicle (or production engine) which is or will be claimed by the manufacturer to be covered by the certificate;

(D) Any step in the construction of a vehicle (or engine) described in paragraph (c)(iii)(C) of this section;

(E) Any records, documents, reports, or histories required by this part to be kept concerning any of the above;

(iv) Any EPA Enforcement Officer is denied "reasonable assistance" (as defined in § 86.078–7(c)) in examining any of the items listed in paragraph (c)(1)(iii) of this section.

(2) The sanctions of withholding, denying, revoking, or suspending of a certificate may be imposed for the reasons in paragraphs (c)(1)(i),(ii),(iii), or (iv) of this section only when the infraction is substantial.

(3) In any case in which a manufacturer knowingly submits false or inaccurate information or knowingly renders inaccurate or invalid any test data or commits any other fraudulent acts and such acts contribute substantially to the Administrator's decision to issue a certificate of conformity, the Administrator may deem such certificate void *ab initio*.

(4) In any case in which certification of a vehicle (or engine) is proposed to be withheld, denied, revoked, or suspended under paragraph (c)(1)(iii) or (iv) of this section, and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.078–7(c) in fact occurred, the manufacturer, if he wishes to contend that, even though the violation occurred, the vehicle (or engine) in question was not involved in the violation to a degree that would warrant withholding, denial, revocation, or suspension of certification under either paragraph (c)(1)(iii) or (iv) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(5) Any revocation or suspension of certification under paragraph (c)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.078–6 hereof.

(ii) Extend no further than to forbid the introduction into commerce of vehicles (or engines) previously covered by the certification which are still in the hands of the manufacturer, except in cases of such fraud or other misconduct as makes the certification invalid *ab initio*.

(6) The manufacturer may request in the form and manner specified in paragraph (b)(3) of this section that any determination made by the Administrator under paragraph (c)(1) of this section to withhold or deny certification be reviewed in a hearing conducted in accordance with § 86.078–6. If the Administrator finds, after a review of the request and supporting data, that the request raises a substantial factual issue, he will grant the request with respect to such issue.

(d)(1) *For light-duty vehicles.* Notwithstanding the fact that any vehicle configuration or engine family may be covered by a valid outstanding certificate of conformity, the Administrator may suspend such outstanding certificate of conformity in

whole or in part with respect to such vehicle configuration or engine family if:

(i) The manufacturer refuses to comply with the provisions of a test order issued by the Administrator pursuant to § 86.603; or

(ii) The manufacturer refuses to comply with any of the requirements of § 86.603; or

(iii) The manufacturer submits false or incomplete information in any report or information provided pursuant to the requirements of § 86.609; or

(iv) The manufacturer renders inaccurate any test data which he submits pursuant to § 86.609; or

(v) Any EPA Enforcement Officer is denied access to a facility on the terms specified in § 86.606; or

(vi) Any EPA Enforcement Officer is denied the opportunity on the terms specified in § 86.606, to:

(A) Monitor vehicle selection pursuant to § 86.607, or

(B) Select vehicles for testing pursuant to § 86.607, or

(C) Monitor vehicle testing performed to satisfy any of the requirements of this part; or

(vii) Any EPA Enforcement Officer is denied "reasonable assistance" as defined in § 86.606 in examining any of the items listed in that section; or

(viii) The manufacturer refuses to comply with the requirements of §§ 86.604(a), 86.605, and 86.607, 86.608, 86.610, or 86.611.

(2) The sanction of suspending a certificate may not be imposed for the reasons in paragraph (d)(1) (i), (ii), or (viii) of this section where such refusal is caused by conditions and circumstances outside the control of the manufacturer which renders it impossible to comply with those requirements. Such conditions and circumstances shall include, but not be limited to, any uncontrollable factors which results in the temporary unavailability of equipment and personnel needed to conduct the required tests, such as equipment breakdown, or failure, or illness of personnel, but shall not include failure of the manufacturer to adequately plan for and provide the equipment and personnel needed to conduct the tests. The manufacturer will bear the burden of establishing the presence of the conditions and circumstances required by this paragraph.

(3) The sanctions of suspending a certificate may be imposed for the reasons in paragraph (d)(1) (iii), (iv), (v), (vi), or (vii) of this section only when the infraction is substantial.

(4) In any case in which a manufacturer knowingly submitted false or inaccurate information or knowingly rendered inaccurate any test data or committed any other fraudulent acts, and such acts contributed substantially to the Administrator's original decision not to suspend or revoke a certificate of conformity in whole or in part, the Administrator may deem such certificate void from the date of such fraudulent act.

(5) In any case in which certification of a vehicle is proposed to be suspended under paragraph (d)(1) (v), (vi), or (vii) of this section, and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.606 in fact occurred, the manufacturer, if he wishes to contend that even though the violation occurred, the vehicle configuration or engine family in question was not involved in the violation to the degree that would warrant suspension of certification under either paragraph (d)(1) (v), (vi), or (vii) of this section, shall have the burden of establishing that contention to the satisfaction of the Administrator.

(6) Any suspension of certification under paragraph (d)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.613 hereof, and

(ii) Not apply to vehicles no longer in the hands of the manufacturer.

(e) *For light-duty trucks and heavy-duty engines.* (1) Notwithstanding the fact that any vehicle configuration or engine family may be covered by a valid outstanding certificate of conformity, the Administrator may suspend such outstanding certificate of conformity in whole or in part with respect to such vehicle or engine configuration or engine family if:

(i) The manufacturer refuses to comply with the provisions of a test order issued by the Administrator pursuant to § 86.1003; or

(ii) The manufacturer refuses to comply with any of the requirements of § 86.1003; or

(iii) The manufacturer submits false or incomplete information in any report or information provided pursuant to the requirements of § 86.1009; or

(iv) The manufacturer renders inaccurate any test data submitted pursuant to § 86.1009; or

(v) Any EPA Enforcement Officer is denied the opportunity to conduct activities related to entry and access as authorized in § 86.1006 of this part and in a warrant or court order presented to the manufacturer or the party in charge of a facility in question; or

(vi) EPA Enforcement Officers are unable to conduct activities related to entry and access as authorized in § 86.1006 of this part because a manufacturer has located a facility in a foreign jurisdiction where local law prohibits those activities; or

(vii) The manufacturer refuses to or in fact does not comply with the requirements of §§ 86.1004(a), 86.1005, 86.1007, 86.1008, 86.1010, 86.1011, or 86.1013.

(2) The sanction of suspending a certificate may not be imposed for the reasons in paragraphs (e)(1)(i), (ii), or (vii) of this section where such refusal or denial is caused by conditions and circumstances outside the control of the manufacturer which renders it impossible to comply with those requirements. Such conditions and circumstances shall include, but are not limited to, any uncontrollable factors which result in the temporary unavailability of equipment and personnel needed to conduct the required tests, such as equipment breakdown or failure or illness of personnel, but shall not include failure of the manufacturers to adequately plan for and provide the equipment and personnel needed to conduct the tests. The manufacturer will bear the burden of establishing the presence of the conditions and circumstances required by this paragraph.

(3) The sanction of suspending a certificate may be imposed for the reasons outlined in paragraph (e)(1) (iii), (iv), or (v) of this section only when the infraction is substantial.

(4) In any case in which a manufacturer knowingly submitted false or inaccurate information or knowingly rendered inaccurate any test data or committed any other fraudulent acts, and such acts contributed substantially to the Administrator's original decision not to suspend or revoke a certificate of conformity in whole or in part, the Administrator may deem such certificate void from the date of such fraudulent act.

(5) In any case in which certification of a light-duty truck or heavy-duty engine is proposed to be suspended under paragraph (e)(1)(v) of this section and in which the Administrator has presented to the manufacturer involved reasonable evidence that a violation of § 86.1006 in fact occurred, if the manufacturer wishes to contend that, although the violation occurred, the vehicle or engine configuration or engine family in question was not involved in the violation to a degree that would warrant suspension of certification under paragraph (e)(1)(v) of this section,

he shall have the burden of establishing that contention to the satisfaction of the Administrator.

(6) Any suspension of certification under paragraph (e)(1) of this section shall:

(i) Be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.1014, and

(ii) Not apply to vehicles or engines no longer in the hands of the manufacturer.

(7) Any voiding of a certificate of conformity under paragraph (e)(4) of this section shall be made only after the manufacturer concerned has been offered an opportunity for a hearing conducted in accordance with § 86.1014.

27. A new § 86.088–35 is added, to read as follows:

§ 86.088–35 Labeling.

(a) The manufacturer of any motor vehicle (or motor vehicle engine) subject to the applicable emission standards (and family particulate emission limits and family NO_x emission limits, as appropriate) of this subpart shall, at the time of manufacture, affix a permanent legible label, of the type and in the manner described below, containing the information hereinafter provided, to all production models of such vehicles (or engines) available for sale to the public and covered by a certificate of conformity under § 86.088–30(a).

(1) *Light-duty vehicles.* (i) A permanent, legible label shall be affixed in a readily visible position in the engine compartment.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(A) The label heading: Vehicle Emission Control Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches), engine, family identification and evaporative family identification;

(D) Engine tune-up specifications and adjustments, as recommended by the manufacturer in accordance with the applicable emission standards (or family particulate emission limit, as applicable), including but not limited to idle speed(s), ignition timing, the idle air-fuel mixture setting procedure and valve (*e.g.*, idle CO, idle air-fuel ratio, idle speed drop), high idle speed, initial injection timing, and valve lash (as applicable), as well as other parameters deemed necessary by the manufacturer. These specifications should indicate the proper transmission position during tune-up and what accessories (*e.g.*, air conditioner), if any, should be in operation;

(E) An unconditional statement of compliance with the appropriate model year U.S. Environmental Protection Agency regulations which apply to light-duty vehicles;

(F) For vehicles which are part of the diesel particulate averaging program, the family particulate emission limit to which the vehicle is certified;

(G) For vehicles that have been exempted from compliance with the emission standards at high altitude, as specified in § 86.087–8(h),

(*1*) A highlighted statement (*e.g.*, underscored or boldface letters) that the vehicle is certified to applicable emission standards at low altitude only,

(*2*) A statement that the vehicle's unsatisfactory performance under high-altitude conditions makes it unsuitable for principal use at high altitude, and

(*3*) A statement that the emission performance warranty provisions of 40 CFR Part 85, Subpart V do not apply when the vehicle is tested at high altitude, and

(H) For vehicles that have been exempted from compliance with the emission standards at low altitude, as specified in § 86.087–8(i),

(*1*) A highlighted statement (*e.g.*, underscored or boldface letters) that the vehicle is certified to applicable emission standards at high altitude only, and

(*2*) A statement that the emission performance warranty provisions of 40 CFR Part 85, Subpart V do not apply when the vehicle is tested at low altitude.

(2) *Light-duty trucks.* (i) A legible, permanent label shall be affixed in a readily visible position in the engine compartment.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label.

(A) The label heading: Important Vehicle Information;

(B) Full coroprate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches) and engine family identification;

(D) Engine tune-up specifications and adjustments, as recommended by the manufacturer in accordance with the applicable emission standards (or family particulate limit, as appropriate), including but not limited to idle speed(s), ignition timing, the idle air-fuel mixture setting procedure and value (*e.g.*, idle CO, idle air-fuel ratio, idle speed drop), high idle speed, initial injection timing, and valve lash (as applicable), as well as other parameters deemed necessary by the manufacturer. These specifications should indicate the proper transmission position during tune-up and what accessories (*e.g.*, air conditioner), if any, should be in operation. If adjustments or modifications to the vehicle are necessary to insure compliance with emission standards (or family particulate limit, or family NO_x emission limit, as appropriate) at either high or low altitude, the manufacturer shall either include the instructions for such adjustments on the label, or indicate on the label where instructions for such adjustments may be found. The label shall indicate whether the engine tune-up or adjustment specifications are applicable to high altitude, low altitude or both;

(E) The prominent statement: "This vehicle conforms to U.S. EPA regulations applicable to 19— Model Year New Light-Duty Trucks."

(F) If the manufacturer is provided an alternate useful-life period under the provisions of § 86.088–21(f), the prominent statement: "This vehicle has been certified to meet U.S. EPA standards for a useful-life period of — years or —— miles of operation, whichever occurs first. This vehicle's actual life may vary depending on its service application." The manufacturer may alter this statement only to express the assigned alternate useful life in terms other than years of miles (*e.g.*, hours, or miles only);

(G) A statement, if applicable, that the adjustments or modifications indicated on the label are necessary to ensure emission control compliance at the altitude specified;

(H) A statement, if applicable, that the high-altitude vehicle was designated or modified for principal use at high altitude. This statement must be affixed by the manufacturer at the time of assembly or by any dealer who performs the high-altitude modification

or adjustment prior to sale to an ultimate purchaser;

(I) For vehicles that have been exempted from compliance with the high-altitude emission standards, as specified in § 86.088–9(g)(2),

(*1*) A highlighted statement (*e.g.*, underscored or boldface letters) that the vehicle is certified to applicable emission standards at low altitude only,

(*2*) A statement that the vehicle's unsatisfactory performance under high-altitude conditions makes it unsuitable for principal use at high altitude, and

(*3*) A statement that the emission performance warranty provisions of 40 CFR Part 85, Subpart I do not apply when the vehicle is tested at high altitude; and,

(J) For vehicles which are included in the diesel particulate averaging program, the family particulate emission limit to which the vehicle is certified.

(K) For vehicles which are included in the light-duty truck NO_x averaging program, the family NO_x emission limit to which the vehicle is certified.

(3) *Heavy-duty engines.* (i) A permanent legible label shall be affixed to the engine in a position in which it will be readily visible after installation in the vehicle.

(ii) The label shall be attached to an engine part necessary for normal engine operation and not normally requiring replacement during engine life.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals which shall be of a color that contrasts with the background of the label:

(A) The label heading: Important Engine Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches) and engine family and model designations;

(D) Date of engine manufacture (month and year). The manufacturer may, in lieu of including the date of manufacture on the engine label, maintain a record of the engine manufacture dates. The manufacturer shall provide the date of manufacture records to the Administrator upon request;

(E) Engine specifications and adjustments as recommended by the manufacturer. These specifications should indicate the proper transmission position during tuneup and what accessories (*e.g.*, air conditioner), if any, should be in operation;

(F) For gasoline-fueled engines the label should include the idle speed, ignition timing, and the idle air-fuel mixture setting procedure and value (*e.g.*, idle CO, idle air-fuel ratio, idle speed drop), and valve lash;

(G) For diesel engines the label should include the advertised hp at rpm, fuel rate at advertised hp in mm^3/stroke, valve lash, initial injection timing, and idle speed;

(H) The prominent statement: "This engine conforms to U.S. EPA regulations applicable to 19— Model Year New Heavy-Duty Engines."

(I) If the manufacturer is provided with an alternate useful-life period under the provisions of § 86.088–21(f), the prominent statement: "This engine has been certified to meet U.S. EPA standards for a useful-life period of —— miles or —— hours of operation, whichever occurs first. This engine's actual life may very depending on its service application." The manufacturer may alter this statement only to express the assigned alternate useful life in terms other than miles or hours (*e.g.*, years, or hours only);

(J) *For diesel engines.* The prominent statement: "This engine has a primary intended service application as a —— heavy-duty diesel engine." (The primary intended service applications are light, medium, and heavy, as defined in § 86.085–2);

(K) *For gasoline-fueled engines.* One of the following statements, as applicable:

(*1*) For engines certified to the emission standards under § 86.088–10(a)(1)(i), the statement: "This engine is certified for use in all heavy-duty vehicles."

(*2*) For engines certified under the provisions of § 86.088–10(a)(3)(i), the statement: "This engine is certified for use in all heavy-duty vehicles under the special provision of 40 CFR § 86.088–10(a)(3)(i)."

(*3*) For engines certified to the emission standards under § 86.088–10(a)(1)(ii), the statement: "This engine is certified for use only in heavy-duty vehicles with a gross vehicle weight rating above 14,000 lbs."

(iv) The label may be made up of one or more pieces: *Provided*, that all pieces are permanently attached to the same engine or vehicle part as applicable.

(4)(i) *Gasoline-fueled heavy-duty vehicles.* A permanent, legible label shall be affixed in a readily visible position in the engine compartment. If such vehicles do not have an engine compartment, the label required in paragraphs (a)(4) and (g)(1) of this section shall be affixed in a readily visible position on the operator's enclosure or on the engine.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numericals, which shall be of a color that contrasts with the background of the label:

(A) The label heading: Vehicle Emission Control Information;

(B) Full corporate name and trademark of manufacturer;

(C) Evaporative family identification;

(D) The maximum nominal fuel tank capacity (in gallons) for which the evaporative control system is certified; and,

(E) An unconditional statement of compliance with the appropriate model year U.S. Environmental Protection Agency regulations which apply to gasoline-fueled heavy-duty vehicles.

(b) The provisions of this section shall not prevent a manufacturer from also reciting on the label that such vehicle (or engine) conforms to any applicable state emission standards for new motor vehicles (or new motor vehicle engines) or any other information that such manufacturer deems necesary for, or useful to, the proper operation and satisfactory maintenance of the vehicle (or engine).

(c)(1) The manufacturer of any light-duty vehicle or light-duty truck subject to the emission standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) of this subpart shall, in addition and subsequent to setting forth those statements on the label required by the Department of Transportation (DOT) pursuant to 49 CFR 567.4, set forth on the DOT label or on an additional label located in proximity to the DOT label and affixed as described in 40 CFR 567.4(b), the following information in the English language, lettered in block letters and numerals not less than three thirty-seconds of an inch high, of a color that contrasts with the background of the label:

(i) The Heading: "Vehicle Emission Control Information."

(ii)(A) *For light-duty vehicles*, the statement: "This Vehicle Conforms to U.S. EPA Regulations Applicable to 19— Model Year New Motor Vehicles."

(B) *For light-duty trucks.* (*1*) The statement: "This vehicle conforms to U.S. EPA regulations applicable to 19— Model Year New Light-Duty Trucks."

(*2*) If the manufacturer is provided an alternate useful-life period under the provisions of § 86.088–21(f), the

prominent statement: "This vehicle has been certified to meet U.S. EPA standards for a useful-life period of — years or —— miles of operation, whichever occurs first. This vehicle's actual life may vary depending on its service application." The manufacturer may alter this statement only to express the assigned alternate useful life in terms other than years or miles (*e.g.*, hours, or miles only).

(iii) One of the following statements, as applicable, in letters and numerals not less than six thirty-seconds of an inch high and of a color that contrasts with the background of the label:

(A) For all vehicles certified as non-catalyst-equipped: "NON-CATALYST"

(B) For all vehicles certified as catalyst-equipped which are included in a manufacturer's catalyst control program for which approval has been given by the Administrator: "CATALYST—APPROVED FOR IMPORT"

(C) For all vehicles certified as catalyst-equipped which are not included in a manufacturer's catalyst control program for which prior approval has been given by the Administrator: "CATALYST"

(2) In lieu of selecting either of the labeling options of paragraph (c)(1) of this section, the manufacturer may add the information required by paragraph (c)(1)(iii) of this section to the label required by paragraph (a) of this section. The required information will be set forth in the manner prescribed by paragraph (c)(1)(iii) of this section.

(d) Incomplete light-duty trucks or incomplete heavy-duty vehicles optionally certified as light-duty trucks shall have the following prominent statement printed on the label required by paragraph (a)(2) of this section in lieu of the statement required by paragraph (a)(2)(iii)(E) of this section: "This vehicle conforms to U.S. EPA regulations applicable to 19— Model Year New Light-Duty Trucks when completed at a maximum curb weight of —— pounds or at a maximum gross vehicle weight rating of —— pounds or with a maximum frontal area of — square feet."

(e) Incomplete heavy-duty vehicles having a gross vehicle weight rating of 8,500 pounds or less shall have one of the following statements printed on the label required by paragraph (a)(3) of this section in lieu of the statement required by paragraph (a)(3)(iii)(H) of this section: "This engine conforms to U.S. EPA regulations applicable to 19— Model Year New Heavy-Duty Engines when installed in a vehicle completed at a curb weight of more than 6,000 pounds or with a frontal area of greater than 45 square feet."

(f) The manufacturer of any incomplete light-duty vehicle or light-duty truck shall notify the purchaser of such vehicle of any curb weight, frontal area, or gross vehicle weight rating limitations affecting the emission certificate applicable to that vehicle. This notification shall be transmitted in a manner consistent with National Highway Traffic Safety Administration safety notification requirements published in 49 CFR Part 568.

(g)(1) Incomplete gasoline-fueled heavy-duty vehicles shall have the following prominent statement printed on the label required in paragraph (a)(4) of this section: "(Manufacturer's corporate name) has determined that this vehicle conforms to U.S. EPA regulations applicable to 19— Model Year New Gasoline-Fueled Heavy-Duty Vehicles when completed with a nominal fuel tank capacity not to exceed —— gallons. Persons wishing to add fuel tank capacity beyond the above maximum must submit a written statement to the Administrator that the hydrocarbon storage system has been upgraded according to the requirements of 40 CFR 86.085-35(g)(2)."

(2) Persons wishing to add fuel tank capacity beyond the maximum specified on the label required in paragraph (g)(1) of this section shall:

(i) Increase the amount of fuel tank vapor storage material according to the following function:

$$Cap_f = Cap_i \left(\frac{T.\ Vol.}{Max.\ Vol.} \right)$$

Where:

Cap_f = final amount of fuel tank vapor storage material, grams.

Cap_i = initial amount of fuel tank vapor storage material, grams.

T. Vol. = total fuel tank volume of completed vehicle, gallons.

Max. Vol. = maximum fuel tank volume as specified on the label required in paragraph (g)(1) of this section, gallons.

(ii) Use, if applicable, hosing for fuel vapor routing which is at least as impermeable to hydrocarbon vapors as that used by the primary manufacturer.

(iii) Use vapor storage material with the same adsorptive characteristics as that used by the primary manufacturer.

(iv) Connect, if applicable, any new hydrocarbon storage device to the existing hydrocarbon storage device in series such that the original hydrocarbon storage device is situated between the fuel tank and the new hydrocarbon storage device. The original hydrocarbon storage device shall be sealed such that vapors cannot reach the atmosphere. The elevation of the original hydrocarbon storage device shall be equal to or lower than the new hydrocarbon storage device.

(v) Submit a written statement to the Administrator that paragraphs (g)(2)(i) through (g)(2)(iv) of this section have been complied with.

(3) If applicable, the Administrator will send a return letter verifying the receipt of the written statement required in paragraph (g)(2)(v) of this section.

28. A new § 86.091-35 is added, to read as follows:

§ 86.091-35 Labeling.

(a) The manufacturer of any motor vehicle (or motor vehicle engine) subject to the applicable emission standards (and family particulate emission limits and family NO_x emission limits, as appropriate) of this subpart, shall, at the time of manufacture, affix a permanent legible label, of the type and in the manner described below, containing the information hereinafter provided, to all production models of such vehicles (or engines) available for sale to the public and covered by a certificate of conformity under § 86.091-30(a).

(1) *Light-duty vehicles.* (i) A permanent, legible label shall be affixed in a readily visible position in the engine compartment.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label:

(A) The label heading: Vehicle Emission Control Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches), engine, family identification and evaporative family identification;

(D) Engine tune-up specifications and adjustments, as recommended by the manufacturer in accordance with the applicable emission standards (or family particulate emission limit, as applicable), including but not limited to idle speed(s), ignition timing, the idle air-fuel mixture setting procedure and value (*e.g.*, idle CO, idle air-fuel ratio, idle speed drop), high idle speed, initial injection timing, and valve lash (as

applicable), as well as other parameters deemed necessary by the manufacturer. These specifications should indicate the proper transmission position during tune-up and what accessories (*e.g.*, air conditioner), if any, should be in operation;

(E) An unconditional statement of compliance with the appropriate model year U.S. Environmental Protection Agency regulations which apply to light-duty vehicles;

(F) For vehicles which are part of the diesel particulate averaging program, the family particulate emission limit to which the vehicle is certified;

(G) For vehicles that have been exempted from compliance with the emission standards at high altitude, as specified in § 86.087–8(h),

(*1*) A highlighted statement (*e.g.*, underscored or boldface letters) that the vehicle is certified to applicable emission standards at low altitude only,

(*2*) A statement that the vehicle's unsatisfactory performance under high-altitude conditions makes it unsuitable for principal use at high altitude, and

(*3*) A statement that the emission performance warranty provisions of 40 CFR Part 85, Subpart V do not apply when the vehicle is tested at high altitude; and

(H) For vehicles that have been exempted from compliance with the emission standards at low altitude, as specified in § 86.087–8(i),

(*1*) A highlighted statement (*e.g.*, underscored or boldface letters) that the vehicle is certified to applicable emission standards at high altitude only, and

(*2*) A statement that the emission performance warranty provisions of 40 CFR Part 85, Subpart V do not apply when the vehicle is tested at low altitude.

(2) *Light-duty trucks.* (i) A legible permanent label shall be affixed in a readily visible position in the engine compartment.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals, which shall be of a color that contrasts with the background of the label.

(A) The label heading: Important Vehicle Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches) and engine family identification;

(D) Engine tune-up specifications and adjustments, as recommended by the manufacturer in accordance with the applicable standards standards (or family particulate limit, as appropriate), including but not limited to idle speed(s), ignition timing, the idle air-fuel mixture setting procedure and value (*e.g.*, idle CO, idle air-fuel ratio, idle speed drop), high idle speed, initial injection timing, and valve lash (as applicable), as well as other parameters deemed necessary by the manufacturer. These specifications should indicate the proper transmission position during tune-up and what accessories (*e.g.*, air conditioner), if any, should be in operation. If adjustments or modifications to the vehicle are necessary to insure compliance with emission standards (or family particulate limit, or family NO_x emission limit, as appropriate) at either high or low altitude, the manufacturer shall either include the instructions for such adjustments on the label, or indicate on the label where instructions for such adjustments may be found. The label shall indicate whether the engine tune-up or adjustment specifications are applicable to high altitude, low altitude or both;

(E) The prominent statement: "This vehicle conforms to U.S. EPA regulations applicable to 19— Model Year New Light-Duty Trucks."

(F) If the manufacturer is provided an alternate useful-life period under the provisions of § 86.088–21(f), the prominent statement: "This vehicle has been certified to meet U.S. EPA standards for a useful-life period of — years or —— miles of operation, whichever occurs first. This vehicle's actual life may vary depending on its service application." The manufacturer may alter this statement only to express the assigned alternate useful life in terms other than years of miles (*e.g.*, hours, or miles only);

(G) A statement, if applicable, that the adjustments or modifications indicated on the label are necessary to ensure emission control compliance at the altitude specified;

(H) A statement, if applicable, that the high-altitude vehicle was designated or modified for principal use at high altitude. This statement must be affixed by the manufacturer at the time of assembly or by any dealer who performs the high-altitude modification or adjustment prior to sale to an ultimate purchaser;

(I) For vehicles that have been exempted from compliance with the high-altitude emission standards, as specified in § 86.088–9(g)(2),

(*1*) A highlighted statement (*e.g.*, underscored or boldface letters) that the vehicle is certified to applicable emission standards at low altitude only,

(*2*) A statement that the vehicle's unsatisfactory performance under high-altitude conditions makes it unsuitable for principal use at high altitude, and

(*3*) A statement that the emission performance warranty provisions of 40 CFR Part 85, Subpart I do not apply when the vehicle is tested at high altitude; and,

(J) For vehicles which are included in the diesel particulate averaging program, the family particulate emission limit to which the vehicle is certified.

(K) For vehicles which are included in the light-duty truck NO_x averaging program, the family NO_x emission limit to which the vehicle is certified.

(3) *Heavy-duty engines.* (i) A permanent legible label shall be affixed to the engine in a position in which it will be readily visible after installation in the vehicle.

(ii) The label shall be attached to an engine part necessary for normal engine operation and not normally requiring replacement during engine life.

(iii) The label shall contain the following information lettered in the English language in block letters and numerals which shall be of a color that contrasts with the background of the label:

(A) The label heading: Important Engine Information;

(B) Full corporate name and trademark of manufacturer;

(C) Engine displacement (in cubic inches) and engine family and model designations;

(D) Date of engine manufacture (month and year). The manufacturer may, in lieu of including the date of manufacture on the engine label, maintain a record of the engine manufacture dates. The manufacturer shall provide the date of manufacture records to the Administrator upon request;

(E) Engine specifications and adjustments as recommended by the manufacturer. These specifications should indicate the proper transmission position during tuneup and what accessories (*e.g.*, air conditioner), if any, should be in operation;

(F) For gasoline-fueled engines the label should include the idle speed, ignition timing, and the idle air-fuel mixture setting procedure and value (*e.g.*, idle CO, idle air-fuel ratio, idle speed drop), and valve lash;

(G) For diesel engines the label should include the advertised hp at rpm, fuel rate at advertised hp in mm^3/stroke, valve lash, initial injection timing, and idle speed;

(H) The prominent statement: "This engine conforms to U.S. EPA regulations applicable to 19— Model Year New Heavy-Duty Engines."

(I) If the manufacturer is provided with an alternate useful-life period under the provisions of § 86.088–21(f), the prominent statement: "This engine has been certified to meet U.S. EPA standards for a useful-life period of —— miles or — hours of operation, whichever occurs first. This engine's actual life may vary depending on its service application." The manufacturer may alter this statement only to express the assigned alternate useful life in terms other than miles or hours (*e.g.*, years, or hours only);

(J) *For diesel engines.* The prominent statement: "This engine has a primary intended service application as a —— - heavy-duty diesel engine." (The primary intended service applications are light, medium, and heavy, as defined in § 86.085–2);

(K) *For gasoline-fueled engines.* One of the following statements, as applicable:

(*1*) For engines certified to the emission standards under § 86.088–10(a)(1)(i), the statement: "This engine is certified for use in all heavy-duty vehicles."

(*2*) For engines certified under the provisions of § 86.088–10(a)(3)(i), the statement: "This engine is certified for use in all heavy-duty vehicles under the special provision of 40 CFR 86.088–10(a)(3)(i)."

(*3*) For engines certified to the emission standards under § 86.088–10(a)(1)(ii), the statement: "This engine is certified for use only in heavy-duty vehicles with a gross vehicle weight rating above 14,000 lbs."

(L) For diesel engines which are included in the diesel heavy-duty particulate averaging program, the family particulate emission limit to which the engine is certified.

(M) For any heavy-duty engines which are included in the heavy-duty NO_x averaging program, the family NO_x emission limit to which the engine is certified.

(iv) The label may be made up of one or more pieces: *Provided*, that all pieces are permanently attached to the same engine or vehicle part as applicable.

(4)(i) *Gasoline-fueled heavy-duty vehicles.* A permanent, legible label shall be affixed in a readily visible position in the engine compartment. If such vehicles do not have an engine compartment, the label required in paragraphs (a)(4) and (g)(1) of this section shall be affixed in a readily visible position on the operator's enclosure or on the engine.

(ii) The label shall be affixed by the vehicle manufacturer who has been issued the certificate of conformity for such vehicle, in such a manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

(iii) The lable shall contain the following information lettered in the English language in block letters and numericals, which shall be of a color that contrasts with the background of the label:

(A) The label heading: Vehicle Emission Control Information;

(B) Full corporate name and trademark of manufacturer;

(C) Evaporative family identification;

(D) The maximum nominal fuel tank capacity (in gallons) for which the evaporative control system is certified; and

(E) An unconditional statement of compliance with the appropriate model year U.S. Environmental Protection Agency regulations which apply to gasoline-fueled heavy-duty vehicles.

(b) The provisions of this section shall not prevent a manufacturer from also reciting on the label that such vehicle (or engine) conforms to any applicable state emission standards for new motor vehicles (or new motor vehicle engines) or any other information that such manufacturer deems necessary for, or useful to, the proper operation and satisfactory maintenance of the vehicle (or engine).

(c)(1) The manufacturer of any light-duty vehicle or light-duty truck subject to the emission standards (or family particulate emission limits, or family NO_x emission limits, as appropriate) of this subpart shall, in addition and subsequent to setting forth those statements on the label required by the Department of Transportation (DOT) pursuant to 49 CFR 567.4, set forth on the DOT label or on an additional label located in proximity to the DOT label and affixed as described in 40 CFR 567.4(b), the following information in the English language, lettered in block letters and numerals not less than three thirty-seconds of an inch high, of a color that contrasts with the background of the label:

(i) The Heading: "Vehicle Emission Control Information."

(ii)(A) *For light-duty vehicles*, the statement: "This Vehicle Conforms to U.S. EPA Regulations Applicable to 19— Model Year New Motor Vehicles."

(B) *For light-duty trucks.* (*1*) The statement: "This vehicle conforms to U.S. EPA regulations applicable to 19— Model Year New Light-Duty Trucks."

(*2*) If the manufacturer is provided an alternate useful-life period under the provisions of § 86.088–21(f), the prominent statement: "This vehicle has been certified to meet U.S. EPA standards for a useful-life period of — years or —— miles of operation, whichever occurs first. This vehicle's actual life may vary depending on its service application." The manufacturer may alter this statement only to express the assigned alternative useful life in terms other than years or miles (*e.g.*, hours, or miles only).

(iii) One of the following statements, as applicable, in letters and numerals not less than six thirty-seconds of an inch high and of a color that contrasts with the background of the label:

(A) For all vehicles certified as non-catalyst-equipped: "NON-CATALYST";

(B) For all vehicles certified as catalyst-equipped which are included in a manufacturer's catalyst control program for which approval has been given by the Administrator: "CATALYST—APPROVED FOR IMPORT";

(C) For all vehicles certified as catalyst-equipped which are not included in a manufacturer's catalyst control program for which prior approval has been given by the Administrator: "CATALYST";

(2) In lieu in of selecting either of the labeling options of paragraph (c)(1) of this section, the manufacturer may add the information required by paragraph (c)(1)(iii) of this section to the labeling required by paragraph (a) of this section. The required information will be set forth in the manner prescribed by paragraph (c)(1)(iii) of this section.

(d) Incomplete light-duty trucks or incomplete heavy-duty vehicles optionally certified as light-duty trucks shall have the following prominent statement printed on the label required by paragraph (a)(2) of this section in lieu of the statement required by paragraph (a)(2)(iii)(E) of this section: "This vehicle conforms to U.S. EPA regulations applicable to 19—— Model Year New Light-Duty Trucks when completed at a maximum curb weight of ——— pounds or at a maximum gross vehicle weight rating of ——— pounds or with a maximum frontal area of —— square feet."

(e) Incomplete heavy-duty vehicles having a gross vehicle weight rating of 8,500 pounds or less shall have one of the following statements printed on the label required by paragraph (a)(3) of this

section in lieu of the statement required by paragraph (a)(3)(iii)(H) of this section: "This engine conforms to U.S. EPA regulations applicable to 19—— Model Year New Heavy-Duty Engines when installed in a vehicle completed at a curb weight of more than 6,000 pounds or with a frontal area of greater than 45 square feet."

(f) The manufacturer of any incomplete light-duty vehicle or light-duty truck shall notify the purchaser of such vehicle of any curb weight, frontal area, or gross vehicle weight rating limitations affecting the emission certificate applicable to that vehicle. This notification shall be transmitted in a manner consistent with National Highway Traffic Safety Administration safety notification requirements published in 49 CFR Part 568.

(g)(1) Incomplete gasoline-fueled heavy-duty vehicles shall have the following prominent statement printed on the label required in paragraph (a)(4) of this section: "(Manufacturer's corporate name) has determined that this vehicle conforms to U.S. EPA regulations applicable to 19 —— Model Year New Gasoline-Fueled Heavy-Duty Vehicles when completed with a nominal fuel tank capacity not to exceed —— gallons. Persons wishing to add fuel tank capacity beyond the above maximum must submit a written statement to the Administrator that the hydrocarbon storage system has been upgraded according to the requirements of 40 CFR 86.085–35(g)(2)."

(2) Persons wishing to add fuel tank capacity beyond the maximum specified on the label required in paragraph (g)(1) of this section shall:

(i) Increase the amount of fuel tank vapor storage material according to the following function:

$$Cap_f = Cap_i \left(\frac{T.\ Vol.}{Max.\ Vol.} \right)$$

Where:

Cap_f = final amount of fuel tank vapor storage material, grams.

Cap_i = initial amount of fuel tank vapor storage material, grams.

T. Vol. = total fuel tank volume of completed vehicle, gallons.

Max. Vol. = maximum fuel tank volume as specified on the label required in paragraph (g)(1) of this section, gallons.

(ii) Use, if applicable, hosing for fuel vapor routing which is at least as impermeable to hydrocarbon vapors as that used by the primary manufacturer.

(iii) Use vapor storage material with the same adsorptive characteristics as that used by the primary manufacturer.

(iv) Connect, if applicable, any new hydrocarbon storage device to the existing hydrocarbon storage device in series such that the original hydrocarbon storage device is situated between the fuel tank and the new hydrocarbon storage device. The original hydrocarbon storage device shall be sealed such that vapors cannot reach the atmosphere. The elevation of the original hydrocarbon storage device shall be equal to or lower than the new hydrocarbon storage device.

(v) Submit a written statement to the Administrator that paragraphs (g)(2)(i) through (g)(2)(iv) of this section have been complied with.

(3) If applicable, the Administrator will send a return leter verifying the recipt of the written statement required in paragraph (g)(2)(v) of this section.

29. A new § 86.087–38 is added to Subpart A, to read as follows:

§ 86.087–38 Maintenance instructions.

(a) The manufacturer shall furnish or cause to be furnished to the purchaser of each new motor vehicle (or motor vehicle engine) subject to the standards prescribed in § 86.087–8, § 86.087–9, § 86.087–10, or § 86.087–11, as applicable, written instructions for the proper maintenance and use of the vehicle (or engine), by the purchaser consistent with the provisions of § 86.087–25, which establishes what scheduled maintenance the Administrator approves as being reasonable and necessary. For light-duty vehicle manufacturers optionally complying with § 86.087–25(a) for the 1987 model year, the Administrator approves any scheduled maintenance allowed by § 86.087–25(a) as being reasonable and necessary.

(1) The maintenance instructions required by this section shall be in clear, and to the extent practicable, nontechnical language.

(2) The maintenance instructions required by this section shall contain a general description of the documentation which the manufacturer will require from the ultimate purchaser or any subsequent purchaser as evidence of compliance with the instructions.

(b) Instructions provided to purchasers under pargraph (a) of this section shall specify the performance of all scheduled maintenance performed by the manufacturer on certification durability vehicles and, in cases where the manufacturer performs less maintenance on certification durability vehicles than the allowed limit, may specify the performance at any scheduled maintenance allowed under § 86.087–25 (or under § 86.087–25(a), for light-duty vehicle families optionally complying with this section for the 1987 model year).

(c) Scheduled emission-related maintenance in addition to that performed under § 86.087–25(b) may only be recommended to offset the effects of abnormal in-use operating conditions, except as provided in paragraph (d) of this section. The manufacturer shall be required to demonstrate, subject to the approval of the Administrator, that such maintenance is reasonable and technologically necessary to assure the proper functioning of the emission control system. Such additional recommended maintenance shall be clearly differentiated, in a form approved by the Administrator, from that approved under § 86.087–25(b).

(d) Inspections of emission-related parts or systems with instructions to replace, repair, clean, or adjust the parts or systems if necessary, are not considered to be items of scheduled maintenance which insure the proper functioning of the emission control system. Such inspections, and any recommended maintenance beyond that approved by the Administrator as reasonable and necessary under paragraphs (a), (b), and (c) of this section, may be included in the written instructions furnished to vehicle owners under paragraph (a) of this section: *Provided*, that such instructions clearly state, in a form approved by the Administrator, that the owner need not perform such inspections or recommended maintenance in order to maintain the emission warranty or manufacturer recall liability.

(e) If the vehicle has been granted an alternative useful-life period under the provisions of § 86.087–21(f) the manufacturer may choose to include in such instructions an explanation of the distinction between the alternative useful life specified on the label, and the emissions defect and emissions performance warranty period. The explanation must clearly state that the useful life period specified on the label represents the average period of use up to retirement or rebuld for the engine family used in the vehicle. An explanation of how the actual useful lives of engines used in various applications are expected to differ from the average useful life may be included. The explanation(s) shall be in clear, nontechnical language that is understandable to the ultimate purchaser.

(f) If approved by the Administrator, the instructions provided to purchasers under paragraph (a) of this section shall

indicate what adjustments or modifications, if any, are necessary to allow the vehicle to meet applicable emission standards at elevations above 4,000 feet, or at elevations of 4,000 feet or less.

30. Section 86.144–78 is amended by revising paragraph (c) (3), to read as follows:

§ 86.144–78 Calculations; exhaust emissions.

* * * * *

(c) * * *

(3) CO_{mass} = Carbon monoxide emissions, in grams per test phase.

$Density_{co}$ = Density of carbon monoxide is 32.97 g/ft³ (1.164 kg/m³), at 68°F (20°C) and 760 mm Hg (101.3 kPa) pressure.

CO_{conc} = Carbon monoxide concentration of the dilute exhaust sample corrected for background, water vapor, and CO_2 extraction, in ppm.

$CO_{conc} = CO_e - CO_d[1-(1/DF)]$

Where:

CO_e = Carbon monoxide concentration of the dilute exhaust volume corrected for water vapor and carbon dioxide extraction, in ppm. The calculation assumes the carbon to hydrogen ratio of the fuel is 1:1.85.

CO_e-{1–0.01925 CO_{2e} – 0.000323 R) CO_e

Where:

CO_{dm} = Carbon monoxide concentration of the dilution air sample as measured, in ppm.

Notes.—If a CO instrument which meets the criteria specified in § 86.111 is used and the conditioning column has been deleted, CO_{em} must be substituted directly for CO^{T*} and CO_{dm} must be substituted directly for CO_d.

* * * * *

31. Section 86.1336–84 is amended by revising paragraph (d)(2)(ii) to read as follows:

§ 86.1336–84 Engine starting and restarting.

* * * * *

(d) * * *

(2) * * *

(ii) Only one hot start resoak and restart is permitted per test.

32. Section 86.1341–84 is amended by revising paragraph (f) to read as follows:

§ 86.1341–84 Test cycle validation criteria.

* * * * *

(f)(1) The integrated brake horsepower-hour for each cycle (cold and hot start) shall be between −15 percent and +5 percent of the integrated brake horsepower-hour for the reference cycle, or the test is void.

(2) For gasoline engines, the integrated brake horsepower-hour of the feedback cycle shall be within 5 percent of the integrated brake horsepower-hour of the reference cycle for the cold cycle, or the test is void. The tolerance for the hot cycle shall be 4 percent.

* * * * *

33. Section 86.1342–84 is amended by revising paragraph (c)(3), to read as follows:

§ 86.1342–84 Calculations; exhaust emissions.

* * * * *

(c) * * *

(3) CO_{mass} = Carbon monoxide emissions, in grams per test phase.

$Density_{CO}$ = Density of carbon monoxide is 32.97 g/ft³ (1.164 kg/m³), at 68 °F (20 °C) and 760 mm Hg (101.3 kPa) pressure.

CO_{conc} = Carbon monoxide concentration of the dilute exhaust sample corrected for background, water vapor, and CO_2 extraction, in ppm.

$CO_{conc} = CO_e - CO_d\,[1-(1/DF)]$.

Where:

CO_e = Carbon monoxide concentration of the dilute exhaust bag sample volume corrected for water vapor and carbon dioxide extraction, in ppm. For flow compensated sample systems $(CO_e)_i$ is the instantaneous concentration. (The calculation assumes the carbon to hydrogen ratio of the fuel is 1:1.85.)

$CO_e = [1 - 0.01925CO_{2e} - 0.000323R]CO_{em}$

Where:

CO_{em} = Carbon monoxide concentration of the dilute exhaust sample as measured, in ppm.

CO_{2e} = Carbon dioxide concentration of the dilute exhaust bag sample, in percent, if measured. For flow compensated sample systems, $(CO_{2e})_i$ is the instantaneous concentration. For cases where exhaust sampling of CO_2 is not performed, the following approximation is permitted:

$$CO_{2e} = \frac{44.010}{12.011+(1.008)} \; \frac{M'\,(453.6)}{Density_{CO2}} \; \frac{100}{V_{mix}}$$

= Average carbon to hydrogen ratio.

M' = Fuel mass consumed during the test cycle.

R = Relative humidity of the dilution air, in percent.

CO_d = Carbon monoxide concentration of the dilution air corrected for water vapor extraction, in ppm.

$CO_d = (1 - 0.000323R)\,CO_{dm}$

Where:

CO_{dm} = Carbon monoxide concentration of the dilution air sample as measured, in ppm.

Note.—If a CO instrument which meets the criteria specified in § 86.1311–84 is used and the conditioning column has been deleted, CO_{em} must be substituted directly for CO_e and CO_{dm} must be substituted directly for CO_d.

* * * * *

34. A new § 86.1301–88 is added, to read as follows:

§ 86.1301–88 Scope; applicability.

This subpart contains gaseous emission test procedures for gasoline-fueled heavy-duty engines and gaseous and particulate emission test procedures for heavy-duty diesel engines. It applies to 1988 and later model years.

35. A new § 86.1306–88 is added, to read as follows:

§ 86.1306–88 Equipment required and specifications; overview.

(a) *Exhaust emission tests.* All engines subject to this subpart are tested for exhaust emissions. Diesel and gasoline-fueled engines are tested identically with the exception of the systems used to measure hydrocarbon, nitrogen oxide, and particulate; diesel engines require a heated, continuous hydrocarbon detector and a continuous nitrogen oxide detector (§ 86.1310–88); gasoline-fueled engines are not tested for particulate emissions (§ 86.1309–84). Necessary equipment and specifications appear in §§ 86.1308–84, 86.1309–84, 86.1310–87 and 86.1311–84.

(b) *Fuel, analytical gas, and engine cycle specifications.* Fuel specifications for exhaust emission testing are specified in § 86.1313–84. Analytical gases are specified in § 86.1314–84. The EPA heavy-duty transient engines cycles for use in exhaust testing are described in § 86.1333–84 and specified in Appendix I to this part.

36. A new § 86.1310–88 is added, to read as follows:

§ 86.1310–88 Exhaust gas sampling and analytical system; diesel engines.

(a) *General.* The exhaust gas sampling system described in this paragraph is designed to measure the true mass of both gaseous and particulate emissions in the exhaust of heavy-duty diesel engines. This system utilizes the CVS concept (described in § 86.1309–84) of measuring mass emissions of CO, CO_2, and particulate. A continuously integrated system is required for HC and NO_x measurement, and is allowed for CO, and CO_2. The mass of gaseous emissions is determined from the sample concentration and total flow over the test period. The mass of particulate emissions is determined from a proportional mass sample collected on a filter and from the sample flow and total

flow over the test period. As an option, the measurement of total fuel mass consumed over a cycle may be substituted for the exhaust measurement of CO_2. General requirements are as follows:

(1) This sampling system requires the use of a PDP–CVS and a heat exchanger, or a CFV–CVS with either a heat exchanger or electronic flow compensation. Figure N88–3 is a schematic drawing of the PDP system. Figure N88–4 is a schematic drawing of the CFV system.

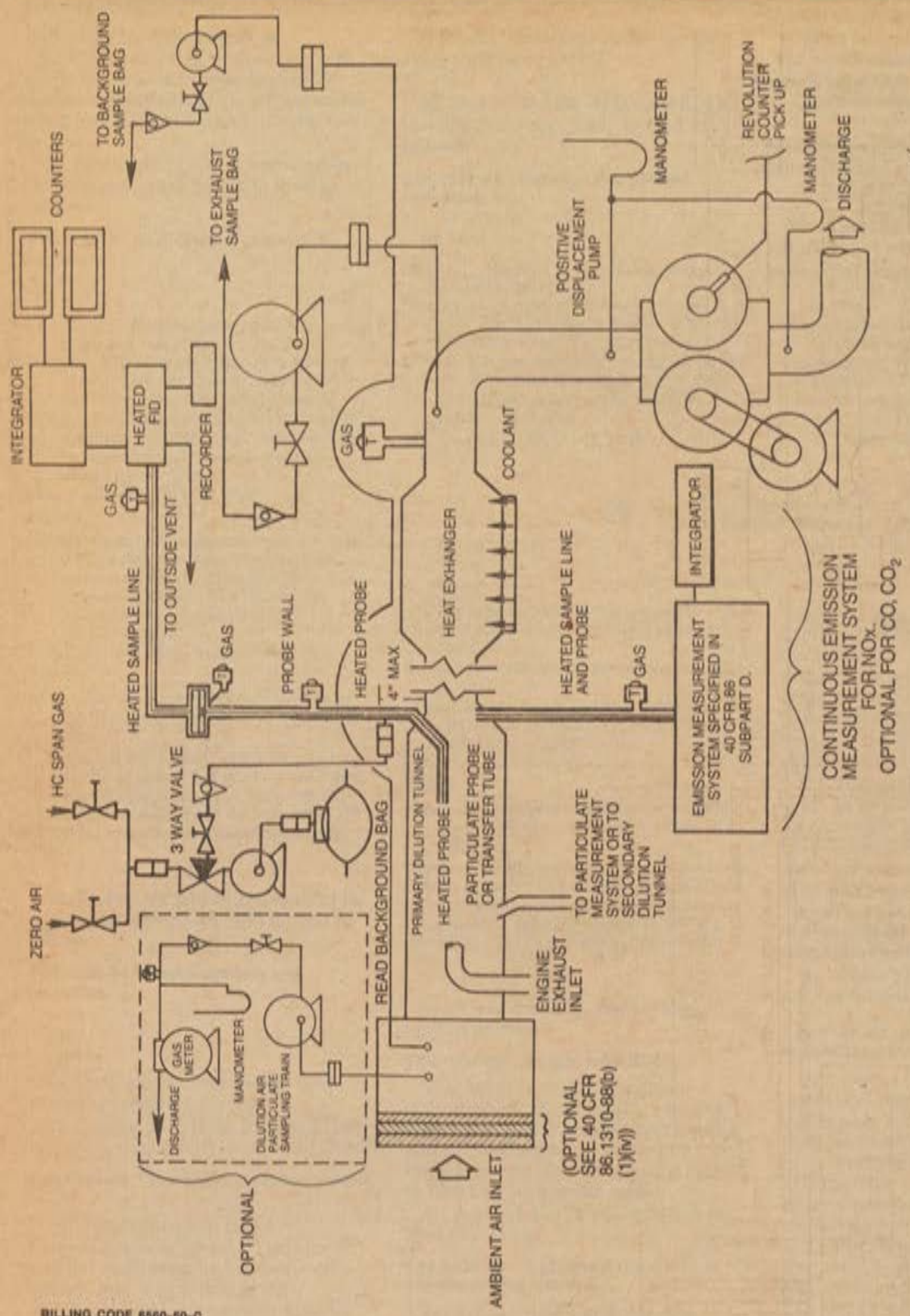

FIGURE N88-3
GASEOUS EMISSIONS SAMPLING SYSTEM (PDP-CVS)
(FOR DIESEL ENGINES ONLY)
(SEE FIGURE N84-5 FOR SYMBOL LEGEND)

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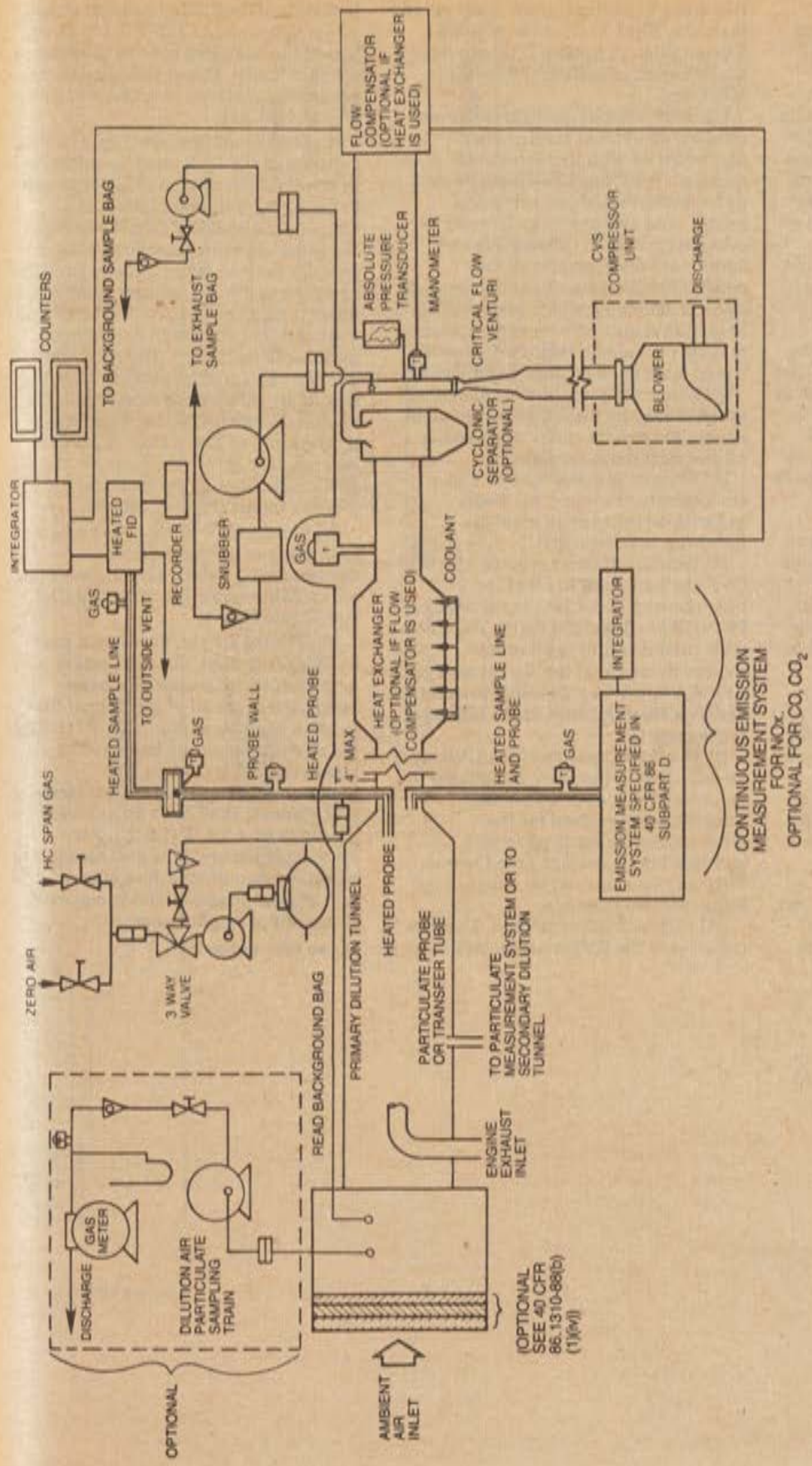

FIGURE N88-4
GASEOUS EMISSIONS SAMPLING SYSTEM (CFV-CVS)
(FOR DIESEL ENGINES ONLY)
(SEE FIGURE N84-5 FOR SYMBOL LEGEND)

BILLING CODE 6560-50-C

(2) The HC analytical system for diesel engines requires a heated flame ionization detector (HFID) and heated sample system.

(i) The HFID sample must be taken directly from the diluted exhaust stream through a heated probe and integrated continuously over the test cycle. Unless compensation for varying flow is made, the HFID must be used with a constant flow system to ensure a representative sample.

(ii) The heated probe shall be located in the primary dilution tunnel and far enough downstream of the mixing chamber to ensure a uniform sample distribution across the CVS duct at the point of sampling.

(3) The CO and CO_2 analytical system for diesel engines requires:

(i) Bag sampling (§ 86.1309–84) and analytical (§ 86.1311–84) capabilities as shown in Figure N88–3 (or Figure N88–4), or

(ii) Continuously integrated measurement of diluted CO and CO_2 meeting the minimum requirements and technical specifications contained in paragraph (b)(5) of this section. Unless compensation for varying flow is made, a constant flow system must be used to ensure a representative sample.

(4) The NO_x analytical system for diesel engines requires a continuously integrated measurement of diluted NO_x meeting the minimum requirements and technical specifications contained in paragraph (b)(5) of this section. Unless compensation for varying flow is made, a constant flow system must be used to ensure a representative sample.

(5) The mass of particulate in the exhaust is determined via filtration. The particulate sampling system requires dilution of the exhaust in either one or two steps to a temperature never greater than 125 °F (51.7 °C) at the primary sample filter. A backup filter provides a confirmation of sufficient filtering efficiency.

(6) Since various configurations can produce equivalent results, exact conformance with these drawings is not required. Additional components such as instruments, valves, solenoids, pumps, and switches may be used to provide additional information and coordinate the functions of the component systems. Other components, such as snubbers, which are not needed to maintain accuracy on some systems, may be excluded if their exclusion is based upon good engineering judgment.

(7) Other sampling and/or analytical systems may be used if shown to yield equivalent results and if approved in advance by the Administrator.

(b) *Component description.* The components necessary for diesel exhaust sampling shall meet the following requirements:

(1) *Exhaust dilution system.* The PDP–CVS shall conform to all of the requirements listed for the exhaust gas PDP–CVS in § 86.1309–84(b). The CFV–CVS shall conform to all of the requirements listed for the exhaust gas CFV–CVS in § 86.1309–84(c). In addition, the CVS must conform to the following requirements:

(i) The flow capacity of the CVS must be sufficient to maintain the diluted exhaust stream at or below the temperatures required for the measurement of particulate and hydrocarbon emissions noted below. This may be achieved by either of the following two methods.

(A) *Single-dilution method.* The flow capacity of the CVS must be sufficient to maintain the diluted exhaust stream at a temperature of 125 °F (51.7 °C) or less at the sampling zone in the primary dilution tunnel. Direct sampling of the particulate material may then take place (Figure N88–4a).

(B) *Double-dilution method.* The flow capacity of the CVS must be sufficient to maintain the diluted exhaust stream in the primary dilution tunnel at a temperature of 375 °F (191 °C) or less at the sampling zone. Gaseous emission samples may be taken directly from this sampling point. An exhaust sample must then be taken at this point to be diluted a second time for use in determining particulate emissions. The secondary dilution system must provide sufficient secondary dilution air to maintain the double-diluted exhaust stream at a temperature of 125 °F (51.7 °C) or less immediately before the primary particulate filter in the secondary dilution tunnel (Figure N88–4b).

(ii) For the CFV–CVS, either a heat exchanger or electronic flow compensation (which also includes the particulate sample flows) is required (see Figure N88–4).

(iii) For the CFV–CVS when a heat exchanger is used, the gas mixture temperature, measured at a point immediately ahead of the critical flow venturi, shall be within ±20 °F (11 °C) of the average operating temperature observed during the test. The temperature measuring system (sensors and readout) shall have an accuracy and precision of ±3.4 °F (1.9 °C). For systems utilizing a flow compensator to maintain proportional flow, the requirement for maintaining constant temperature is not necessary.

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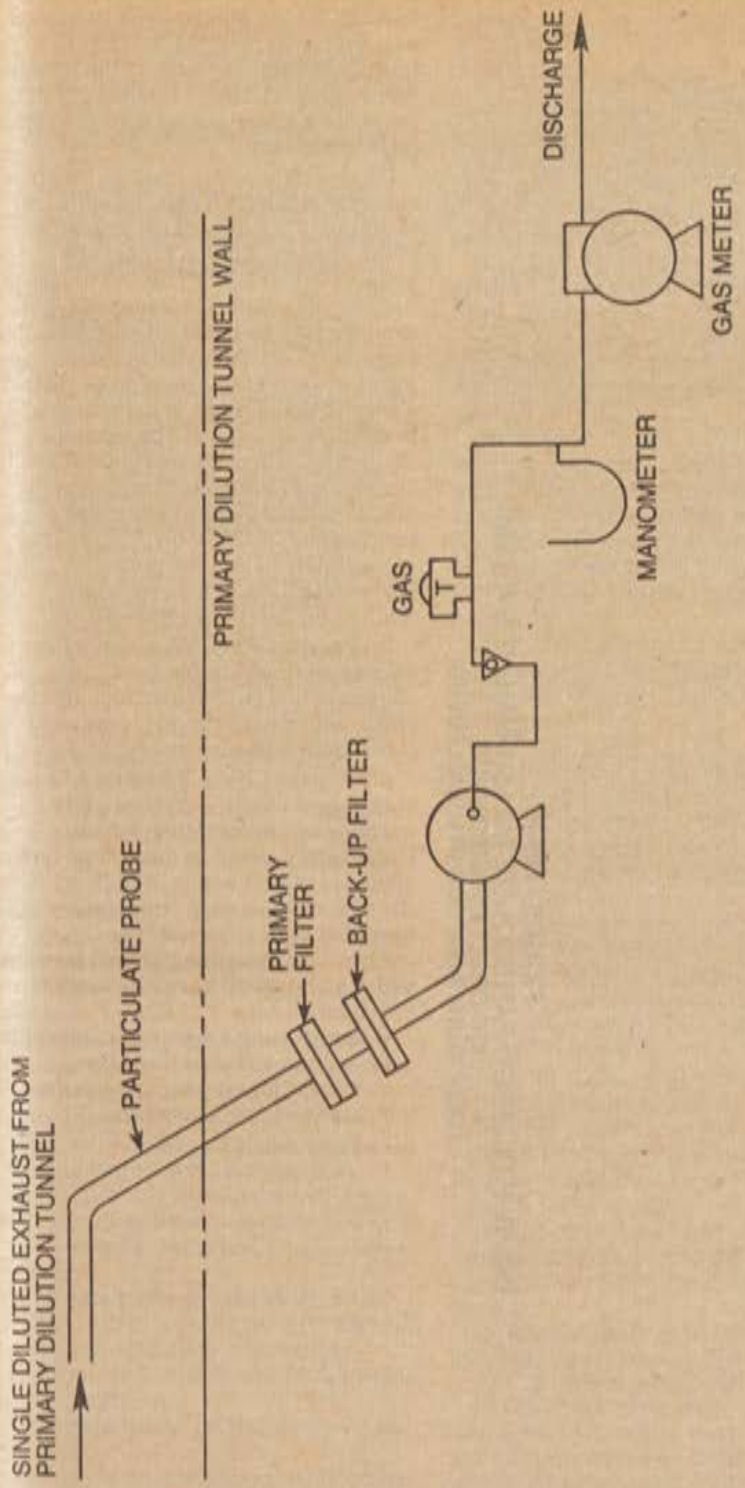

FIGURE N88-4a
SINGLE DILUTION PARTICULATE MEASUREMENT SYSTEM
(FOR DIESEL ENGINES ONLY)
(SEE FIGURE N84-5 FOR SYMBOL LEGEND)

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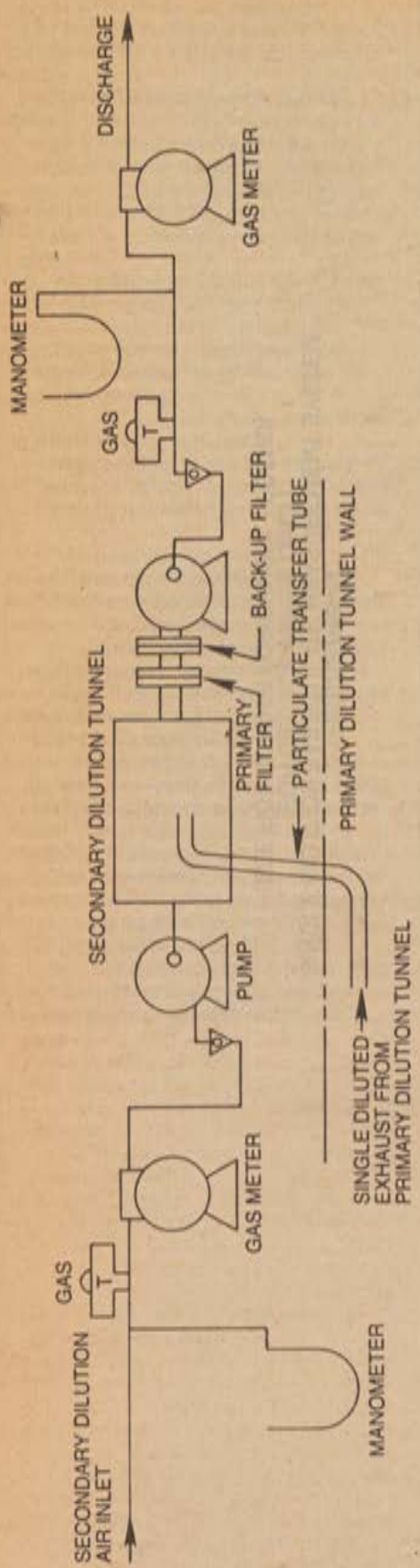

FIGURE N88-4b
DOUBLE DILUTION PARTICULATE MEASUREMENT SYSTEM
(FOR DIESEL ENGINES ONLY)
(SEE FIGURE N84-5 FOR SYMBOL LEGEND)

BILLING CODE 6560-50-C

(iv) The primary dilution air and secondary dilution air (if applicable):

(A) Shall have a temperature of 77°±9 °F (25°±5 °C).

(B) May be filtered at the dilution air inlet.

(C) May be sampled to determine background particulate levels, which can then be subtracted from the values measured in the detailed exhaust stream.

(2) [Reserved]

(3) *Continuous HC measurement system.*

(i) The continuous HC sample system (as shown in Figure N88-3 or N88-4) uses an "overflow" zero and span system. In this type of system, excess zero or span gas spills out of the probe when zero and span checks of the analyzer are made. The "overflow" system may also be used to calibrate the HC analyzer per § 86.1321-84(b), although this is not required.

(ii) No other analyzers may draw a sample from the continuous HC sample probe, line or system, unless a common sample pump is used for all analyzers and the sample line system design reflects good engineering practice.

(iii) The overflow gas flow rates into the sample line shall be at least 105 percent of the sample system flow rate.

(iv) The overflow gases shall enter the heated sample line as close as practicable to the outside surface of the CVS duct or dilution tunnel.

(v) The continuous hydrocarbon probe shall be:

(A) Installed in the primary dilution tunnel at a point where the dilution air and exhaust are well mixed (*i.e.*, approximately 10 tunnel diameters downstream of the point where the exhaust enters the dilution tunnel).

(B) Sufficiently distant (radially) from other probes and the tunnel wall so as to be free from the influence of any wakes or eddies.

(C) Heated over the entire length to maintain a 375° ±20°F (191°±11°C) *wall* temperature. (Insulation and other techniques may also be used to maintain the temperature.)

(D) 0.19 in. (0.457 cm) minimum inside diameter.

(E) Free from cold spots (*i.e.*, free from spots where the probe *wall* temperature is less than 355°F (180°C)).

(vi) The dilute exhaust *gas* flowing in the total hydrocarbon sample system shall be:

(A) At 375°±10°F (191°±6°C) immediately before the heated filter. This *gas* temperature will be determined by a temperature sensor located immediately upstream of the filter. The sensor and its readout shall have an accuracy and precision of ±3.4°F (1.9°C).

(B) At 375°±10°F (191°±10°C) immediately beforse the HFID. This *gas* temperature will be determined by a temperature sensor located at the exit of the heated sample line. The sensor and its readout shall have an accuracy and precision of ±3.4°F (1.9°C).

(vii) The response time of the continuous measurement system shall be no greater than:

(A) 1.5 seconds from an instantaneous step change at the port entrance to the analyzer to within 90 percent of the step change.

(B) 20 seconds from an instantaneous step change at the entrance to the sample probe or overflow span gas port to within 90 percent of the step change. Analysis system response time shall be coordinated with CVS flow fluctuations and sampling time/test cycle offsets if necessary.

(C) For the purpose of verification of response times, the step change shall be at least 60 percent of full-scale chart deflection.

(4) *Primary-dilution tunnel.* (i) The primary dilution tunnel shall be:

(A) Small enough in diameter to cause turbulent flow (Reynolds Number greater than 4,000) and of sufficient length to cause complete mixing of the exhaust and dilution air;

(B) At least 18 inches (45.7 cm) in diameter with a single-dilution system or at least 8 inches (20.3 cm) in diameter with a double-dilution system;

(C) Constructed of electrically conductive material which does not react with the exhaust components; and

(D) Electrically grounded.

(ii) The temperature of the diluted exhaust stream inside of the primary dilution tunnel shall be sufficient to prevent water condensation.

(iii) The engine exhaust shall be directed downstream at the point where it is introduced into the primary dilution tunnel.

(5) *Continuously integrated NO_x CO, and CO_2 measurement systems.*

(i) The sample probe shall:

(A) Be in the same plane as the continuous HC probe, but shall be sufficiently distant (radially) from other probes and the tunnel wall so as to be free from the influences of any wakes or eddies.

(B) Heated and insulated over the entire length, to prevent water condensation, to a minimum temperature of 131°F (55°C). Sample *gas* temperature immediately before the first filter in the system shall be at least 131°F(55°C).

(ii) The continuous NO_x, CO, or CO_2 sampling and analysis system shall conform to the specifications of 40 CFR Part 86, Subpart D with the following exceptions and revisions:

(A) The system components required to be heated by Subpart D need only be heated to prevent water condensation, the minimum component temperature shall 131°F(55°C)]

(B) The system response defined in § 86.329-79 shall be no greater than 20 seconds. Analysis system respone time shall be coordinated with CVS flow fluctuations and sampling time/test cycle offsets, if necessary.

(C) Alternative NO_x measurement techniques outlined in § 86.346-79 are not permitted for NO_x measurement in this Subpart.

(D) All analytical gases shall conform to the specifications of § 86.1314-84.

(E) Any range on a linear analyzer below 155 ppm shall have and use a calibration curve conforming to § 86.330-79.

(F) The measurement accuracy requirements specified in § 86.338-79 are superseded by those specified in § 86.1338-84.

(iii) The chart deflections or voltage output of analyzers with non-linear calibration curves shall be converted to concentration values by the calibration curve(s) specified in Subpart D (§ 86.330-79) before flow correction (if used) and subsequent integration takes place.

(6) *Particulate sampling system.* The particulate collection system must be configured in either of two ways. The *single-dilution* method collects a proportional sample from the primary tunnel, and then passes this sample through the collection filter (Figure N88-4a). The *double-dilution* method collects a proportional sample from the primary tunnel, and then transfers this sample to a secondary dilution tunnel where the sample is further diluted; the double-diluted sample is then passed through the collection filter (Figure N88-4b). Proportionality (*i.e.*, mass flow ratio) between the primary tunnel flow rate and the sample flow rate must be maintained within ±5 percent for systems with or without flow compensation. Without flow compensation, proportional sampling is achieved by introducing the secondary dilution air at a constant mass flow rate, and removing the double-diluted sample at a constant mass flow rate. The requirements for these two systems are:

(i) *Single Dilution Method.* (A) The particulate sample probe shall be:

(*1*) Installed facing upstream at a point where the dilution air and exhaust air are well mixed (*i.e.*, on the primary tunnel centerline, approximately 10

tunnel diameters downstream of the point where the exhaust enters the primary dilution tunnel).

(2) Sufficiently distant (radially) from other sampling probes so as to be free from the influence of any wakes or eddies produced by the other probes.

(3) 0.5 in. (1.27 cm) minimum inside diameter.

(4) The distance from the sampling tip to the filter holder shall be at least 5 probe diameters for filters located inside the primary dilution tunnel, and not more than 40 inches (102 cm) for filters located outside the primary dilution tunnel.

(5) Designed to minimize the deposition of particulate in the probe (*i.e.*, bends should be as gradual as possible, protrusions (due to sensors, etc.) should be smooth and not sudden, etc.).

(B) The particulate sample pump(s) shall be located sufficiently distant from the dilution tunnel so that the inlet gas temperature is maintained at a constant temperature (±5 °F (±2.8 °C)) if flow compensation is not used.

(C) The gas meters or flow instrumentation shall be located sufficiently distant from the tunnel so that the inlet gas temperature remains constant (±5 °F (±2.8 °C)) if flow compensation is not used.

(D) Other sample flow handling and/or measurement systems may be used if shown to yield equivalent results and if approved in advance by the Administrator.

(ii) *Double-dilution method.* (A) The particulate sample transfer tube shall be configured and installed so that:

(1) The inlet faces upstream in the primary dilution tunnel at a point where the primary dilution air and exhaust are well mixed (*i.e.*, on the primary tunnel centerline, approximately 10 tunnel diameters downstream of the point where the exhaust enters the primary dilution tunnel).

(2) The particulate sample exits on the centerline of the secondary tunnel and points downstream.

(B) The particulate sample transfer tube shall be:

(1) Sufficiently distant (radially) from other sampling probes (in the primary dilution tunnel) so as to be free from the influence of any wakes or eddies produced by the other probes.

(2) 0.5 in. (1.27 cm) minimum inside diameter.

(3) No longer than 36 in. (91.4 cm) from inlet plane to exit plane.

(4) Designed to minimize the deposition of particulate during transfer (*i.e.*, bends should be as gradual as possible, protrusions (due to sensors, etc.) should be smooth and not sudden, etc.).

(5) Constructed of electrically conductive material which does not react with the exhaust components, and electrically grounded.

(C) The secondary dilution air shall be at a temperature of 77°±9°F (25°±5°C).

(D) The secondary-dilution tunnel shall be:

(1) 3.0 inches (7.62 cm) minimum inside diameter.

(2) Of sufficient length so as to provide a residence time of at least 0.25 seconds for the double-diluted sample.

(3) Constructed of electrically conductive material which does not react with the exhaust components, and electrically grounded.

(E) Additional dilution air must be provided so as to maintain a sample temperature of 125°F (51.7°C) or less immediately before the primary sample filter. This dilution air must be introduced at a known constant mass flow rate in order to maintain proportional sampling. This can be achieved by either of the following methods:

(1) A PDP-type pump flowing filtered dilution air at a temperature of 77°±9°F (25°±5°C) and essentially constant pressure (atmospheric is acceptable) along with a gas meter or flow instrumentation for mass determination. (See § 86.1320–87 for calibration specifics.) The gas meter or flow instrumentation shall be located so that the inlet gas temperature remains 77°±9°F (25°±5°C).

(2) A choked critical flow orifice flowing filtefed dilution air. For mass determination, a gas meter or other flow instrumentation is acceptable. The gas meter or flow instrumentation shall be located so that the inlet gas temperature remains at 77°±9°F (25°±5°C).

(F) The primary filter holder shall be located within 12.0 in. (30.5 cm) of the exit of the secondary dilution tunnel.

(G) The particulate sample pump shall be located sufficiently distant from the dilution tunnel so that the inlet gas is maintained at a constant temperature (±5°F (±2.8°C)) if flow compensation is not used.

(H) The gas meter or flow instrumentation (if double-dilution, this means the downstream device) shall be located sufficiently distant from the tunnel (either primary or secondary) so that the inlet gas temperature remains essentially constant (±5°F (±2.8°C)) if flow compensation is not used.

(I) Other sample flow handling and/or measurement systems may be used if shown to yield equivalent results and if approved in advance by the Administrator.

(7) *Particulate sampling filters.*

(i) Fluorocarbon-coated glass fiber filters or fluorocarbon-based (membrane) filters are required.

(ii) Particulate filters must have a minimum diameter of 70 mm (60 mm stain diameter). Larger diameter filters are acceptable.

(iii) The dilute exhaust will be simultaneously sampled by a pair of filters (one primary and one back-up filter) during the cold-start test and by a second pair of filters during the hot-start test. The back-up filter holder shall be located no more than 4 inches downstream of the primary filter holder. The primary and back-up filters shall not be in contact with each other.

(iv) The recommended minimum loading on a primary 70 mm filter is 5.3 milligrams. Equivalent loadings (*i.e.*, mass/stain area) are recommended for larger filters. For equivalency calculations assume the 70 mm filter has a 60 mm strain diameter.

37. A new § 86.1312–88 is added, to read as follows:

§ 86.1312–88 Weighing chamber and microgram balance specifications.

(a) *Ambient conditions.* (1) *Temperature.* The temperature of the chamber (or room) in which the particulate filters are conditioned and weighed shall be maintained to within ±10 °F (±6 °C) of a set point between 68 °F (20°C) and 86 °F (30 °C) during all filter conditioning and weighing.

(2) *Humidity.* The relative humidity of the chamber (or room) in which the particulate filters are conditioned and weighed shall be maintained to within ±10 percent (relative humidity) of a set point between 30 and 70 percent during all filter conditioning and weighing.

(3) The chamber (or room) environment shall be free of any ambient contaminates (such as dust) that would settle on the particulate filters during their stabilization. It is required that two unused reference filters remain in the weighing room at all times, and that these filters be weighed once each 24-hour period. If the weight of either or both of these two reference filters changes by more than ±1.0 percent of the nominal filter loading (a recommended minimum of 5.3 milligrams) during the conditioning period, then all filters in the process of being stabilized should be discarded, and any tests repeated. The reference filters shall be changed at least once per month.

(b) *Weighing balance specifications.* The microgram balance used to determine the weights of all filters shall have a precision (standard deviation) of

20 micrograms and readability of 10 micrograms.

38. A new § 86.1320-88 is added, to read as follows:

§ 86.1320-88 Gas meter or flow instrumentation calibration, particulate measurement.

(a) Sampling for particulate emissions requires the use of gas meters or flow instrumentation to determine flow through the particulate filters. This instrument shall receive initial and periodic calibrations as follows:

(1) Install a standard air flow measurement device upstream of the instrument. A critical flow orifice, a bellmouth nozzle, or a laminar flow element is recommended as the standard device.

(2) Flow air through the calibration system at the sample flow rate used for particulate testing and at the backpressure which occurs during the sample test.

(3) When the temperature and pressure in the system have stabilized, measure the indicated gas volume over a time period of at least 5 minutes and until a gas volume of at least ± 1 percent accuracy can be determined by the standard device. Record the stabilized air temperature and pressure upstream of the instrument and as required for the standard device.

(4) Calculate air flow at standard conditions as measured by both the standard device and the instrument. (Standard conditions are defined as 68 °F (20 °C) and 29.92 in. of mercury (101.3 kPa).)

(5) Repeat the procedures of paragraphs (a) (2) through (4) of this section using flow rates which are 10 percent above and 10 percent below the nominal sampling flow rate.

(6) If the air flow at standard conditions measured by the instrument differs by more than ±1 percent from the standard measurement at any of the three measured flow rates, then a correction shall be made by either of the following two methods:

(i) Mechanically adjust the instrument so that it agrees within 1 percent of the standard measurement at the three specified flow rates, or

(ii) Develop a continuous best fit calibration curve for the instrument (as a function of the standard device flow measurement) from the three calibration points that represents the data to within 1 percent at all points to determine corrected flow.

(b) *Other systems.* A bell prover may be used to calibrate the instrument if the procedure outlined in ANSI B109.1-1973 is used. Prior approval by the Administrator is not required to use the bell prover.

39. A new § 86.1327-88 is added, to read as follows:

§ 86.1327-88 Engine dynamometer test procedures; overview.

(a) The engine dynamometer test procedure is designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, oxides of nitrogen and particulate (diesels only). The test procedure consists of a "cold" start test following either natural or forced cool-down periods described in § 86.1334-84 and § 86.1335-84, respectively. A "hot" start test follows the "cold" start test after a hot soak of 20 minutes. The idle test of Subpart P may be run after the "hot" start test. The exhaust emissions are diluted with ambient air and a continuous proportional sample is collected for analysis during both the cold- and hot-start tests. The composite samples collected are analyzed either in bags or continuously for hydrocarbons (HC), carbon monoxide (CO), carbon dioxide (CO_2), and oxides of nitrogen (NO_x). A bag or continuous sample of the dilution air is similarly analyzed for background levels of hydrocarbon, carbon monoxide, carbon dioxide, and oxides of nitrogen. In addition, for diesels only, particulates are collected on fluorocarbon-coated glass fiber filters or fluorocarbon-based (membrane) filters, and the dilution air may be prefiltered.

(b) Engine torque and rpm shall be recorded continuously during both the cold and hot start tests. Data points shall be recorded at least once every second.

(c) Using the torque and rpm feedback signals the brake horsepower is integrated with respect to time for the cold and hot cycles. This producers a brake horsepower-hour value that enables the brake-specific emissions to be determined (see § 86.1342-84, Calculations: gaseous exhaust emissions and § 86.1343-87, Calculations: particulate exhaust emissions).

(d)(1) When an engine is tested for exhaust emissions or is operated for service accumulation on an engine dynamometer, the complete engine shall be tested, with all emission control devices installed and functioning.

(2) Evaporative emission controls need not be connected if data are provided to show that normal operating conditions are maintained in the engine induction system.

(3) On air-cooled engines, the fan shall be installed.

(4) Additional accessories (*e.g.*, oil cooler, alternators, air compressors, etc.) may be installed or their loading simulated if typical of the in-use application.

(5) The engine may be equipped with a production type starter.

(e) Means of engine cooling which will maintain the engine operating temperatures (*e.g.*, temperatures of intake air, oil, water, etc.) at approximately the same temperature as specified by the manufacturer shall be used. Auxiliary fan(s) may be used to maintain engine cooling during operation on the dynamometer. Rust inhibitors and lubrication additives may be used, up to the levels recommended by the additive manufacturer. Antifreeze mixtures and other coolants typical of those approved for use by the manufacturer may be used.

(f) *Exhaust system.* The exhaust system shall meet the following requirements:

(1) *Gasoline-fueled engines.* A chassis-type exhaust system shall be used. For all catalyst systems, the distance from the exhaust manifold flange(s) to the catalyst shall be the same as in the vehicle configuration unless the manufacturer provides data showing equivalent performance at another location.

(2) *Diesel engines.* Either a chassis-type or a facility-type exhaust system or both systems simultaneously may be used. The exhaust backpressure or restriction shall be typical of those seen in the actual average vehicle exhaust system configuration and may be set with a valve (muffler omitted).

(i) The diesel engine exhaust system shall meet the following requirements:

(A) The total length of the tubing from the exit of the engine exhaust manifold or turbocharger outlet to the primary dilution tunnel should not exceed 32 feet.

(B) The initial portion of the exhaust system may consist of a typical in-use (*i.e.*, length, diameter, material, etc.) chassis-type exhaust system.

(C) The distance from the exhaust manifold flange(s) to any exhaust aftertreatment device shall be the same as in the vehicle configuration unless the manufacturer is able to demonstrate equivalent performance at another location.

(D) If the exhaust system tubing from the exit of the engine exhaust manifold or turbocharger outlet to the primary dilution tunnel exceeds 12 feet in length, than all tubing in excess of 12 feet (chassis and/or facility type) shall be insulated.

(E) If the tubing is required to be insulated, the radial thickness of the insulation must be at least R inches, where R=16(k)—(2)r,

Where:

(1) k = Thermal conductivity of the insulating material (Btu/hr-ft-°F), and

(2) r = Outer radius of uninsulated tubing (inches).

(F) A smoke meter or other instrumentation may be inserted into the exhaust system tubing. If this option is exercised in the insulated portion of the tubing, then a minimal amount of tubing not to exceed 18 inches may be left uninsulated. However, no more than 12 feet of tubing can be left uninsulated in total, including the length at the smoke meter.

(ii) The facility-type exhaust system shall meet the following requirements:

(A) It must be composed of smooth tubing made of typical in-use steel or stainless steel. This tubing shall have a maximum inside diameter of 6.0 in. (15.2 cm).

(B) Short sections (altogether not to exceed 20 percent of the entire tube length) of flexible tubing at connection points are allowed.

40. A new § 86.1337-88 is added, to read as follows:

§ 86.1337-88 Engine dynamometer test run.

(a) The following steps shall be taken for each test:

(1) Prepare the engine, dynamometer, and sampling system for the cold-start test. Change filters, etc. and leak check as necessary.

Note.— For a single dilution particulate system, a propane check will not reveal a pressure side leak (that portion of the system downstream of the pump) since the volume concentration is ppm will not change if a portion of the sample is lost. A separate leak check is needed.

A leak check of a filter assembly that has only one seal ring in contact with the filter media will not detect a leak tested under vacuum. A pressure leak test should be performed.

(2) Connect evacuated sample collection bags to the dilute exhaust and dilution air sample collection systems.

(3) Attach the CVS to the engine exhaust system any time prior to starting the CVS.

(4) Start the CVS (if not already on), the sample pumps (except for the diesel particulate sample pump(s), if applicable), the engine cooling fan(s), and the data collection system. The heat exchanger of the constant volume sampler (if used), and the heated components of any continuous sampling system(s) (if applicable) shall be preheated to their designated operating temperatures before the test begins. (See § 86.1340-84(e) for continuous sampling procedures.)

(5) Adjust the sample flow rates to the desired flow rates and set the CVS gas flow measuring devices to zero.

Note.—CFV-CVS sample flow rate is fixed by the venturi design.

(6) For diesels only, carefully install a clean particulate sample filter into each of the filter holders and install the assembled filter holders in the sample flow line. (Filter holders may be preassembled.)

(7) Follow the manufacturer's choke and throttle instructions for cold starting. Simultaneously start the engine and begin exhaust and dilution air sampling. For diesel engines, turn on the hydrocarbon and NO_x (and CO and CO_2, if continuous) analyzer system integrators (if used) and turn on the particulate sample pumps and indicate the start of the test on the data collection medium.

(8) As soon as it is determined that the engine is started, start a "free idle" timer.

(9) Allow the engine to idle freely with no-lead for 24±1 seconds. This idle period for automatic transmission engines may be interpreted as an idle speed in neutral or park. All other idle conditions shall be interpreted as an idle speed in gear. It is permissible to lug the engine down to curb idle speed during the last 8 seconds of the free idle period for the purpose of engaging dynamometer control loops.

(10) Begin the transient engine cycles such that the first non-idle record of the cycle occurs at 25± seconds. The free idle time is included in the 25±1 seconds. During diesel particulate testing without the use of flow compensation, adjust the sample pump(s) so that the flow rate through the particulate sample probe or transfer tube is maintained at a constant value within ±5 percent of the set flow rate. Record the average temperature and pressure at the gas meter(s) or flow instrumentation inlet. If the set flow rate cannot be maintained because of high particulate loading on the filter, the test shall be terminated. The test shall be rerun using a lower flow rate and/or a larger diameter filter.

(11) On the last record of the cycle, cease sampling. Immediately turn the engine off, and start a hot-soak timer. For diesel engines, also turn off the particulate sample pumps, the gas flow measuring device(s) and any continuous analyzer system integrators and indicate the end of the test on the data collection medium. Sampling systems should continue to sample after the end of the test cycle until system response times have elapsed.

(12) Immediately after the engine is turned off, turn off the engine cooling fan(s) if used, and the CVS blower (or disconnect the exhaust system from the CVS). As soon as possible, transfer the "cold start cycle" exhaust and dilution air bag samples to the analytical system and process the samples according to § 83.1340-84. A stabilized reading of the exhaust sample on all analyzers shall be obtained within 20 minutes of the end of the sample collection phase of the test. For diesel engines, carefully remove the filter holder from the sample flow apparatus, and remove each particulate sample filter from its holder and place each in a petri dish and cover.

(13) Allow the engine to soak for 20±1 minutes.

(14) Prepare the engine and dynamometer for the hot start test.

(15) Connect evacuated sample collection bags to the dilute exhaust and dilution air sample collection systems.

(16) Start the CVS (if not already on) or connect the exhaust system to the CVS (if disconnected). Start the sample pumps (except the diesel particulate sample pump(s), if applicable), the engine cooling fan(s) and the data collection system. The heat exchanger of the constant volume sampler (if used) and the heated components of any continuous sampling system(s) (if applicable) shall be preheated to their designated operating temperatures before the test begins. See § 86.1340-84(e) for continuous sampling procedures.

(17) Adjust the sample flow rates to the desired flow rate and set the CVS gas flow measuring devices to zero.

(18) For diesels only, carefully install a clean particulate filter in each of the filter holders and install assembled filter holders in the sample flow line. (Filter holders may be preassembled.)

(19) Follow the manufacturer's choke and throttle instruction for hot starting. Simultaneously start the engine and begin exhaust and dilution air sampling. For diesel engines, turn on the hydrocarbon and NO_x (and CO and CO_2, if continuous) analyzer system integrators (if used), indicate the start of the test on the data collection medium, and turn on the particulate sample pump(s).

(20) As soon as it is determined that the engine is started, start a "free idle" timer.

(21) Allow the engine to idle freely with no-load for 24±1 seconds. The provisions and interpretations of paragraph (a)(9) of this section apply.

(22) Begin the transient-engine cycle such that the first non-idle record of the cycle occurs at 25±1 seconds. The free idle is included in the 25±1 seconds.

(23) On the last record of the cycle, allow sampling system response times to elapse and cease sampling. For diesel engines, turn off the particulate sample pump(s), the gas flow measuring device(s) and any continuous analyzer system integrators and indicate the end of the test on the data collection medium.

(24) As soon as possible, transfer the "hot start cycle" exhaust and dilution air bag samples to the analytical system and process the samples according to § 86.1340–84. A stabilized reading of the exhaust sample on all analyzers shall be obtained within 20 minutes of the end of the sample collection phase of the test. For diesel engines, carefully remove the assembled filter holder from the sample flow lines and remove each particulate sample filter from its holder and place in a clean petri dish and cover as soon as possible. Within 1 hour after the end of the hot start phase of the test, transfer the four particulate filters to the weighing chamber for post-test conditioning.

(25) The CVS and the engine may be turned off, if desired.

(b) The procedure in paragraph (a) of this section is designed for one sample bag for the cold-start protion and one for the hot-start protion. It is also permissible to use more than one sample bag per test portion.

(c) If a dynamometer test run is determined to be void, corrective action may be taken. The engine may then be allowed to cool (naturally or forced) and the dynamometer test rerun per paragraph (a) or (b) of this section.

41. A new § 86.1339–88 is added, to read as follows:

§ 86.1339–88 Diesel particulate filter handling and weighing.

(a) At least 1 hour, but not more than 80 hours, before the test, place each filter in an open petri dish and place in a weighing chamber meeting the specifications of § 86.1312–87 for stabilization.

(b) At the end of the stabilization period, weigh each filter on a balance having a precision of 20 micrograms and a readability of 10 micrograms. This reading is the tare weight and must be recorded (see § 86.1344–88(e)(18)).

(c) The filter shall then be stored in a covered petri dish or a sealed filter holder, either of which shall remain in the weighing chamber until needed for testing.

(d) If the filter is not used within 1 hour of its removal from the weighing chamber, it must be re-weighed before use. This limit of 1 hour may be replaced by an 8-hour limit if either of the following three conditions are met:

(1) A stabilized filter is placed and kept in a sealed filter holder assembly with the ends plugged, or

(2) A stabilized filter is placed in a sealed filter holder assembly, which is then immediately placed in a sample line through which there is no flow, or

(3) A combination of the conditions specified in paragraphs (1) and (2).

(e) After the emissions test, and after the sample and back-up filters have been returned to the weighing room after being used, they must be conditioned for at least 1 hour but not more than 80 hours and then weighed. This reading is the gross weight of the filter and must be recorded (see § 86.1344–88(e)(18)).

(f) The net weight of each filter is its gross weight minus its tare weight. Should the sample on the filter contact the petri dish or any other surface, the test is void and must be re-run.

(g) A ratio of net weights will be determined by the following formula:

$$\text{Ratio of net weights} = \frac{(\text{Net weight})_{\text{Primary filter}}}{(\text{Net weight})_{\text{Primary filter}} + (\text{Net weight})_{\text{Back up filter}}}$$

(1) If the ratio of net weights is greater than 0.95, then P_f is the net weight of the primary filter only.

(2) If the ratio of net weights is less than or equal to 0.95, then P_f is the sum of the net weights of the primary filter and the back-up filter.

(h) The following optional weighting procedure is permitted:

(1) At the end of the stabilization period, weigh both the primary and back-up filters as a pair on a balance having a precision of 20 micrograms and a readability of 10 micrograms. This reading is the tare weight and must be recorded (see § 86.1344–88(e)(18)).

(2) After the emissions test, in removing the filters from the filter holder, the back-up filter is inverted on

top of the primary filter. They must then be conditioned in the weighing chamber for at least one hour but not more than 80 hours. The filters are then weighed as a pair. This reading is the gross weight of the filters and must be recorded (see § 86.1344–88(e)(18)).

(3) Subsections (a), (c), (d), and (f) of this section apply to this option, except that the word "filter" is replaced by "filters."

42. A new § 86.1343–88 is added, to read as follows:

§ 86.1343–88 Calculations; particulate exhaust emissions (diesels only).

(a) The final reported transient emission test results shall be computed by use of the following formula:

$$P_{wm} = \frac{1/7\ P_C + 6/7\ P_H}{1/7\ BHP\text{-}hr_C + 6/7 BHP\text{-}hr_H}$$

(1) P_{wm} = Weighted mass particulate, grams per brake horsepower-hour.
(2) P_C = Mass particulate measured during the cold-start test, grams.
(3) P_H = Mass particulate measured during the hot-start test, grams.
(4) $BHP\text{-}hr_C$ = Total brake horsepower-hour (brake horsepower integrated with respect to time) for the cold-start test.
(5) $BHP\text{-}hr_H$ = Total brake horsepower-hour (brake horsepower integrated with respect to time) for the hot-start test.

(b) The mass of particulate for the cold-start test and the hot-start test is determined from the following equation when a heat exchanger is used (*i.e.*, no flow compensation), and when background filters are used to correct for background particulate levels:

$$P_{mass} = (V_{mix} + V_{ef}) \times \left[\frac{P_f}{V_{ef}} - \left(\frac{P_{bf}}{V_{bf}} \times [1 - (1/DF)] \right) \right]$$

(1) P_{mass} = Mass of particulate emitted per test phase, grams per test phase. ($P_H = P_{mass}$ for the hot-start test and $P_C = P_{mass}$ for the cold-start test.
(2) V_{mix} × Total dilute exhaust volume corrected to standard conditions (528°R (293°K) and 760 mm Hg (101.3 kPa)), cubic feet per test phase. For a PDP–CVS:

$$V_{mix} = V_o \times \frac{N\ (P_B - P_4)\ (528°R)}{(760\ mm\ H_g)\ (T_p)}.$$

in SI units,

$$V^{mix} = V_o \times \frac{N\ (P_B - P_4)\ (293°K)}{(101.3\ kPa)\ (T_p)}.$$

Where:
(i) V_o = Volume of gas pumped by the positive displacement pump, cubic feet (cubic meters) per revolution. This volume is dependent on the pressure differential across the positive displacement pump.
(ii) N = Number of revolutions of the positive displacement pump during the test phase while samples are being collected.
(iii) P_B = Barometric pressure, mm Hg (kPa).
(iv) P_4 = Pressure depressions below atmospheric measured at the inlet to the positive displacement pump (during an idle mode), mm Hg (kPa).
(v) T_p = Average temperature of dilute exhaust entering the positive displacement pump during test, °R (°K).
(3) V_{ef} = Total volume of sample removed from the primary dilution tunnel, cubic feet at standard conditions.

(i) For a single-dilution system:

$$V_{ef} = \frac{V_{ss} \times (P_B + P_{is}) \times 528°R}{T_{is} \times 760\ mm\ Hg.}$$

Where:
(A) V_{ss} = Actual volume of dilute sample removed from the primary-dilution tunnel, cubic feet.
(B) P_B = Barometric pressure, mm Hg.
(C) P_{is} = Pressure elevation above ambient measured at the inlet to the dilute exhaust sample gas meter or flow instrumentation, mm Hg. (For most gas meters or flow instruments with unrestricted discharge, P_{is} is negligible and can be assumed = 0.)
(D) T_{is} = Average temperature of the dilute exhaust sample at the inlet to the gas meter or flow instrumentation, °R.
(E) V_{ef} may require correction according to § 86.1320–87(a)(6).

(ii) For a double-dilution system:

$V_{ef} = V_{ef} - V_{ef}'$

Where:

$$(A) \quad V_{ef} = \frac{V_{sv} \times (P_B + P_{iv}) \times 528°R}{T_{iv} \times 760\ mm\ Hg}$$

(B) V_{sv} = Actual volume of double diluted sample which passed through the particulate filter, cubic feet.
(C) P_b = Barometric pressure, mm Hg.
(D) P_{iv} = Pressure elevation above ambient measured at the inlet to the sample gas meter located at the exit side of the secondary-dilution tunnel, mm Hg. (For most gas meters with unrestricted discharge P_{iv} is negligible and can be assumed = 0.)
(E) T_{iv} = Average temperature of the dilute exhaust sample at the inlet to the exit side gas meter or flow instrumentation, °R.

$$(F) \quad V_{ef} = \frac{V_{sp} \times (P_a + P_{ip}) \times 528°R}{T_{ip} \times 760\ mm\ Hg}$$

(G) V_{sp} = Actual volume of secondary dilution air, cubic feet.
(H) P_a = Barometric pressure, mm Hg.
(I) P_{ip} = Pressure elevation above ambient measured at the inlet to the sample gas meter or flow instrumentation located at the inlet side of the secondary dilution tunnel, mm Hg. (For most gas meters with unrestricted discharge P_{ip} is negligible and can be assumed = 0.)
(J) T_{ip} = Average temperature of the secondary dilution air at the inlet to the inlet side gas meter or flow instrumentation, °R.
(K) Both V_{ef} and V_{ef} may require correction according to § 86.1320–87(a)(6). These corrections must be applied before V_{ef} is determined.
(4) P_f = Mass of particulate on the sample filter (or sample and back-up filters if the back-up filter is required to be included, see § 86.1339–87(g) for determination), grams per test phase.
(5) P_{bf} = Net weight of particulate on the background particulate filter, grams.

$$(6) \quad V_{bf} = \frac{V_{ab} \times (P_B + P_{ib}) \times 528°R.}{T_{ib} \times 760\ mm\ Hg}$$

Where:
(i) V_{ab} = Actual volume of primary dilution air sampled by background particulate sampler, cubic feet.
(ii) P_{ib} = Pressure elevation above ambient measured at the inlet to the background gas meter or flow instrument, mm Hg. (for most gas meters or flow instruments with unrestricted discharge, P_{ib} is negligible and can be assumed = 0.)
(iii) T_{ib} = Average temperature of the background sample at the inlet to the gas meter or flow instrument, °R.

(7) For definition of DF see § 86.1342–84(d)(5).

(8) Other systems and options, as permitted under these regulations, may require calculations other than these, but these must be based on sound engineering principle and be approved in advance by the Administrator at the time the alternate system is approved.

43. A new § 86.1344-88 is added, to read as follows:

§ 86.1344-88 Required information.

(a) The required test data shall be grouped into the following three general categories:

(1) *Engine set-up and descriptive data.* This data must be provided to the EPA supervisor of engine testing for each engine sent to the Administrator for confirmatory testing prior to the initiation of engine set-up. This data is necessary to ensure that EPA test personnel have the correct data in order to set up and test the engine in a timely and proper manner. This data is not required for tests performed by the manufacturers.

(2) *Pre-test data.* This data is general test data that must be recorded for each test. The data is of a more descriptive nature such as identification of the test engine, test site number, etc. As such, this data can be recorded at any time within 24 hours of the test.

(3) *Test-data.* This data is physical test data that must be recorded at the time of testing.

(b) All data may be supplied to the Administrator by punch cards, magnetic tape, or other electronic data processing means. Acceptable data formats and transmission techniques will be provided in the Application Format for Certification of the applicable model year.

(c) *Engine set-up data.* Because specific test facilities may change with time, the specific data parameters and number of items may vary. The Application Format for Certification for the applicable model year will specify the exact requirements. In general, the following types of data will be required:

(1) Engine manufacturer.

(2) Engine system combination.

(3) Engine code and CID.

(4) Engine identification number.

(5) Applicable engine model year.

(6) Engine fuel type.

(7) Recommended oil type.

(8) Exhaust pipe configuration, pipe sizes, etc.

(9) Curb or low idle speed.

(10) Dynamometer idle speed. (Automatic transmission engines only.)

(11) Engine parameter specifications such as spark timing, operating temperature, advance curves, etc.

(12) Engine performance data, such as maximum BHP, previously measured rated rpm, fuel consumption, governed speed, etc.

(13) Recommended start-up procedure.

(14) Maximum safe engine operating speed.

(15) Number of hours of operation accumulated on engine.

(16) Manufacturer's recommended inlet depression limit and typical in-use inlet depression level.

(17) Exhaust system.

(i) *Diesel engines.*

(A) Header pipe inside diameter.

(B) Tailpipe inside diameter.

(C) Minimum distance in-use between the exhaust manifold flange and the exit of the chassis exhaust system.

(D) Manufacturer's recommended maximum exhaust backpressure limit for the engine.

(E) Typical backpressure as determined by typical application of the engine.

(F) Minimum backpressure required to meet applicable noise regulations.

(ii) *Gasoline-fueled engines.* Typical in-use backpressure in vehicle exhaust system.

(d) *Pre-test data.* The following data shall be recorded, and reported to the Administrator for each test conducted for compliance with the provisions of 40 CFR Part 86, Subpart A:

(1) Engine-system combination.

(2) Engine identification.

(3) Instrument operator(s).

(4) Engine operator(s).

(5) Number of hours of operation accumulated on the engine prior to beginning the test sequence (Figure N84-10).

(6) Identification and specifications of test fuel used.

(7) Date of most recent analytical assembly calibration.

(8) All pertinent instrument information such as tuning, gain, serial numbers, detector number, calibration curve number, etc. As long as this information is traceable, it may be summarized by system number or analyzer identification numbers.

(e) *Test data.* The physical parameters necessary to compute the test results and ensure accuracy of the results shall be recorded for each test conducted for compliance with the provisions of 40 CFR Part 86, Subpart A. Additional test data may be recorded at the discretion of the manufacturer. Extreme details of the test measurements such as analyzer chart deflections will generally not be required on a routine basis to be reported to the Administrator for each test, unless a dispute about the accuracy of the data arises. The following types of data shall be required to be reported to the Administrator. The Application Format for Certification for the applicable model year will specify the exact requirements which may change slightly from year to year with the addition or deletion of certain items.

(1) Date and time of day.

(2) Test number.

(3) Engine intake air or test cell temperature.

(4) Barometric pressure. (A central laboratory barometer may be used: *Provided*, that individual test cell barometric pressure are shown to be within ±0.1 percent of the barometric pressure at the central barometer location.

(5) Engine intake or test cell and CVS dilution air humidity.

(6) Maximum torque versus speed curve as determined in § 86.1332-84, with minimum and maximum engine speeds, and a description of the mapping technique used.

(7) Measured maximum horsepower and maximum torque speeds.

(8) Measured maximum horsepower and torque.

(9) Measured high idle engine speed (governed diesel engines only).

(10) Measured fuel consumption at maximum power and torque (diesel engines only).

(11) Cold-soak time interval and cool down procedures.

(12) Temperature set point of the heated continuous analysis system components (if applicable).

(13) Test cycle validation statistics as specified in § 86.1341-84 for each test phase (cold and hot).

(14) Total CVS flow rate with dilution factor for each test phase (cold and hot).

(15) Temperature of the dilute exhaust mixture and secondary dilution air (in the case of a double dilution system) at the inlet to the respective gas meter(s) or flow instrumentation used for particulate sampling (diesels only).

(16) The maximum temperature of the dilute exhaust mixture immediately before the particulate filter (diesels only).

(17) Sample concentrations (background corrected) for HC, CO, CO_2, and NO_x for each test phase (cold and hot).

(18) The stabilized pre-test weight and post-test weight of each particulate sample and back-up filter or pair of filters (diesels only).

(19) Brake specific emissions (g/BHP-hr) for HC, CO and NO_x for each test phase (cold and hot).

(20) The weighted (cold and hot) brake specific emissions (g/BHP-hr) for the total test.

(21) The weighted (cold and hot) carbon balance or mass-measured brake

specific fuel consumption for the total test.

(22) The number of hours of operation accumulated on the engine after completing the test sequences described in Figure N84-10.

44. Section 86.1544-84 is amended by revising paragraph (b)(4), to read as follows:

§ 86.1544-84 Calculations; idle exhaust emissions.

* * * * *

(b) * * *

(4) Calculate the CVS dilution factor (DF) by:

$$DF = \frac{\text{Raw Wet } CO_2\text{—background } CO_2}{\text{Dilute wet } CO_2\text{—background } CO_2}$$

* * * * *

PART 600—[AMENDED]

45. Section 600.307-86 amended by revising paragraph (b)(ii), to read as follows:

§ 600.307-86 Fuel economy label format requirements.

* * * * *

(b) * * *

(i) * * *

(ii) The digit "one," shall measure at least 0.2 inches by 0.6 inches (5 x 15 mm) in width and height respectively.

* * * * *

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Friday
March 15, 1985

Part IV

Department of Education

34 CFR Part 690

Pell Grant Program; Final Rule

DEPARTMENT OF EDUCATION

34 CFR Part 690

Pell Grant Program

AGENCY: Department of Education.

ACTION: Final Regulations.

SUMMARY: The Secretary of Education amends the regulations for the Pell Grant Program. The regulations are amended as a result of the Secretary's review of current regulations. These regulations are being amended to simplify procedures, clarify requirements, and reduce administrative burdens on institutions while maintaining program integrity.

EFFECTIVE DATE: These regulations take effect either 45 days after publication in the **Federal Register** or later if Congress takes certain adjournments, with the exceptions of §§ 690.72, 690.77, 690.81, 690.82, 690.92, 690.96, and 690.100. These sections will become effective following the Education Department's submission and OMB approval of reporting requirements contained in those sections under the Paperwork Reduction Act of 1980. It should be noted, however, that with the exception of § 690.66, these regulatory amendments apply to the awarding of Pell Grant assistance for award years following the 1984–1985 award year. Section 690.66, when it becomes effective, will also apply to the remainder of the 1984–1985 award year as well as to subsequent award years. As a result, correspondence schools having payment periods that begin before July 1, 1985 and end on or after July 1, 1985 may place those payment periods in either the 1984–1985 or 1985–86 award year. If you want to know the effective date of these regulations, call or write the Department of Education contact person.

FOR FURTHER INFORMATION CONTACT: Mr. Brian Kerrigan, Mr. David Morgan or Mrs. Altia J. Jackson, U.S. Department of Education, Office of Student Financial Assistance, 400 Maryland Avenue, S.W. [Regional Office Building 3, Room 4318] Washington, D.C. 20202. Telephone number (202) 472–4300.

SUPPLEMENTARY INFORMATION: These regulations are being issued in accordance with the Department's deregulation initiative. They clarify requirements and delete provisions in the existing regulations that impose unnecessary administrative burdens on participating institutions. The following is a discussion of these final regulations, including a summary of the comments received and the Department's response to those comments.

Revisions to the Notice of Proposed Rulemaking

Only a few significant changes have been made to the Notice of Proposed Rulemaking (NPRM) published on May 9, 1984.

Section 690.2 General definitions.

The Secretary is adding the definitions of the terms "Electronic Pilot Project" and "Valid Student Aid Report" to § 690.2. The Pell Grant Program Electronic Pilot Project is a project under which students attending an RDS institution participating in the project are able to correct or verify information contained on their Student Aid Reports by using computer terminals at the institution. In contrast, students attending an RDS institution that is not participating in the project must make the corrections directly on their Student Aid Reports and must mail the Reports back to the Secretary. Participation by institutions in this project is strictly voluntary, and only a limited number of institutions will be involved in this project. The goal of this pilot project is to reduce the costs of current processing and provide improved information to the user community through electronic means.

In order to receive a Pell Grant award, a student must submit a valid Student Aid Report to the institution. A valid Student Aid Report is one that contains accurate and complete information. Under the electronic pilot project, as noted above, students correct or verify information contained on their Student Aid Reports. For RDS institutions participating in the electronic pilot project, a valid Student Aid Report must be accurate and complete, and, in addition, be signed by the applicant, his or her spouse, and his or her parents if the student is a dependent student.

Section 690.4 Eligible student.

The Secretary is revising § 690.4 to require a permanent resident to provide evidence from the Immigration and Naturalization Service that he or she is a permanent resident of the United States. This requirement has been added in response to a recommendation from the General Accounting Office and to ensure that Pell Grant funds are awarded to eligible students. The regulations for the Guaranteed Student Loan and the campus-based programs will also include this requirement.

Section 690.8 Enrollment status for students taking non-credit or reduced credit remedial courses or regular and correspondence courses.

Students will be limited to one academic year of non-credit or reduced credit remedial work except for courses relating to English as a Second Language. A number of commenters have questioned this restriction by referring to the statutory language in section 411(a)(3) of the Higher Education Act. That portion of the Act provides that "Nothing in this section shall exclude from eligibility courses of study which are non-credit or remedial in nature which are determined by the institution as necessary to help the student be prepared for the pursuit of a first undergraduate baccalaureate degree."

In strictly literal sense, every program offered by an institution of higher education, no matter now basic, elementary or far removed from the education level of an eligible postsecondary course of study, can be viewed as a remedial program which is "designed to increase the ability of the student to pursue an undergraduate course of study leading to that certificate or degree." Theoretically, a student enrolled in any type of "remedial" program of whatever length could be viewed as eligible to receive assistance under the Pell Grant Program. However, the Secretary does not believe that the statutory scheme of the Pell Grant Program premits such an interpretation.

The Pell Grant Program was designed to provide financial assistance to students pursuing postsecondary education. Thus, to receive such aid, a student must attend an eligible institution of higher education. One of the criteria defining such an institution is the type of student it admits as a regular student. Such a student must be a high school graduate, a GED recipient or recipient of a similar degree, or must be above the age of compulsory school attendance with the ability to benefit from the education or training offered by the institution in its degree or certificate programs. A remedial program that becomes part of an eligible program must be viewed in this context.

A remedial program, by design, offers instruction on less than a postsecondary level. However, the purpose of the program is to prepare a student, who is a high school graduate or who has the ability to benefit from the postsecondary education program provided by the institution, with the background and skills necessary to successfully complete

that postsecondary program. Presumably because the student is a high school graduate or has the ability to benefit from the postsecondary program, the remedial program, if it is to be considered part of an eligible postsecondary program, must have a reasonable relationship to the eligible postsecondary program both in terms of the level of instruction provided and the length of the program. Therefore, the Secretary has decided to limit eligibility for remedial work to one academic year.

Exception for English as a Second Language

An exception to the one year limitation has been made for English as a Second Language (ESL) courses because ESL students often have complete mastery of logical thinking, communication, and reading, as well as math skills in their own language. However, these students do not have the ability to express this knowledge in English. The difficulty of ESL courses is often comparable to the courses taken by students who enroll in French or German language courses. ESL courses are not designed to develop or improve elementary and secondary education skills, but instead are designed to permit a student who already has those skills to pursue a postsecondary education through a second language.

Section 690.77 Verification of information on the SAR—withholding of payments.

The Secretary initiated the verification of application information for the Pell Grant Program in the 1979–80 award year. In the succeeding years, the Secretary developed procedures to select students for verification based in part on the probability that a student's application contained errors. Recent studies by the Education Department on the Pell Grant application process have indicated that a substantial number of errors are still being made on Pell Grant applications. Accordingly, the Secretary anticipates a significant increase in the number of applicants who will be selected to verify their application information.

In response to a comment requesting a list of the items that must be verified under § 690.77 and the identification of the documents that must be collected by institutions to verify those items, and to clarify the Secretary's intent in the proposed rules, the Secretary has amended § 690.77. The procedures in § 690.77 are to be used to verify application information starting with applicants for the 1985–1986 award year. Most of the items set forth in § 690.77 and the documents needed to verify those items are similar to the items and documents currently being used by institutions for verifying application information in the 1984–1985 award year. However, as a result of the errors discovered in the above noted studies, the Secretary determined that additional items needed to be verified and that certain items needed to be verified with additional documents to reduce the application error rates. To assist institutions in carrying out these verification requirements, the Secretary will publish a handbook indicating procedures that institutions may use to carry out the requirements of § 690.77. That handbook for the 1985–86 award year is expected to be mailed to all institutions during the Spring of 1985.

The amended § 690.77 provides that if the applicant is selected for verification, he or she must verify the following items:

- Adjusted gross income (AGI) and U.S. income tax paid as reported on the U.S. individual income tax return.
- Household size.
- Number in the household enrolled in postsecondary educational institutions.
- Independent student status.
- Untaxed income and benefits.

If the household size or the number enrolled in postsecondary educational institutions has changed at the time the student is being verified by the institution, the student must update this information to reflect the change that has occurred since the time the student applied for a Pell Grant. Students who have not been selected for verification are responsible for updating any changes in household size or the number enrolled in postsecondary institutions at the time they submit the first Student Aid Report to the institution. If these two items change after a student who is not selected for verification has submitted the first Student Aid Report or after a student has been verified, the student may not update these changes. By not allowing changes after this time the institution can avoid making adjustments to a student's award after a disbursement has been made to a student.

If a student's dependency status changes at any time after the student has applied for a Pell Grant, he or she must revise that status. By definition, a student's dependency status changes whenever a change in the projected dependency criteria affects the student's dependency status. However, it should be noted that if a student's marital status changes after he or she has applied for a Pell Grant, the change in marital status will not be updated, and therefore will not affect a student's dependency status.

Under the amended § 690.77, an applicant selected for verification must submit to the institution a U.S. income tax return or comparable state income tax return to verify adjusted gross income, U.S. income taxes paid and number in household. The IRS transcript of tax account information that a taxpayer may request and receive from the Internal Revenue Service may be used as an alternative to a tax return. If no return was filed or will be filed an applicant selected for verification must provide to the institution a signed statement which certifies that no tax return was filed, indicates the amount and source of income received, and lists the household members.

Not all State income tax returns are comparable to the U.S. income tax return. The Secretary has determined that a comparable State income tax return is one that is based on the Federal income tax return and one which requires the filer to provide the amount of Federal income tax paid as well as the same information that he or she is required to provide on the Federal tax return with regard to information being verified. However, the responsibility for assuring that the State income tax return is comparable to the U.S. income tax return rests with the institution.

As a general rule for documenting independent student status, institutions shall require that an unmarried applicant document his or her independent student status by submitting the Federal or comparable State income tax return of the applicant's parents and a written statement signed by the parents concerning the amount of assistance they provided to the applicant and the number of days in a year the applicant lived with them. For a married applicant, the parents need to provide only the written statement regarding support and residency.

If the Secretary or the institution has conflicting documentation with regard to the three factors used to determine independent student status—tax exemption, receipt of $750 and six weeks residence—no other documentation is acceptable to verify the applicant's independent student status. However, if neither the Secretary nor the institution has such conflicting documentation, the following rules apply.

1. For an applicant who will be 23 or older on January 1 of an award year, the applicant need not submit the required tax return and statement and the

institution shall consider that the applicant has verified his or her independent student status.

2. For a married applicant who will not be 23 or older on January 1 of an award year, the institution shall consider that the applicant has verified his or her independent student status if the institution determines that the applicant's parents are unable or unwilling to provide the required statement.

3. For an unmarried applicant who will not be 23 or older on January 1 of an award year, the institution shall consider that the applicant has verified his or her independent student status if the institution determines that—

a. The applicant's parents are unable or unwilling to provide the required tax return and statement and

b. The applicant had sufficient income to support himself or herself and any dependents in both the calendar year preceding the first calendar year of the award year and the first calendar year of that award year.

For those situations where an institution needs to determine whether the applicant's parents are unable or unwilling to provide required tax returns or statements, the institution shall make a reasonable effort to obtain the tax returns or statements from the applicant's parents.

The Secretary will notify institutions if he has conflicting documentation concerning whether an unmarried applicant was claimed as an exemption by his or her parents in a base year of an award year, i.e., the calendar year preceding an award year, 1984 for the 1985–1986 award year. The Secretary will compare application information filed by an applicant for an award year with the application information filed by the applicant for the previous award year.

If an unmarried applicant claims independent student status for an award year, the applicant must indicate that his or her parents did not claim him or her as a tax exemption in the base year or the first year of an award year. If the applicant filed an application for the previous award year, the applicant would have also had to indicate whether his or her parents claimed him or her as a tax exemption for the base year or the first year of that award year. The base for an award year is the same calendar year as the first calendar year of the preceding award year. For example, for the 1985–86 award year, the base year is calendar year 1984; for the preceding award year, 1984–85, the first calendar year of that award year is also 1984. The Secretary considers that there is inconsistent documentation if an applicant indicated for the current award year that his or her parents did not claim him or her as an exemption in the base year, i.e. 1984 for the 1985–86 award year in the above example, while indicating in the application for the preceding award year, 1984–85, that for the first calendar year of that award year, i.e. 1984, the parents were going to claim him or her as an exemption. Beginning in the 1984–85 award year, the Student Aid Report of an applicant with this inconsistency has a comment noting this conflicting documentation.

If verification results in a change from independent student status to dependent student status, the applicant must submit a new student aid application providing parental data in order to recalculate the applicant's expected family contribution. The applicant must verify the parental data provided on the new application.

The Secretary recognizes that the documentation requirements for verifying independent student status are complex. However, the Secretary believes that the magnitude of the error in awards made on the basis of incorrect dependency status, as found in the quality control reports in the Pell Grant Program, justifies this requirement.

As set forth in the amended § 690.77, in certain cases an institution must obtain signed statements from applicants and parents, as appropriate, to verify the number in household, the number in postsecondary institutions, and untaxed income and benefits. For number in household, the institution must first collect a signed copy of an appropriate tax form which indicates the number of exemptions. If there is a discrepancy between the number of exemptions claimed on the tax form and the number in the household indicated on the application, the discrepancy must be resolved, either by a signed statement or by other documentation on file at the institution.

For the number of family members in postsecondary educational institutions, the institution may, in lieu of a signed statement, use the applicant's student aid application if it provides the names of the household members who are or will be attending postsecondary institutions as at least half-time students, their ages, and the names of the institutions that they are planning to attend. With regard to untaxed income, institutions must verify untaxed income and benefits by obtaining, in addition to a tax return, a copy of the student aid application worksheet for untaxed income and benefits which is part of the application package, or a comparable listing of that information, with a signed statement certifying that the information on the worksheet or listing is correct.

If the institution determines that it has any reason to doubt the information supplied by the student for these two areas, a signed statement is not sufficient documentation to verify the accuracy of the data. In these cases, the institution must require additional documentation, such as a statement from the institution the other family member is attending indicating the individual is enrolled as at least a half-time student or a statement from the agency supplying the untaxed benefit of the amount of the benefits provided, unless the institution the student is attending certifies that such a statement is unavailable or not obtainable in a reasonable period of time.

Section 690.84 Audit and examination.

The audit and examination provisions (§ 690.85) were removed from the Pell Grant regulations in the NPRM because these provisions will be transferred to the Student Assistance General Provisions regulations (see § 668.23 of the Student Assistance General Provisions regulations NPRM published in the **Federal Register** on December 12, 1984, 49 FR 48494–48518). However, the Pell Grant final regulations will become effective before the amendments to the Student Assistance General Provisions regulations. Thus, Secretary has reinstated the audit provisions in the Pell Grant final regulations under § 690.84 in order to avoid any uncertainty about the effectiveness of the audit requirements for institutions participating in the Pell Grant Program. This section will be removed from the Pell Grant regulations when the Student Assistance General Provisions final regulations are published.

A summary of the comments received and the Department's response to those comments follows.

In the Preamble to the Notice of Proposed Rulemaking, the Secretary solicited comments on two topics. The first topic related to recalculation of an award when there is a change in enrollment status, the second related to a tape exchange as a substitute for the SAR submission requirement.

Recalculation of Awards Because of a Change in Enrollment Status

Comment: Most of the commenters were opposed to a change in the rule that gives institutions the option of recalculating awards when a student's enrollment status changes within an academic term. Two commenters thought that recalculating should be mandatory, but over one hundred

commenters opposed such a requirement. A summary of the comments on this proposed change follows.

Several commenters questioned whether the problem was significant enough to merit a mandatory recalculation policy. Some of these commenters suggested that institutions can exercise the option of recalculation if there is a problem at their school.

Many commenters focused on the administrative burden for institutions in relation to the "potential" for abuse among students who change enrollment status. Among the burdens cited were monitoring the enrollment status of every Pell Grant recipient throughout the term if a school is required to recalculate in the same term, or the problem of adjusting awards in the subsequent term for students who receive incompletes, transfer from another institution or do not return to any school. One commenter stated that 40 percent of the entering freshmen at his institution do not enroll in the subsequent term. If a student did not return to the institution in a subsequent term, many commenters wondered whether the institution would be responsible for collecting the overpayment.

Several commenters suggested alternatives to recalculation. These alternatives included withholding the disbursement until after the drop/add period, or after the refund period. Another suggestion was to require two disbursements, one at the beginning of the term, and the second at the midpoint of the term when an adjustment could be made if the enrollment status changed. Many commenters suggested that an adjustment would not be necessary if the Pell Grant disbursement did not exceed direct institutional costs for that term.

Many commenters argued that mandatory recalculation was not necessary because institutions must have specific policies defining the effect of course incompletes and withdrawals for satisfactory progress. In addition, institutions must determine whether a student has completed a minimum percentage of work toward his degree within each increment established by the institution.

Several commenters expressed concern about the effect on Campus-based aid when an adjustment is made to the Pell Grant award. These commenters pointed out that an adjustment was not required for Campus-based aid and that this resulted in inconsistent treatment among the Title IV Higher Education Act programs. One commenter asked whether the adjustment in the Pell Grant award would qualify as unmet need for purposes of Campus-based assistance.

Finally, many commenters focused on the hardship for students, particularly those who withdrew from classes because of illness or other hardships. Many commenters suggested that students who were hardpressed financially would be discouraged from returning in subsequent terms.

Response: No change has been made. In the interest of minimizing the administrative burdens of institutions, the Secretary has decided not to change the current rule which gives institutions the option of recalculating when there is a change in enrollment status within a term. Even though Pell Grant recipients attending clock hour institutions must account for every hour they are paid for, the administrative problems of recalculating awards or collecting overpayments do not exist at most of those institutions because a student cannot receive a subsequent payment until he or she completes the hours for which he or she was originally paid. Unfortunately, this approach is not compatible with the nature of credit hour institutions that have academic terms. Students can enroll in subsequent terms without completing the credits in a previous term.

Although satisfactory progress requirements may deny assistance to students attending institutions that have strict standards, the intent of the recalculation policy is not to withhold completely assistance from students. Such a measure would not be appropriate for students who may have legitimate reasons for withdrawing from a course. Rather than withholding all assistance, a recalculation policy would merely hold students accountable for the courses they were paid for, but did not complete.

Since the recalculation proposals appear to be overly burdensome, the Secretary is soliciting comments on alternatives that will hold students more accountable for the courses they do not complete. Such an alternative should be less burdensome than recalculation, but more effective than satisfactory progress.

Tape Exchange Proposal

Comment: Many commenters supported, in principle, the proposal to eliminate the SAR submission requirement for students enrolled at an institution that participates in the full data tape exchange program provided by the Department of Education. In fact, several commenters suggested that this proposal should be implemented in the 1984–85 award year. Many commenters stated that this proposal would substantially reduce the administrative burden on institutions, but several commenters suggested several changes should be made to the tape exchange program to make the proposal more effective. Verification and edit codes would need to be included, and the tapes should be distributed to more than one institution, since a student will often attend an institution that is listed as his or her second or third choice.

A few commenters questioned the feasibility of the proposal for students who transfer to other institutions, or who have Student Aid Indexes that must be recalculated, or who have awards that must be adjusted. One commenter thought that students would become confused about different submission requirements, and another commenter suggested that students should be informed of this new procedure on the SAR. One commenter suggested that this proposal would create new opportunities for fraud and abuse.

Several commenters suggested alternatives to this proposal, such as sending SARs directly to the institution, or eliminating the central processor and allowing institutions to calculate the Student Aid Index.

Response: No change has been made. This proposal was suggested as an alternative to the SAR *submission* requirement. Transfer students or students who must change their SAR would still have to use the SAR. Additional planning is required before a tape exchange option can be implemented. Commenters provided many helpful suggestions for formulating a more specific proposal in the future.

Section 690.2 General definitions.

Comment: Several commenters stated that limiting students enrolled in the non-residential portion of a correspondence program to half-time enrollment was arbitrarily restrictive.

Response: No change has been made. Correspondence students have been restricted to half-time status because generally these students have a workload that is comparable to a part-time student.

Comment: Two commenters questioned the Secretary's statutory authority for limiting a student's Pell Grant eligibility to four academic years when the program the student was enrolled in exceeded five academic years.

Response: No change has been made. Section 411(a)(3) of the Higher Education Act states that, "The period during which a student may receive basic grants shall be the period required

for the completion of the first undergraduate baccalaureate course of study being pursued by that student . . .". If an academic program is longer than five years for a full-time student, the Secretary does not consider the entire program to be an undergraduate course of study, but instead a combined program of undergraduate and graduate study. For example, this provision in the definition of an undergraduate student applies to students enrolled in a six year program who will not receive a Bachelor's degree but will instead receive a Doctor of Osteopathy or Doctor of Chiropractic at the completion of that program. These students are obviously not enrolled in undergraduate study for their entire six years of postsecondary study but are considered undergraduate students for purposes of the Pell Grant Program for the first four academic years of postsecondary study.

Section 690.3 Definitions of payment period.

Comment: One commenter stated that the wording in proposed § 690.3(a)(2)(iii) is ambiguous for students who are allowed to make up clock hours in the previous term at the same time they are enrolled in new coursework.

Response: A change has been made. The Secretary agrees that the phrase in the NPRM that refers to "clock hours remaining in that term" is ambiguous for these students and a revision has been made to that part of the regulations so that all unpaid clock hours are taken into account in calculating subsequent disbursements. However, a student cannot be paid for these clock hours until he or she has completed the hours required for the preceding payment period. This restriction has been placed in § 690.75.

Comment: One commenter suggested that the minimum full-time standard for students attending institutions with quarter terms should be increased because quarter hours are not equal to semester hours.

Response: No change has been made. The fact that a quarter hour is not equal to a semester hour is offset by the fact that a full-time student must complete three quarters, as opposed to two semesters, to receive a full Pell Grant award. Thus, a student must receive at least 36 quarters hours or 24 semester hours in order to receive a full Pell Grant award.

Section 690.5 Eligible program.

Comment: One commenter noted that eligible six month programs can only be offered by proprietary or postsecondary vocatior al institutions, and questioned whether six month programs offered by community colleges were eligible.

Response: No change has been made. For purposes of offering an eligible six month program, a community college can be considered to be both a postsecondary vocational institution and a public or private non-profit institution of higher education.

Comment: One commenter questioned the Secretary's authority to require that students without a high school diploma or its equivalent must have the ability to benefit from the training offered.

Response: No change has been made. The ability to benefit requirement is referred to in the next to last sentence of section 1201(a) and section 481(b) of the Higher Education Act.

Section 690.6 Duration of student eligibility.

Comment: Several commenters have interpreted paragraph (b) to mean that institutions must determine when each student has completed the course requirements for completing the first undergraduate baccalaureate course of study. Other commenters suggested that paragraph (a) was sufficient and paragraph (b) was unnecessary.

Response: No change has been made. Paragraph (b) has been added to stress that the institution rather than the student shall determine when a student has completed the first baccalaureate course of study. An institution may detemine that a student has fulfilled all the course requirements for a baccalaureate, and is no longer eligible, or the institution may have a policy of waiting until the student has actually received a baccalaureate. In either case, the institution determines when the baccalaureate course of study has been completed.

Section 690.8 Enrollment status for students taking non-credit or reduced credit remedial courses or regular and correspondence courses.

Comment: Many commenters objected to the one-year restriction on non-credit or reduced credit remedial work in determining enrollment status for students receiving a Pell Grant. Many of these commenters felt that any limits on remedial work should be determined by the institution. Other commenters suggested that the satisfactory progress standard of the institution should be relied on the determine any limit on remedial work. A few commenters objected to the limitation because they claimed it would be difficult to monitor when a student had completed an academic year of remedial work. Three commenters contended that this restriction would disproportionately affect low income students who are the very students the Pell Grant Program was designed to help. Finally, some commenters throught the Secretary did not have the statutory authority to limit Pell Grant payments for remedial work.

Three commenters thought that remedial work should not be included at all in determining enrollment status for a Pell Grant. This work was considered not to be a part of a student's postsecondary education. One commenter agreed with the one year limitation.

Response: No change has been made. As discussed at the beginning of this preamble, the Secretary is not excluding remedial courses from eligibility, but there must be some limit to the number of remedial courses taken before there is a question of whether the student is really enrolled in a postsecondary program of study. The purpose of the Pell Grant Program is to assist students who are enrolled in postsecondary education. The Secretary does not consider a student who enrolls in the equivalent of more than one year of remedial work to be enrolled in postsecondary education. The Pell Grant should not be used to pay for a substantial portion of a student's elementary or secondary training.

Comment: A few commenters suggested that English as a Second Language should be excluded from the one-year limitation because much of this training involves learning a foreign language that extends beyond the level of elementary or secondary education.

Response: A change has been made. The Secretary agrees that students enrolled in English as a Second Language (ESL) coursework should be exempted from the one-year limitation, assuming the student is enrolled in an eligible program as a regular student at the time he or she is enrolled in the ESL Program. Such a student would usually have the knowledge and skills of a high school graduate, but needs to learn a second language as part of his or her postsecondary program. The students would still be subject to the one-year limitation for any other courses that are remedial in nature.

Comment: Several commenters objected to the specificity of the requirements in paragraph (a)(2) for attributing the number of credit or clock hours to non-credit remedial courses. Some of these commenters thought this interfered with the academic standards of an institution.

Response: No change has been made. The previous regulation required the institution to determine the equivalent number of clock or credit hours which

should be included for that work. In paragraph (a)(2) of these regulations, the Secretary has established specific procedures for determining equivalence in calculating enrollment status for a Pell Grant to ensure that the workload for non-credit remedial courses is comparable to that of regular courses. Institutions may apply different criteria for attributing the number of clock or credit hours to non-credit or reduced credit courses for academic purposes.

Comment: A few commenters objected to the chart in paragraph (b)(4) because the guidelines were too specific and interfered with an institution's academic standards while others objected because the chart was confusing. However, some commenters thought the chart was helpful.

Response: No change has been made. The chart reflects the established policy for determining enrollment status in calculating a Pell Grant award for students enrolled in both correspondence study and regular coursework. This procedure is only used to calculate Pell Grant awards and should not interfere with the academic standards of an institution.

Section 690.10 Administrative cost allowance to participating schools.

Comment: Several commenters objected to the phrase "Subject to available appropriations . . ." as a condition for paying an administrative cost allowance. Some of these commenters pointed out that this allowance is a part of the program funds rather than a separate appropriation.

Response: No change has been made. In 1981, Pub. L. 97-12 specifically prohibited the Secretary from making any payments to institutions for administrative expenses incurred in the 1981-82 award year. In case such a rescission is passed by Congress in the future, the phrase "Subject to available appropriations" is included in this section to avoid any potential conflict between the regulations and laws passed by Congress.

Comment: Two commenters suggested that the administrative cost allowance should be raised to $10.

Response: No change has been made. Section 489(a) of the Higher Education Act as amended by Pub. L. 97-35 only provides an allowance of $5 for each student.

Section 690.61 Submission process and deadline for student aid report.

Comment: Most commenters supported the single SAR submission deadline of June 30 because it is simpler to administer and less confusing for students. One commenter suggested the May 31 deadline date should be retained for students who enroll before May 1, so that the school could close its account in a timely manner. One commenter asked whether the June 30 deadline applied to students who must verify information on the SAR as required by § 690.77.

Response: No change has been made. The Secretary agrees with the majority of commenters that a single deadline date regardless of when the student first enrolls is easier to administer. The reference to § 690.77 in paragraph (b) indicates that the June 30 deadline date does not apply to students who must verify information on the SAR.

A student must still be enrolled at the time he submits the SAR to the institution, so a college that closes before June 30 can finalize its accounts for that year shortly after it closes. However, if a student submits an SAR when he is not enrolled at the school, but later enrolls on or before the June 30 deadline, he is eligible to receive payment for his entire period of enrollment during the award year.

Comment: Several commenters suggested that a student should not be required to be enrolled at the time he submits the SAR to the institution. They argued that as long as he has been enrolled at some time during the award year and has incurred educational expenses, he should be reimbursed for those expenditures. Students often submit the SARs late because of delays in the processing system.

Response: No change has been made. Some institutions may object to the administrative burden of allowing previously enrolled students to submit SARs at any time up to the June 30 deadline. However, the Secretary may propose in the future that the enrollment requirement for submission of the SAR should be eliminated, at which time further consideration would be given to this suggestion.

Section 690.62 Calculation of a Pell Grant.

Comment: Two commenters suggested that the Secretary was required under section 411(a)(2)(B)(iii) to publish criteria for when an institution can award a Pell Grant of less than $200 because of the requirement in division (i) that the amount of the grant cannot exceed a given percentage of the cost of attendance.

Response: No change has been made. Under division (i) the amount of a Pell Grant shall not exceed 50 percent of the cost of attendance. If the Pell Grant was less than $200 the award would not exceed 50 percent of the cost unless the cost of attendance was less than $400. All students other than those who are incarcerated or enrolled in correspondence study receive at least a standard maintenance allowance of $400. Accordingly, the Secretary has not published criteria for awards of less than $200 because it is highly unlikely that a student will have a cost of attendance of less than $400.

Section 690.65 Transfer student: attendance at more than one institution during an award year.

Comment: Several commenters found the more detailed description for calculating awards in paragraph (d) of the NPRM to be helpful, but a few suggested the distribution of Pell Grant disbursements at the second institution should be explained in the regulations.

Response: A change has been made. Paragraph (e) has been added to the final regulation to explain how the remaining percentage is to be distributed at the second institution.

Section 690.66 Correspondence study.

Comment: Several commenters suggested that paragraph (b)(1)(ii) of the NPRM should be eliminated because automatically limiting students to one-half the Scheduled Award is arbitrary and does not take into account students who have a workload that is greater than half-time.

Response: No change has been made. As stated in response to the comments on the definition of half-time student under § 690.2, correspondence students who are not enrolled in the residential portion of a program have been restricted to half-time status because generally these students have a workload that is comparable to a part-time student.

Comment: A few commenters objected to the double reduction proposed for correspondence students who were enrolled in a program that is less than an academic year. Under the proposed rule such a student's award would be calculated by multiplying one-half the Scheduled Award by the following fraction:

$$\frac{\text{hours in the program}}{\text{hours in the academic year}}$$

These commenters stated that the double reduction was unnecessarily restrictive.

Response: A change has been made. Since the half-time restriction ensures that a student enrolled in a six-month program will not be over-awarded, the Secretary agrees that a further reduction is not necessary.

Comment: Several commenters supported the proposal that allowed students who enrolled near the end of an award year to be placed in either the first or second award year when the payment period occurred in two award years. They thought this procedure would be easier to administer and that the award calculations were more equitable. However, two commenters questioned how this procedure affected institutions that participated under the Alternate Disbursement System (ADS).

Response: A change has been made. The option of placing students in either award year will not apply to ADS institutions. The second payment period at ADS institutions must end on June 30 for each award year. Paragraph (d) has been added to explain how calculations at ADS institutions must be made.

Section 690.73 Termination of institutional participation agreement—Regular Disbursement System (RDS).

Comment: Several commenters stated that the Secretary may not terminate a participation agreement with an institution without reasonable notice and an opportunity for a hearing according to section 487 of the HEA.

Response: No change has been made. Section 487 requires a hearing before an institution's eligibility to participate is not terminated under the provision of § 690.73. Under that section of the regulations, the Secretary is terminating the institution's agreement to participate under the RDS. An institution would still be eligible to participation, but under paragraph (e) of § 690.73 the Secretary will pay the institution's students only if the institution enters into an ADS agreement. The hearing requirement in section 487 applies to a suspension, limitation, or termination of the institution's eligibility to participate in the Pell Grant Program. The hearing requirement does not apply to the decision of whether the institution participates in the Pell Grant Program under the RDS or ADS Systems.

Section 690.74 Provision of funds to institutions.

Comment: Several commenters have interpreted the wording in this section to mean the Department of Education intends only to provide funds to institutions to cover reimbursement for Pell Grants awards already paid by the institution. Some commenters thought that institutions would have to borrow or use their own existing funds to make payments to students, after which the institution could seek reimbursement.

Response: No change has been made. As stated in the preamble to the Pell Grant Program regulations published in the Federal Register of October 6, 1983 the wording was changed to clarify the meaning of that section. Some institutions had previously interpreted this section to mean the Secretary was always required to provide funds to an institution in advance of its awarding of Pell Grants merely on the basis of a request of that institution for funds. The wording of this section was not revised to permit the Department of Education only to provide funds to institutions to cover reimbursements. The Secretary will continue to provide funds in advance of expenditures, but is not obligated to fulfill unwarranted requests for such funds. The Secretary must ensure that federal funds are not given for an unfounded or unreasonable institutional request.

Section 690.75 Determination of eligibility for payment.

Comment: Several commenters stated that the phrase "For each payment period" should be deleted from the beginning of § 690.75 because a student's satisfactory progress need not be determined every payment period.

Response: No change has been made. If all the elements of an institution's satisfactory progress standard are designed to be monitored only at the end of each academic year instead of at the end of each payment period, a student is maintaining satisfactory progress when payments are made during that academic year. However, if an institution's satisfactory progress standards are designed to be monitored at the end of each payment period a student may not be maintaining satisfactory progress within an academic year and therefore his status must be checked before any disbursement can be made.

Section 690.77 Verification of information on the SAR—withholding of payments.

Comment: Several commenters objected to the provision in paragraph (f) which grants an extension of the submission deadline for students who must resubmit a verified SAR when the SAR must be corrected. The student is then paid from the original SAR or the corrected SAR depending upon which SAR yields the lower award. These commenters suggested that the student should always be paid from the corrected SAR, citing section 411(a)(2)(A) of the Higher Education Act. That part of the statute states that the Secretary shall pay to each eligible student a Pell Grant in the amount he or she is eligible to receive.

Response: No change has been made. The Secretary has established a SAR submission deadline of June 30, or the latest date of enrollment, whichever come first. A valid SAR must be submitted within that time or else the student is not eligible for payment. A student whose original SAR must be corrected has never fulfilled that requirement because a valid SAR has not been submitted within the allowable time frame. Some deadline for submitting SAR's must be established for purposes of administrative efficiency. Students who submit SAR's that are not valid has misreported information on their applications. These students have been given a 60 day extension to correct the SAR and submit supporting documentation. A student who have misreported information and is given an extension to correct that error should not receive the additional benefit of a higher award.

Comment: One commenters indicated that § 690.77, describing requirements for verification, should specify the items to be verified, and the documentation required for verifying them. The commenter felt that items to be verified should include, at a minimum: Adjusted gross income, Federal income taxes paid, untaxed income and benefits, number of family members in the applicant's household, number of family members in postsecondary educational institutions, and independent student status.

Response: A change has been made. The Notice of Proposed Rulemaking would have required a student to submit documentation that the Secretary considers appropriate. The Secretary agrees with the commenter that the proposed rule needs clarification as to what the Secretary considers appropriate, and believes that at least the six items cited by the commenter should be verified: Adjusted gross income, Federal income taxes paid, untaxed income and benefits, number in household, number in postsecondary educational institutions, and independent student status. An institution may verify additional items if it wishes. The Secretary believes that the documentation for verifying these items should include a signed copy of the Federal income tax return, a comparable state income tax return or the IRS listing of tax account information from the Internal Revenue Service. If no income tax return was filed or will be filed, a signed statement providing the sources of income earned, the amount of income from each source, and a list of family members in the household must be provided. A signed statement must also be submitted to verify the number in postsecondary

educational institutions, factors relating to independent student status, and untaxed income or benefits. In some cases documentation for the Social Security Administration or Veterans Administration may be required to verify benefits from those agencies. In some circumstances an income tax return must be requested by the institution to verify independent student status.

Section 690.78 Method of disbursement—by check or credit to the student's account.

Comment: Two commenters asked whether the 15 day period for requesting payment in paragraph (d)(2) referred to business days or calendar days.

Response: No change has been made. Since the regulations do not specifically state business days, the 15-day period is measured by calendar days.

Section 690.80 Recalculation of a Pell Grant award.

Comment: One commenter, under the heading of this section, raised a question dealing with the calculation of an expected family contribution that is more appropriate to Subparts C & D of this part. The commenter asked whether a person who filed an application to have his expected family contribution calculated using estimated income must submit a new application using actual income if his estimate turned out to be inaccurate.

Response: No change has been made. The expected family contribution does not change if the estimates on the income turn out to be incorrect, as long as the applicant has made a good faith estimate based on what he knew at the time he applied.

Comment: One commenter objected to the requirement of recalculating for a change in the cost of attendance when a student's enrollment status changes between payment periods. The commenter thought this requirement was overly burdensome.

Response: No change has been made. If an institution must recalculate a student's enrollment status, verifying or correcting that student's cost of attendance should not be overly burdensome. An institution can assume that the costs have not changed unless it has documents that indicate the student's cost has changed.

Comment: One commenter pointed out that a recalculation for a change in enrollment status does not apply for clock hour institutions that do not have academic terms. The commenter suggested that paragraph (b)(1) should not apply to these institutions.

Response: A change has been made. The Secretary agrees that a recalculation is not relevant to these institutions since a change in enrollment status would only affect the timing of the disbursements. This paragraph has been revised to apply only to institutions that have academic terms.

Section 690.81 Fiscal control and fund accounting procedures.

Comment: Several commenters suggested that the option of sending a letter to a bank, listing the accounts in which the Federal funds will be deposited, should be retained. These commenters stated that including in the name of the account the fact that Federal funds are in that account is burdensome and expensive, particularly for large institutions that have funds from many different sources in their accounts.

Response: No change has been made. The difficulty of finding Federal funds deposited by institutions that have later closed has convinced the Secretary that the option of sending a letter to the bank must not be retained despite the additional burden this causes for some institutions.

Subpart H—Administration of Grant Payments—Alternate Disbursement System

Comment: One commenter objected to the verification and record retention requirements for ADS institutions in §§ 690.96 and 690.100. The commenter argued that institutions that select the Alternate Disbursement System should have fewer administrative responsibilities.

Response: No change has been made. Institutions participating in the Pell Grant Program under the Alternate Disbursement System still have fewer responsibilities than RDS institutions. There were no revisions to Subpart H in the Notice of Proposed Rulemaking. As stated in the preamble to the Pell Grant Program regulations published in the **Federal Register** of October 6, 1983, these requirements were made in response to recommendations of the former Department of Health, Education, and Welfare Audit Agency report on the ADS. The Secretary decided to include these requirements in the October 6, 1983 final regulations to close off an avenue of serious potential program abuse.

Executive Order 12291

These final regulations have been reviewed in accordance with Executive Order 12291.

They are classified as non-major because they do not meet the criteria for major regulations established in the Order.

Paperwork Reduction Act of 1980

The information collection requirements contained in these regulations in §§ 690.72, 690.77, 690.81, 690.82, 690.92, 690.76, and 690.100 will become effective after they have been approved by the Office of Management and Budget.

Assessment of Educational Impact

In the Notice of Proposed Rulemaking the Secretary requested comments on whether the proposed regulations would require transmission of information that is being gathered by or is available from any other agency or authority of the United States.

Based on the absence of any comments on this matter and the Department's own review, it has been determined that the regulations in this document do not require information that is being gathered by or is available from any other agency or authority of the United States.

List of Subjects in 34 CFR Part 690

Administrative practice and procedure, Education, Education of disadvantaged, Grant programs—education, Student aid.

Citation of Legal Authority

A citation of statutory or other legal authority is placed in parentheses on the line following each substantive provision of these final regulations.

(Catalog of Federal Domestic Assistance No. 84.063, Pell (Basic) Grant Program)

Dated: March 8, 1985.

William J. Bennett,

Secretary of Education.

PART 690—PELL GRANT PROGRAM

The Secretary revises Subparts A, B, F, G, and H of Part 690 of Title 34 of the Code of Federal Regulations to read as follows:

Subpart A—Scope, Purpose and General Definitions

Sec.

690.1 Scope and purpose.
690.2 General definitions.
690.3 Definitions of payment period.
690.4 Eligible student.
690.5 Eligible program.
690.6 Duration of student eligibility.
690.7 Institutional participation.
690.8 Enrollment status for students taking non-credit or reduced credit remedial courses or regular and correspondence courses.
690.9 Written agreements between two or more eligible institutions.

Sec.
690.10 Administrative cost allowance to participating schools.
690.11 Pell Grant payments from more than one institution.

Subpart B—Application Procedures for Determining Expected Family Contribution

690.12 Application.
690.13 Notification of expected family contribution.
690.14 Applicant's request for recalculation of expected family contribution because of clerical or arithmetic error, or updating of projected data.

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Subpart F—Determination of Pell Grant Awards

690.61 Submission process and deadline for student aid report.
690.62 Calculation of a Pell Grant.
690.63 Calculation of a Pell Grant for a payment period.
690.64 Calculation of a Pell Grant for a payment period which occurs in two award years.
690.65 Transfer student attendance at more than one institution during an award year.
690.66 Correspondence study.

Subpart G—Administration of Grant Payments—Regular Disbursement System (RDS)

690.71 Scope.
690.72 Institutional participation agreement—Regular Disbursement System (RDS).
690.73 Termination of institutional participation agreement—Regular Disbursement System (RDS).
690.74 Provision of funds to institutions.
690.75 Determination of eligibility for payment.
690.76 Frequency of payment.
690.77 Verification of information on the SAR—Withholding of payments.
690.78 Method of disbursement—by check or credit to a student's account.
690.79 Recovery of overpayments.
690.80 Recalculation of a Pell Grant award.
690.81 Fiscal control and fund accounting procedures.
690.82 Maintenance and retention of records.
690.83 Submission of reports.
690.84 Audit and examination.

Subpart H—Administration of Grant Payments—Alternate Disbursement System (ADS)

690.91 Scope.
690.92 Institutional participation agreement—Alternate Disbursement System (ADS).
690.93 Disbursement system changes.
690.94 Termination of agreement—alternate disbursement system.
690.95 General procedures for receiving payment.
690.96 Verification of information on the SAR.
690.97 Withdrawals and refunds.
690.98 Recovery of overpayments.
690.99 Recalculation of a Pell Grant award.
690.100 Maintenance and retention of records.
690.101 Submission of reports.

Authority: Section 411 of the Higher Education Act of 1965 as amended (20 U.S.C. 1070a), unless otherwise noted.

Subpart A—Scope, Purpose and General Definitions

§ 690.1 Scope and purpose.

The Pell Grant Program awards grants to help financially needy students meet the cost of their postsecondary education.
(20 U.S.C. 1070a)

§ 690.2 General definitions.

(a) Definitions of the following terms used in this part are described in Subpart A of the Student Assistance General Provisions, 34 CFR Part 668:

Academic year
Act
Award year
Clock hour
College Work-Study Program
Enrolled
Guaranteed Student Loan Program
National Direct Student Loan Program
National Defense Student Loan Program
National of the United States
One-year training program
Pell Grant Program
PLUS Loan Program
Proprietary institution of higher education
Postsecondary vocational institution
Public or private nonprofit institution of higher education
Recognized equivalent of a high school diploma
Regular student
Secretary
Six-month training program
State
State Student Incentive Grant Program
Supplemental Educational Opportunity Grant Program.

(b) Other terms used in this part are:

ADS institution: An institution that participates in the Pell Grant Program under the Alternate Disbursement System.

Comparable State income tax return: A state income tax return based on the Federal income tax return which requires the filer to provide the amount of Federal income tax paid as well as the same information that he or she is required to provide on the Federal income tax return with regard to information being verified.

Disbursement Schedule: A table showing the grant amounts three-quarter and half-time students at term based institutions using credit hours would receive for an academic year. This table, published annually by the Secretary is based on—

(1) A student's Effective Family Contribution:

(2) A student's attendance costs as defined in Subpart E; and

(3) The amount of funds available for making Pell Grants.

Electronic Pilot Project: An electronic exchange system between the Secretary and an institution under which a student is able to correct or verify information contained on his or her SAR at the institution he or she is attending and the institution is able to print out a Student Aid Report for that student which is based on the corrected or verified information.

Enrollment status: Full-time, three-quarter-time, of half-time depending on a student's credit hour work load per academic term at an institution using semesters, trimesters, quarters, or other academic terms and measuring progress by credit hours.

(2) Full-time or part-time depending on a student's credit hour work load per academic year, at an institution that does not use academic terms and measures progress by credit hours.

(3) Full-time or part-time depending on a student's clock hour work load per week at an institution that measures progress by clock hours.

Full-time student: An enrolled student who is carrying a full-time academic work load (other than by correspondence)—as determined by the institution—under a standard applicable to all students enrolled in a particular program. However, an institution's full-time standard must equal or exceed one of the following minimum requirements.

(1) 12 semester hours or 12 quarter hours per academic term in an institution using a semester, trimester, or quarters system;

(2) 24 semester hours or 36 quarter hours per academic year for an institution using credit hours but not using a semester, trimester, or quarter system, or the prorated equivalent for a program of less than one academic year;

(3) 24 clock hours per week for an institution using clock hours;

(4) In an institution using both credit and clock hours, any combination of credit and clock hours where the sum of the following fractions is equal to or greater than one:

$$\frac{\text{Number of credit hours per term}}{12} + \frac{\text{Number of clock hours per week}}{24}$$

(5) A series of courses or seminars which equals 12 semester hours or 12 quarter hours in a maximum of 18 weeks; or

(6) The work portion of a cooperative education program in which the amount of work performed is equivalent to the academic work-load of a full-time student

Half-time student: (1) Except as provided in paragraph (2), an enrolled student who is carrying a half-time academic work load—as determined by the institution—which amounts to at least half the work load of the appropriate minimum requirement outlined in the definition of a full-time student.

(2) A student enrolled solely in a program of study by correspondence who is carrying a work load of at least 12 hours of work per week, or is earning at least 6 credit hours per semester, trimester or quarter. However, regardless of the work, no student enrolled solely in correspondence study is considered more than a half-time student.

Institution of higher education (Institution): A public or private non-profit or proprietary institution of higher education or a postsecondary vocational institution.

Payment Schedules: A table showing a full-time student's scheduled Pell Grant for a given award year. This table, published annually by the Secretary, is based on—

(1) The student's Expected Family Contribution;

(2) The student's cost of attendance as defined in Subpart E; and

(3) The amount of funds available to the Secretary for making Pell Grants.

RDS Institution: An institution that participates in the Pell Grant Program under the Regular Disbursement System.

Scheduled Pell Grant: The amount of a Pell Grant which would be paid to a full-time student for a full academic year.

Student aid index: The term used on the Student Aid Report (SAR) to designate a student's expected family contribution for the Pell Grant Program.

Student Aid Report (SAR): A report provided to an applicant showing the amount of his or her expected family contribution.

Student Aid Report (SAR) Payment Document: A part of the SAR that is provided to the Secretary by an institution showing an applicant's expected family contribution, cost of attendance, and enrollment status, at that institution.

Three-quarter-time student: An enrolled student who is carrying a three-quarter-time academic work load—as determined by the institution—which amounts to at least three quarters of the work of the appropriate minimum requirement outlined in the definition of a "full-time student."

Undergraduate student: A student enrolled in an undergraduate course of study at an institution of higher education who—

(1) Has not earned a baccalaureate or first professional degree; and

(2) Is in an undergraduate course of study which usually does not exceed 4 academic years, or is enrolled in a 4 to 5 academic year program designed to lead to a first degree. A student enrolled in a program of any other length is considered an undergraduate student for only the first 4 academic years of that program.

Valid Student Aid Report: A student Aid Report—

(a) On which all of the information used in the calculation of the applicant's expected family contribution is accurate and complete as of the date the application is signed; and

(b) For the Electronic Pilot Project, that is signed by the applicant, his or her spouse, and the applicant's parents if the applicant is a dependent student.

(20 U.S.C. 1070a unless otherwise noted.)

§ 690.3 Definitions of payment period.

(a) *Payment period for an RDS institution that has academic terms:*

(1) Except as noted in paragraph (a)(2) of this section, for an RDS institution that uses semesters, trimesters, quarters or other academic terms, the payment period is the semester, trimester, quarter or other academic term.

(2) For an RDS institution that uses semesters, trimesters, quarters or other academic terms and measures progress in clock hours—

(i) A payment period is a semester, trimester, quarter, or other academic term if the student completes all the clock hours scheduled for that term;

(ii) If at the end of a term, the student has not completed all of the clock hours scheduled for that term and the student has received a Pell Grant for that term, the payment period extends beyond that term for as long as it takes the student to complete the number of clock hours originally scheduled for that term; and

(iii) If a payment period extends into another term, the next payment period consists of the number of clock hours scheduled for that term that were not included in the previous payment period.

(b) *Payment period for an RDS institution that does not have academic terms:* (1) For a student whose educational program is one academic year—

(i) The first payment period is the period of time in which the student completes the first half of his or her academic year (in credit or clock hours); and

(ii) The second payment period is the period of time in which the student completes the second half of that academic year.

(2) For a student whose educational program is more than one academic year, the first and second payment periods must be calculated under paragraph (b)(1) of this section. For subsequent academic years, or fractions of academic years, each payment period must be the period of time in which a student completes—

(i) One-half of the academic year; or

(ii) The remaining hours in the student's educational program, which ever is to be completed first.

(3) For a student whose educational program is less than an academic year—

(i) The first payment period must be the period of time which the student completes the first half of his or her educational program (in credit or clock hours); and

(ii) The second payment period must be the period of time in which the student completes the second half of his or her educational program.

(4) If an RDS institution chooses to have more than two payment periods in an academic year or in a program of less than an academic year, the rules in paragraphs (b)(1) through (b)(3) of this section are modified to reflect the increased number of payment periods. For example, if an institution chooses to have three payment periods in an academic year, each payment period must correspond to one-third of the academic year.

(c) *Payment period for an ADS institution.* (1) If an ADS institution uses semesters, trimesters, quarters or other academic terms and measures progress in credit hours, the payment period must be the semester, trimester, quarter or other academic term.

(2) If an ADS institution measures progress in clock hours, or measures progress in credit hours but does not use academic terms, it shall have at least two payment periods, calculated as follows:

(i) If a student's academic year is within one award year and a student's educational program is at least one academic year—

(A) The first payment period must be the period of time in which a student completes the first half of his or her academic year; and

(B) The second payment period must be the period of time in which a student

completes the second half of his or her academic year.

(ii) If a student's academic year is not within one award year or the student's educational program is less than a full academic year—

(A) The first payment period must be the period of time in which a student completes the first half of the hour she or she is scheduled to complete within the award year; and

(B) The second payment period must begin when the first payment period ends and end when a student completes all hours he or she was schedule to complete between the beginning of the second payment period and June 30.

(iii) A student who does not complete all the clock hours required for the second payment period of any award year may complete them during the following award year. In this case, the first payment period of the new award year must begin when a student finishes all carried over hours for which he or she was paid.

(20 U.S.C. 1070a)

§ 690.4 Eligible student.

(a) A student is eligible to receive a Pell Grant if the student—

(1) Is a regular student;

(2) (i) Is a U.S. citizen or National;

(ii) Is a permanent resident of the Trust Territory of the Pacific Islands, or the Northern Marina Islands; or

(iii) Provides evidence from the U.S. Immigration and Naturalization Service that he or she—

(A) Is a permanent resident of the United States; or

(B) Is in the United States for other than a temporary purpose with the intention of becoming a citizen or permanent resident;

(3) Is enrolled as at least a half-time undergraduate student; and

(4) Meets the requirements of § 690.75.

(b) A member of a religious order, community, society, agency of or organization who is pursuing a course of study in an institution of higher education is considered to have an expected family contribution of at least $3,000 if that religious order—

(1) Has as a primary objective the promotion of ideals and beliefs regarding a Supreme Being; and

(2) Provides subsistence support to its members, or has directed the member to pursue the course of study.

(20 U.S.C. 1070a)

§ 690.5 Eligible program.

(a) *General:* An eligible program is an undergraduate program of education or training which—

(1) Has an admission standard that admits as regular students only persons who—

(i) Have a high school diploma;

(ii) Have a General Education Development (G.E.D.) Certificate or a State certificate received after passing a State-authorized examination which the State recognizes as the equivalent of a high school diploma; or

(iii) Are beyond the age of compulsory school attendance in the State in which the institution offering the program is located, and have the ability to benefit from the education or training offered; and

(2)(i) Leads to a bachelor, associate, or undergraduate professional degree;

(ii) Is at least a two-year program which is acceptable for full credit toward a bachelor degree;

(iii) Is a least a 1-year program leading to a certificate or degree, which prepares students for gainful employment in a recognized occupation; or

(iv) Is, if offered by a proprietary or postsecondary vocational institution, at least a six-month program leading to a certificate or degree, which prepares students for gainful employment in a recognized occupation.

(b) *Study by correspondence.* An eligible program of study by correspondence is an undergraduate program of education or training which meets the criteria for an eligible program in paragraph (a) of this section and which is designed to require at least 12 hours of preparation per week.

(20 U.S.C. 1070a)

§ 690.6 Duration of student eligibility.

(a) A student is eligible to receive a Pell Grant for the period of time required to complete his or her first undergraduate baccalaureate course of study.

(b) An institution shall determine when the student has completed the academic curriculum requirements for that first undergraduate baccalaureate course of study.

(20 U.S.C. 1070a)

§ 690.7 Institutional participation.

(a)(1) An institution of higher education is eligible to participate in the Pell Grant program if it—

(i) Meets the appropriate definition set forth in 34 CFR Part 668, Subpart A;

(ii) Enters into a program participation agreement with the Secretary; and

(iii) Complies with that agreement and with the applicable provisions of this part and 34 CFR Part 668.

(2) If an institution begins participation in the Pell Grant Program during an award year, a student enrolled and attending that institution is eligible to receive a Pell Grant for the payment period during which the institution enters into a program participation agreement with the Secretary and any subsequent payment period.

(b) If an institution becomes ineligible to participate in the Pell Grant Program during an award year, an eligible student who was attending the institution and who submitted a valid SAR to the institution (or to the Secretary if it is an ADS institution) before the date the institution became ineligible is paid a Pell Grant for that award year for—

(1) The payment periods that the student completed before the institution became ineligible; and

(2) The payment period in which the institution became ineligible.

(c) An RDS institution which becomes ineligible shall, within 45 days after the effective date of loss of eligibility, provide to the Secretary—

(1) The name and enrollment status of each eligible student who, during the award year, submitted a valid SAR to the institution before it became ineligible;

(2) The amount of funds paid to each Pell Grant recipient for that award year;

(3) The amount due each student eligible to receive a Pell Grant through the end of the payment period during which the institution became ineligible; and

(4) An accounting of the Pell Grant expenditures for that award year to the date of termination.

(d) An ADS institution which becomes ineligible shall, within 45 days after the effective date of loss of eligibility, provide to the Secretary the name and enrollment status of each student who applied for and was determined eligible for a Pell Grant, and who was attending the institution when its eligibility was terminated.

(20 U.S.C. 1070a)

§ 690.8 Enrollment status for students taking non-credit or reduced credit remedial courses or regular and correspondence courses.

(a) *Non-credit or reduced credit remedial course.* (1) A non-credit or reduced credit remedial course is a course of study designed to increase the ability of a student to pursue an undergraduate course of study leading to a certificate or degrees.

(i) A non-credit remedial course is one for which no credit is given toward a certificate or degree; and

(ii) A reduced credit remedial course is one for which reduced credit is given toward a certificate or degree.

(2) Except as provided in paragraphs (a)(3) and (a)(4) of this section, in determining a student's enrollment status, an institution and the Secretary shall include any non-credit or reduced credit remedial course in which the student is enrolled. The institution shall attribute the number of credit or clock hours to a non-credit or reduced credit remedial course by:

(i) Calculating the number of classroom and homework hours required for that course;

(ii) Comparing those hours with the hours required for non-remedial courses in a similar subject; and

(iii) Giving the remedial course the same number of credit or clock hours it gives the non-remedial course with the most comparable classroom and homework requirements.

(3) When calculating an eligible student's enrollment status, neither an institution nor the Secretary may take into account any non-credit or reduced credit remedial course in a program of instruction leading to a high school diploma or the recognized equivalent of a high school diploma, even if the course is necessary to enable the student to complete a degree or certificate program.

(4)(i) When calculating an eligible student's enrollment status, neither the institution nor the Secretary may take into account more than one academic year's worth of non-credit or reduced credit remedial coursework, regardless of whether that coursework was completed. However, courses in English as a second language do not count against the one year academic year limitation.

(ii) One academic year's worth of non-credit or reduced credit remedial coursework for the purpose of paragarph (a)(4)(i) of this section is equivalent to—

(A) 30 semester or 45 quarter hours; or

(B) 900 clock hours.

(b) *Combination of regular and correspondence study.* (1) If—in addition to regular coursework—a student takes correspondence courses from either his or her own institution or another institution having an agreement for this purpose with the student's institution, the correspondence work may be included in determining the student's enrollment status to the extent permitted under paragraph (b)(2) of this section.

(2) Except as noted in paragraph (b)(3) of this section, the correspondence work that may be included in determining a student's enrollment status is that amount of work which—

(i) Applies toward a student's degree or certificate or is remedial work taken by the student to help in his or her course of study;

(ii) Is completed within the period of time required for regular course work; and

(iii) Does not exceed the amount of a student's regular course work for the payment period for which the student's enrollment status is being calculated.

(3) Notwithstanding the limitation in paragraph (b)(2)(iii) of this section a student who would be a half-time student based solely on his or her correspondence work is considered a half-time student unless the calculation in paragraph (b)(2) of this section produces an enrollment status greater than half-time.

(4) The following chart provides examples of the rules set forth in paragraph (b) of this section. It assumes that the institution defines full-time enrollment as 12 credits per term, making the half-time enrollment equal to six credits per term.

Under § 690.8	Number of credit hours regular work	Number of credit hours correspondence work	Total course load in credit hours to determine enrollment status	Enrollment status
(b)(2)(ii)	3	3	6	Half-time.
(b)(2)(iii)	3	6	6	Half-time.
(b)(2)(iii)	3	9	6	Half-time.
(b)(2)(iii)	6	3	9	Three quarter time.
(b)(2)(iii)	6	6	12	Full-time
(b)(2)(iii) and (b)(3).	2	6	6	Half-time.

(20 U.S.C. 1070a)

§ 690.9 Written agreements between two or more eligible institutions.

(a) A student who is enrolled in an eligible program at one eligible institution and taking courses at one or more other eligible institutions which apply toward his or her degree or certificate at the first institution may receive Pell Grant assistance for attendance at both institutions only if there is a written agreement between the institutions.

(1) The institution at which the student is enrolled and expects to receive his or her degree or certificate shall determine and pay the student's Pell Grant assistance. However, the other institution may determine and pay the student's Pell Grant assistance if the institutions agree in writing to that arrangement.

(2) The institution which determines and pays the Pell Grant assistance shall—

(i) Take into account all courses which apply to the student's degree or certificate taken by the student at each eligible institution participating in the agreement when determining the student's enrollment status and cost of attendance; and

(ii) Maintain all records regarding the student's eligibility for and receipt of Pell Grant assistance.

(20 U.S.C. 1070a)

§ 690.10 Administrative cost allowance to participating schools.

(a) Subject to available appropriations, the Secretary pays to each participating institution $5.00 for each student who receives a Pell Grant at that institution for an award year.

(b) All funds an institution receives under this section must be used solely for the institution's cost of administering the Pell Grant, Supplemental Educational Opportunity Grant, College Work-Study and National Direct Student Loan programs.

(20 U.S.C. 1098a)

§ 690.11 Pell Grant payments from more than one institution.

A student is not entitled to receive Pell Grant payments concurrently from more than one institution or from the Secretary and an institution.

(20 U.S.C. 1070a)

Subpart B—Application Procedures for Determining Expected Family Contribution

§ 690.12 Application.

(a) As the first step to receiving a Pell Grant, a student shall apply on an approved form to the Secretary to have his or her expected family contribution determined. A copy of this form is not acceptable.

(b) The student shall provide the address of his or her residence unless the student is incarcerated and the educational institution has made special arrangements with the Secretary to receive relevant correspondence on behalf of the student. If such an arrangement is made, the student shall provide the address indicated by the institution.

(c) A student, and where required the student's parents or spouse, shall provide to the institution or the Secretary a copy of his or her Federal, State, and/or local income tax returns and any other documents, if requested by the Secretary or the institution for

verification of the accuracy of the information submitted.

(d) For each award year the Secretary, through publication in the **Federal Register**, establishes deadline dates for submitting these applications and for making corrections to the information contained in the applications.

(20 U.S.C. 1070a)

(Approved by the Office of Management and Budget under OMB control number 1840-0110)

§ 690.13 Notification of expected family contribution.

The Secretary sends to each eligible applicant a "Student Aid Report" (SAR) which states the amount of the applicant's expected family contribution (student aid index) and information used in that calculation. If any of the information is incorrect, an applicant shall correct it according to procedures established by the Secretary through publication in the **Federal Register**.

(20 U.S.C. 1070a)

(Approved by the Office of Management and Budget under OMB control number 1840-0132)

§ 690.14 Applicant's request for recalculation of expected family contribution because of clerical or arithmetic error, or updating of projected data.

(a) An applicant may request a recalculation of his or her expected family contribution if he or she believes a clerical or arithmetic error has occurred, or if the information submitted was inaccurate when the application was signed.

(b) An applicant, unless selected for verification under §§ 690.77 or 690.96 shall update the following items on his or her SAR so that these items are accurate as of the date he or she submits that SAR to the institution or the Secretary:

(1) Family members in the household.

(2) Family members enrolled as at least half-time students in institutions of higher education.

(3) Whether the applicant was claimed as a tax exemption by the parents.

(4) Whether the parents provided more than $750.

(5) Whether the applicant lives with the parents for more than 42 days.

(c) A request for recalculation must be made on an approved form and this form must be received by the Secretary no later than the deadline date established by the Secretary through publication in the **Federal Register**.

(20 U.S.C. 1070a)

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Subpart F—Determination of Pell Grant Awards

§ 690.61 Submission process and deadline for student aid report.

(a) *Submission process.* (1)(i) In order to receive a Pell Grant at an RDS institution, a student shall submit a valid Student Aid Report (SAR) to that institution.

(ii) In order to receive an initial Pell Grant payment for an award year at an ADS institution, a student shall submit a valid SAR to that institution and shall submit both that SAR and an ED Form 304 to the Secretary.

(iii) In order to receive subsequent Pell Grant payments at an ADS institution, the student shall submit an ED Form 304-1 to the Secretary.

(2) An institution is entitled to rely on SAR information except under conditions set forth in §§ 690.77, 690.96 and 668.16(f).

(b) *Student Aid Report deadline.* (1) Except as noted in §§ 690.77 and 690.96, to receive a Pell Grant for an award year, a student shall submit the relevant parts of the SAR to his or her institution by June 30 of that award year.

(2) Except as noted in §§ 690.77 and 690.96, to receive a Pell Grant for an award year, a student shall submit the relevant parts of the SAR to an institution while he or she is still enrolled and eligible for payment at that institution.

(c) *ED Form 304 and ED Form 304-1 deadlines.* (1) In order to receive the first Pell Grant payment for an award year, a student attending an ADS institution shall submit a certified ED Form 304 together with a valid SAR to the Secretary by July 15 of the subsequent award year.

(2) In order to receive additional Pell Grant payments for an award year, a student attending an ADS institution shall submit additional requests for payment and/or corrected ADS Student Reports (ED Form 304-1) to the Secretary by August 26 of the subsequent award year.

(20 U.S.C. 1070a)

§ 690.62 Calculation of a Pell Grant.

(a) The amount of a student's Pell Grant for an academic year is based upon the payment and disbursement schedules published by the Secretary for each award year.

(b) At full funding, no payment may be made to a student if the student's Scheduled Pell Grant is less than $200.

(c) At less-than-full-funding, no payment may be made if—

(1) The student's Scheduled Pell Grant is less than $50; or

(2) The student's Scheduled Pell Grant at full funding would have been less than $200.

(20 U.S.C. 1070a(a)(2))

§ 690.63 Calculation of a Pell Grant for a payment period.

(a) At an institution using semesters, trimesters, quarters, or other academic terms and measuring progress by credit hours, a student's Pell Grant for each payment period is calculated by—

(1) Determining his or her enrollement status for the term;

(2) Based upon that enrollment status, determining his or her annual award from the Payment Schedule (full-time students), or one of the Disbursement Schedules (part-time students), as appropriate; and

(3)(i) Dividing the amount determined in paragraph (a)(2) of this section by the number of terms in the academic year unless the terms of an RDS institution are not of equal length; or

(ii) If the terms of an RDS institution are not of equal length, multiplying the amount determined in paragraph (a)(2) of this section by the following fraction:

$$\frac{\text{The length of the term in question}}{\text{The length of the academic year}}$$

(b) A single disbursement may not exceed 50 percent of the award determined in paragraph (a)(2) of this section. To ensure this result, an institution shall make multiple disbursements within a term, if that term is longer than half the academic year. Subsequent disbursements within that term may not be made until the student has completed the portion of the term for which he or she was initially paid.

(c) At an institution which measures progress by clock hours or which measures progress by credit hours or units but does not use semesters, trimesters, quarters or other academic terms, a student's Pell Grant for each payment period is calculated by—

(1) Determining the student's Scheduled Pell Grant; and

(2) Multiplying the Scheduled Pell Grant by—

$$\frac{\text{The number of credit or clock hours the student is expected to take in a payment period}}{\text{The number of credit or clock hours in an academic year}}$$

(d) Notwithstanding paragraphs (a), (b), and (c) of this section—

(1) A student may not receive a Pell Grant if the amount which the student would receive, projected on the basis of a full academic year, would be less than either $200 at full funding or $50 at less than full funding; and

(2) The amount of a student's award for an award year may not exceed his or her Scheduled Pell Grant award for that award year.

(20 U.S.C. 1070a)

§ 690.64 Calculation of a Pell Grant for a payment period which occurs in two award years.

(a) If a student enrolls in a payment period which is scheduled to occur in two award years—

(1) The entire payment period must be considered to occur within one award year.

(2) The institution shall determine for each Pell Grant recipient the award year in which the payment period will be placed subject to the restrictions set forth in paragraph (a)(3) of this section.

(3) The institution shall place a payment period with more than six months scheduled to occur within one award year in that award year.

(4) If an institution places the payment period in the first award year, it shall pay a student with funds from the first award year.

(5) If an institution places the payment period in the second award year, it shall pay a student with funds from the second award year.

(b) An institution may not make a payment which will result in the student receiving more than his or her Scheduled Pell Grant for an award year.

(c)(1) If a term-based institution offers a series of mini-sessions which occurs in two award years, the combined sessions must be treated as one term. A student may not receive more than one term's award for completing any combination of these mini-sessions.

(2) For such mini-sessions, a term-based institution shall determine the student's enrollment status for the entire term. That enrollment status shall be based upon—

(i) The total number of credits enrolled for in all sessions if that number is known when the award is calculated; or

(ii) A projected number of credits based upon the credits enrolled for in the first session, if the number of credits to be taken in subsequent sessions is unknown when the award is calculated.

(20 U.S.C.1070a)

§ 690.65 Transfer student: Attendance at more than one institution during an award year.

(a)(1) If a student who receives a Pell Grant at one institution subsequently enrolls at a second institution in the same award year, the student shall submit an SAR to the second institution to receive a grant at the second institution. (The institution shall follow the procedures regarding transfer students set forth in 34 CFR 668.14.)

(2) If the second institution is an ADS institution, the student shall submit an SAR to that institution and that SAR and a certified ED Form 304 and/or ED Form 304-1 to the Secretary.

(b) The second institution (or the Secretary for an ADS institution) shall calculate the student's award according to § 690.63.

(c) The second institution (or the Secretary for an ADS institution) may pay a Pell Grant for only that portion of the award year in which a student is enrolled at that institution. The grant amount must be adjusted if necessary to ensure that the grant does not exceed the student's Scheduled Pell Grant for that award year.

(d) If a student's Scheduled Pell Grant at the second institution differs from the Scheduled Pell Grant at the first institution, the grant amount at the second institution is calculated as follows—

(1) The amount received at the first institution is compared to the Scheduled Pell Grant at the first institution to determine the percentage of the Scheduled Pell Grant that the student has received.

(2) That percentage is subtracted from 100 percent.

(3) The remaining percentage is the percentage of the Scheduled Pell Grant at the second institution to which the student is entitled.

(e) The student's Pell Grant for each payment period is calculated according to the procedures in § 690.63 unless the remaining percentage of the Scheduled Pell Grant at the second institution, referred to in paragraph (d)(3) of this section, is less than the amount the student would normally receive for that payment period. In that case, the student's Pell Grant is equal to that remaining percentage.

(f) A transfer student shall repay any amount received in an award year which exceeds his or her Scheduled Pell Grant.

(20 U.S.C. 1070a)

§ 690.66 Correspondence study.

A student enrolled in an eligible program of study by correspondence must be paid according to the following procedures:

(a) The institution shall determine the length of each correspondence program it offers by preparing a written schedule for submission of lessons, reflecting a workload of at least 12 hours of preparation per week.

(b)(1) For an RDS institution, if there is not a required period of residential training in the program, a student's Pell Grant for an academic year is calculated by—

(i) Determining the student's Scheduled Pell Grant; and

(ii) Multiplying the Schedule Pell Grant by one-half.

(2) An academic year must consist of two payment periods. The first payment period must be the period of time in which the student completes the first half of his or her academic year, or program if the program is less than an academic year. The second payment period must be the period of time in which the student completes the second half of the academic year or program.

(3) For the first payment period, the institution shall pay the student one-half of the amount calculated in paragraph (b)(1)(ii) of this section after he or she has submitted 25 percent of the lessons or otherwise completed 25 percent of the work scheduled for the academic year, or for the program if the program is less than an academic year.

(4) The institution shall make the final payment for the second payment period after the student has submitted 75 percent of the lessons or otherwise completed 75 percent of the work scheduled for the academic year or for the program.

(c)(1) For an RDS institution, if there is a required period of residential training in the program, a student's Pell Grant for an academic year is calculated by—

(i) Determining the student's Scheduled Pell Grant, and;

(ii) Multiplying the Scheduled Pell Grant by one-half.

(2) The non-residential portion of an academic year must consist of two payment periods. The first payment period must be the period of time in which the student completes the first half of his or her academic year or the non-residential portion of the program if it is less than an academic year. The second payment period must be the period of time in which the student completes the second half of the academic year or non-residential portion of the program.

(3) For the first payment period, the institution shall pay the student one-half of the amount calculated in paragraph (c)(1)(ii) of this section after he or she

has submitted 25 percent of the non-residential lessons or otherwise completed 25 percent of the work scheduled for the academic year or for the program if the program is less than an academic year.

(4) The institution shall make the final payment (for the non-residential portion of the program) for the second payment period after the student has submitted 75 percent of the non-residential lessons or otherwise completed 75 percent of the work scheduled for the academic year or for the program.

(5) A student's Pell Grant disbursement for the residential portion of the program is calculated according to the procedures in § 690.63(c) for a student enrolled in a regular course of study at an institution that measures progress by clock hours.

(d)(1) For an ADS institution, a student's Pell Grant for an award year is calculated by—

(i) Determining the student's Scheduled Pell Grant; and

(ii) Multiplying the Scheduled Pell Grant by one-half.

(2) An ADS institution shall have two payment periods in an award year.

(3) If a student's academic year is within one award year he or she must receive—

(i) One-half the amount calculated in paragraph (d)(1)(ii) of this section for the first payment period, which is the period of time in which a student completes the first half of his or her academic year; and

(ii) The final payment for the second payment period, which is the period of time in which a student completes the second half of his or her academic year.

(4) If a student's academic year is not within one award year he or she must receive—

(i) One-half the amount calculated in paragraph (d)(1)(ii) of this section for the first payment period which is the period of time in which a student completes the first half of the hours he or she is scheduled to complete within the award year; and

(ii) The final payment for the second payment period which begins when the first payment period ends and ends when a student completes all hours he or she was scheduled to complete between the beginning of the second payment period and June 30.

(5) A student who does not complete all the hours of preparation required for the second payment period of any award year may complete them during the following award year. In this case, the first payment period of the new award year begins when a student finishes all carried over hours for which he or she was paid.

(6) For the first payment period, the institution shall pay the student after he or she has submitted 25 percent of the lessons or otherwise completed 25 percent of the work scheduled for the award year.

(7) For the second payment period, the institution shall pay the student after he or she has submitted 75 percent of the work scheduled for the award year.

(20 U.S.C. 1070a)

Subpart G—Administration of Grant Payments—Regular Disbursement System (RDS)

§ 690.71 Scope.

This subpart deals with program administration by an RDS institution of higher education. An RDS institution shall enter into a program participation agreement with the Secretary so that is may calculate and pay Pell Grant awards to students.

(20 U.S.C. 1070a)

§ 690.72 Institutional participation agreement—Regular Disbursement System (RDS).

(a) The Secretary may enter into an agreement with an institution of higher education under which it will calculate and pay Pell Grant awards to its students. This RDS agreement is on a standard form provided by the Secretary which contains the necessary terms to carry out this part.

(b) The Secretary sends Payment and Disbursement Schedules for each award year to an RDS institution that has entered into an agreement under paragraph (a) of this section.

(20 U.S.C. 1070a)

§ 690.73 Termination of institutional participation agreement—Regular Disbursement System (RDS).

(a) *Termination by the Secretary.* The Secretary may terminate the agreement with an RDS institution by giving the institution—

(1) 30 days written notice; or

(2) Less than 30 days written notice if shorter notice is necessary to prevent the likelihood of a substantial loss of funds to the Federal government or to students.

(b) *Information required.* An RDS institution shall provide the following information to the Secretary if the Secretary terminates the agreement:

(1) The name and enrollment status of each eligible student who submitted a valid SAR to the institution before the termination date.

(2) The amount of funds the institution paid to Pell Grant recipients for the award year in which the agreement is terminated.

(3) The amount due to each student eligible to receive a Pell Grant through the end of the award year.

(4) An accounting of Pell Grant expenditures to the date of termination.

(c) *Termination by the institution.* An RDS institution may terminate the agreement by giving the Secretary written notice. The termination becomes effective on June 30 of that award year. The institution shall carry out the agreement for the remainder of that award year.

(d) *Termination because of a change in ownership which results in a change of control.* The RDS agreement automatically terminates when an RDS institution changes ownership which results in a change of control. The Secretary may enter into an RDS agreement with the new owner if the institution complies with requirements set forth in Subpart B of the Student Assistance General Provisions (34 CFR Part 668).

(e) If an RDS agreement is terminated the institution's eligibility to participate in the Pell Grant Program as discussed in § 690.7 is not terminated but the Secretary pays that institution's students only if the institution enters into an ADS agreement.

(20 U.S.C. 1070a)

§ 690.74 Provision of funds to institutions.

The Secretary provides funds to an RDS institution for each award year in advance or by way of reimbursement during the course of that year, based on the Secretary's determination of the institution's need for funds to pay Pell Grants or its need for reimbursement for Pell Grants already paid.

(20 U.S.C. 1070a)

§ 690.75 Determination of eligibility for payment.

(a) For each payment period, an institution may pay a Pell Grant to an eligible student only after it has been determined that the financial aid transcript requirements of 34 CFR Part 668 have been met, and the student—

(1) Has filed with the institution a signed Statement of Educational Purpose/Registration Compliance as required by 34 CFR Part 668;

(2) Is maintaining satisfactory progress in his or her course of study;

(3) Is not in default on any National Defense/Direct Student Loan made by that institution or on any Guaranteed Student Loan or PLUS Loan received to meet the cost of attendance at that institution;

(4) Is not, as a parent of another student, in default on a PLUS Loan

received to meet the cost of attendance at that institution;

(5) Does not owe a refund on a Pell Grant, a Supplemental Educational Opportunity Grant, or a State Student Incentive Grant received to meet the cost of attendance at that institution; and

(6) Has completed required clock hours for which he or she has been paid a Pell Grant.

(b) If an eligible student submits an SAR to the institution and becomes ineligible before receiving a payment, the institution may pay the student only the amount which it determines could have been used for educational purposes before the student became ineligible.

(c) If an institution determines at the beginning of a payment period that a student is not maintaining satisfactory progress, but reverses that determination before the end of the payment period, the institution may pay a Pell Grant to the student for the entire payment period.

(d) If an institution determines at the beginning of a payment period that a student is not maintaining satisfactory progress, but reverses that determination after the end of the payment period, the institution may neither pay the student a Pell Grant for that payment period nor make adjustments in subsequent Pell Grant payments to compensate for the loss of aid for that period.

(e) Conditions under which students who are overpaid grants may continue to receive Pell Grants are as follows:

(1) *Overpayment of a Pell Grant.* If an institution makes an overpayment of a Pell Grant to a student, it may continue to make Pell Grant payments to that student if—

(i) The student is otherwise eligible; and

(ii) The institution can eliminate the overpayment in the award year in which it occurred by adjusting subsequent Pell Grant payments for that award year.

(2) *Overpayment of a Pell Grant due to institutional error.* In addition to the exception provided in paragraph (e)(1) of this section, if the institution makes an overpayment of a Pell Grant to a student as a result of its own error, it may continue to make payments to that student if—

(i) The student is otherwise eligible; and

(ii) The student acknowledges in writing the amount of overpayment and agrees to repay it in a reasonable period of time.

(3) *Overpayment on a Supplemental Educational Opportunity Grant.* An institution may continue to make Pell Grant payments to a student who receives an overpayment on a Supplemental Grant if—

(i) The student is otherwise eligible; and

(ii) The institution can eliminate the overpayment by adjusting subsequent financial aid payments (other than Pell Grants) in the same award year in which the overpayment occurred.

(f) An institution, in determining whether a student is in default on a loan made under the Guaranteed Student Loan Program/PLUS Loan Program or a loan made to the student as a parent of another student under the PLUS Loan Program, may rely upon the student's written statement that he or she is not in default unless the institution has information to the contrary.

(g) Conditions under which students may receive Pell Grants for attendance at an institution when they are in default on loans made for attendance at that institution are as follows:

(1) *Guaranteed Student Loans and PLUS Program Loans.* An institution may pay a Pell Grant to a student who is in default on a Guaranteed Student Loan of a PLUS Loan if the Secretary (in the case of a federally guaranteed loan) or a guarantee agency (in the the case of a loan guaranteed by that guarantee agency) determines that the student has made satisfactory arrangements to repay the defaulted loan.

(2) *National Defense/Direct Student Loan.* An institution may pay a Pell Grant to a student who is in default on a National Defense-Direct Student Loan made at that institution, if the student has made arrangements, satisfactory to the institution, to repay the loan.

(3) *Loans discharged in bankruptcy.* The Secretary does not consider a loan made under the National Defense Student Loan, National Direct Student Loan, Guaranteed Student Loan, or PLUS Loan programs, which has been discharged in bankruptcy, to be in default for purposes of this section.

(20 U.S.C. 1070a)

§ 690.76 Frequency of payment.

(a) In each payment period, an institution may pay a student at such times and in such installments as it determines will best meet the student's needs.

(b) The institution may pay funds due a student for any completed period in one lump sum. The student's enrollment status must be determined according to work already completed.

(20 U.S.C. 1070a)

§ 690.77 Verification of information on the SAR—withholding of payments.

(a)(1) The Secretary may require that a student verify the information submitted on the application and included on the SAR by submitting appropriate documentation to the institution or to the Secretary.

(2) The Secretary may also require that the institution withhold payment of a student's grant until the institution or the Secretary determines that the student has supplied the correct information.

(b) If an institution believes that any information on the SAR used in calculating the student's expected family contribution is inaccurate, or if the application is chosen by the Secretary for verification, the institution shall request that the student verify the information on the SAR.

(c) Except as provided in paragraphs (d)(5) and (6) of this section, if a student is selected for verification under paragraph (a) or (b) of this section, the institution shall require a student to submit acceptable documentation that verifies or updates the following information reported on the student aid application:

(1) The adjusted gross income (AGI).

(2) The U.S. income tax paid.

(3) The number of family members in the household of the student and his or her spouse, and his or her parents if the student is a dependent student.

(4) The number of family members in postsecondary educational institutions as at least half-time students in the household of the student and his or her spouse, and the student's parents if the student is a dependent student.

(5) The factors relating to the student's independent student status.

(6) Any untaxed income and benefits, including—

(i) U.S. income tax deduction for a married couple if both work;

(ii) Social security benefits if required by a comment on the student's Student Aid Report (SAR);

(iii) Student veterans educational benefits; and

(iv) Other untaxed income and benefits included on the student aid application.

(d)(1) An institution shall require a student selected for verification to submit to it for adjusted gross income (AGI), U.S. income tax paid, and number in household—

(i)(A) A signed copy of the federal income tax return or comparable State income tax return of the applicant and, where relevant, the applicant's parents and spouse;

(B) The IRS listing of tax account information from the Internal Revenue Service of the applicant and, where relevant, the applicant's parents and spouse; or

(C) If no return was filed or will be filed, a signed statement certifying that no tax return was filed or will be filed by the applicant and, where relevant, the applicant's parents and spouse and providing—

(*1*) The sources of income earned for work stated on the application;

(*2*) The amount of income from each source; and

(*3*) A list of the household members in each relevant household; and

(ii) If there is a difference in the number of exemptions claimed on a Federal or comparable state income tax return and the number in the household on the student aid application, a signed statement which lists the names of the household members and explains any difference between the information included on the student aid application and the tax returns unless other information in the institution's records explains the difference.

(2) An institution shall require a student selected for verification to submit to it for the number of family members in the household in postsecondary educational institutions the following:

(i) If the institution determines that it has no reason to doubt the accuracy of the information provided, a signed statement from the applicant's parents in the case of a dependent student, or from the applicant in the case of an independent student, which lists—

(A) The names of the household members who are or will be attending postsecondary institutions as at least half-time students;

(B) Their ages; and

(C) The names and addresses of those institutions.

(ii) If the institution determines that it has any reason to doubt the accuracy of the information provided—

(A) The information called for in paragraph (d)(2)(i) of this section; and

(B) A statement from each institution required to be listed under paragraph (d)(2)(i)(c) of this section that the household member in question is or will be attending the institution on at least a half time basis, unless the institution the student is attending certifies that such a statement would not be available because the household member in question has not yet registered at the institution he or she is planning to attend.

(3)(i) Except as provided in paragraph (d)(3)(iii) of this section, an institution shall require an unmarried student selected for verification to submit to it—

(A) A signed copy of the Federal or comparable State income tax return of the student's parent(s) for the calendar year preceding the first calendar year of an award year, or if the parent(s) did not file and will not file a tax return for that year, a written statement to that effect signed by the parent(s); and

(B) A written statement signed by the student's parent(s) certifying that—

(*1*) The parent(s) will not and did not provide the student with financial assistance of more than $750 in the first calendar year of an award year or the preceding calendar year; and

(*2*) The student did not and will not live with the parent(s) for more than forty-two days in either of those years.

(ii) Except as provided in paragraph (d)(3)(iii) of this section, an institution shall require a married student selected for verification to submit to it a written statement signed by the student's parent(s) certifying that—

(A) The parent(s) do not and will not provide the student with financial assistance of more than $750 in the first calendar year of an award year; and

(B) The student did not and will not live with the parent(s) for more than forty-two days in that year.

(iii)(A) No documentation or statements are required of a student who is 23 or older as of January 1 of the award year for which aid is requested to verify his or his independent student status if the Secretary or the institution does not have conflicting documentation regarding any of the three factors used to determine independent student status.

(B) An institution shall consider the independent student status of a married student who is under 23 on January 1 of the award year for which aid is requested to be verified if—

(*1*) The institution determines that the student's parents are unable or unwilling to provide the required statements; and

(*2*) The Secretary or the institution does not have conflicting documentation regarding any of the factors used to determine independent student status.

(C) An institution shall consider the independent student status of an unmarried student who is under 23 on January 1 of the award year for which aid is requested to be verified if the institution determines that the applicant had sufficient income to support himself or herself including any dependents for the calendar year preceding the first calendar year of the award year. An institution must make this determination if—

(*1*) The institution determines that the student's parents are unable or unwilling to provide the required tax returns or statements; and

(*2*) The Secretary or the institution does not have conflicting documentation regarding any of the three factors used to determine independent student status.

(4) An institution shall require a student selected for verification to submit to it—

(i) for untaxed income and benefits set forth in paragraph (c)(6)(i) and (iv) of this section, a signed copy of the Federal or comparable State income tax return if collected under paragraph (d)(1) of this section, or the IRS listing of tax account information from the Internal Revenue Service if collected by the institution to verify adjusted gross income, and one of the following:

(A) If the institution determines that it has no reason to doubt the accuracy of the information provided, the worksheet for untaxed income and benefits from the student aid application, or a comparable listing of the untaxed income and benefits specified in paragraph (c)(6)(iv) of this section, accompanied by a signed statement certifying that the information on the worksheet or listing is correct.

(B) If the institution determines that it has any reason to doubt the accuracy of the information provided—

(*1*) The documentation requested in paragraph (d)(4)(i)(A) of this section; and

(*2*) A statement from the agency that supplied the benefits indicating the amount of those benefits, unless the institution certifies that such a statement is not available;

(ii) For social security benefits, a document from the Social Security Administration showing the amount of benefits received in the appropriate calendar year by the student's parents, the parent's children under 18 years of age, the student and the student's spouse if the student's Student Aid Report (SAR) requires that the student verify his or her Social Security benefits; and

(iii) For veterans educational benefits—

(A) A copy of the student's award letter from the Veterans Administration (VA); or

(B) A statement from the institution's veterans office on campus specifying the latest monthly amount being received by the student and the number of months for which these benefits will be received.

(5) For veterans educational benefits, the institution may verify the applicant's

benefits by using the VA rate table issued by the Veterans Administration instead of requiring the applicant to provide the documentation under paragraph (d)(4)(iii) of this section.

(6) If a student applies for a Pell Grant using estimated income information as specified in § 690.39 or § 690.48, that estimated information shall not be subject to verification.

(e)(1) If as a result of the verification process the SAR needs to be corrected, the student shall correct the SAR by—

(i) Putting accurate information on the SAR;

(ii) Getting the appropriate signatures on the SAR; and

(iii) Resubmitting the SAR to the Secretary.

(2) The student shall submit the corrected SAR to the institution and the institution must recalculate the student's award based on this verified SAR. Any overpayment must be repaid by the student.

(f)(1) If an institution has documentation which indicates the information on the SAR used to calculate the student's award for any award year is inaccurate, it may not pay a Pell Grant for any award year until the student corrects or verifies the data and repays any overpayment.

(2) If an institution believes, but cannot document, that discrepancies exist on the SAR, it may not withhold payment unless authorized by the Secretary.

(3) If the student has received funds based on information which may be incorrect and the institution has made a reasonable effort to resolve the alleged discrepancy, but cannot, the institution shall forward the student's name, social security number, and other revelant information to the Secretary.

(4) The Secretary does not process any other Pell Grant application for a student that has been requested to provide information until the student provides the documentation or the Secretary decides there is no longer a need for the documentation.

(g)(1) If the Secretary requests documentation, the student shall comply within a time period set by the Secretary through publication in the Federal Register.

(2) If the student provides the requested documentation, and if necessary, a reprocessed and verified SAR on time, he or she is eligible for a Pell Grant.

(h)(1) A student may submit a verified SAR to the institution after the appropriate deadline specified in § 690.61 but within an established additional time period set by the Secretary through publication in the Federal Register. If a verified SAR is submitted to the institution during the period permitted by the Secretary after the appropriate deadline specified in § 690.61, payment is based on—

(i) The original SAR, if the student aid index on the verified SAR is lower than the student aid index on the original SAR, or

(ii) The verified SAR, if the student aid index on the verified SAR is higher than the student aid index on the original SAR.

(2) If the student does not provide the requested documentation, and if necessary, a reprocessed verified SAR, within the period established in paragraph (f)(1) of this section—

(i) The student forfeits the Pell Grant for the award year; and

(ii) Any grant payments the student previously received for that award year must be returned to the Secretary.

(i) For situations, including but not limited to suspected fraud or abuse, the Secretary may determine not to process any Pell Grant application for a student until that student has verified the information about which there is a discrepancy or the Secretary decides there is no longer a need for verification.

(20 U.S.C. 1070a)

§ 690.78 Method of disbursement—by check or credit to a student's account.

(a) The institution may pay a student either directly by check or by crediting his or her account with the institution. The institution shall notify the student of the amount he or she can expect to receive, and how that amount will be paid.

(b)(1) The institution may not make a payment to a student for a payment period until the student is registered for classes for that period.

(2) The earliest an institution may directly pay a registered student is 10 days before the first day of classes of a payment period.

(3) The earliest an institution may credit a registered student's account is three weeks before the first day of classes of a payment period.

(c) The institution shall return to the Pell Grant account any funds paid to a student who, before the first day of classes—

(1) Officially or unofficially withdraws; or

(2) Is expelled.

(d)(1) If an institution intends to pay a student directly, it shall notify him or her before the payment is made when it will pay the Pell Grant award.

(2) If a student does not pick up the check on time, the institution shall still pay the student if he or she requests payment within 15 days after the last date that his or her enrollment ends in that award year.

(3) If the student has not picked up his or her payment at the end of the 15 day period, the institution may credit the student's account for any amount owed to the institution for the award year.

(4) A student forfeits the right to receive the payment if he or she does not pick up a payment by the end of the 15 day period.

(5) Notwithstanding paragraph (d)(4) of this section, the institution may, if it chooses, pay a student who did not pick up his or her payment, through the next payment period.

(20 U.S.C. 1070a)

§ 690.79 Recovery of overpayments.

(a)(1) The student is liable for any Pell Grant overpayment made to him or her.

(2) The institution is liable for any overpayment if the overpayment occurred because the institution failed to follow the procedures set forth in this Part. The institution shall restore those funds to its Pell Grant account even if it cannot collect the overpayment from the student.

(b) If an institution makes an overpayment for which it is not liable, it shall help the Secretary recover the overpayment by—

(1) Making a reasonable effort to contact the student and recover the overpayment; and, if unsuccessful,

(2) Providing the Secretary with the student's name, social security number, amount of overpayment, and other relevant information.

(c) If an institution refers a student who received an overpayment for which it is not liable to the Secretary for recovery, the student remains ineligible, for further Title IV student financial assistance for attendance at that institution until final resolution of the overpayment.

(20 U.S.C. 1070a)

§ 690.80 Recalculation of a Pell Grant award.

(a) *Change in expected family contribution.* (1) The institution shall recalculate a Pell Grant award for the entire award year if the student's expected family contribution changes at any time during the award year. The change may result from—

(i) The correction of a clerical or arithmetic error under § 690.14;

(ii) Extraordinary circumstances which affect the expected family contribution under § 690.39 or § 690.48; or

(iii) A correction based on information required in § 690.12 or § 690.77.

(2) Except as described in § 690.77(f)(1), the institution shall adjust the student's award when an overaward or underaward is caused by the change in the expected family contribution. That adjustment must be made—

(i) Within the same award year—if possible—to correct any overpayment or underpayment; or

(ii) During the next award year to correct any overpayment that could not be adjusted during the year in which the student was overpaid.

(b) *Change in enrollment status.* (1) If the student's enrollment status changes from one academic term to another term within the same award year, the institution shall recalculate the Pell Grant award for the new payment period taking into account any changes in the cost of attendance.

(2)(i) If the student's projected enrollment status changes during a payment period after the student has begun attendance in all of his or her classes for that payment period, the institution may (but is not required to) establish a policy under which the student's award for the payment period is recalculated. Any such recalculations must take into account any changes in the cost of attendance. If such a policy is established, it must apply to all students.

(ii) If a student's projected enrollment status changes during a payment period before the student begins attendance in all of his or her classes for that payment period, the institution shall recalculate the student's enrollment status to reflect only those classes for which the student actually began attendance.

(c) *Change in cost of attendance.* If the student's cost of attendance changes at any time during the award year and his or her enrollment status remains the same, the institution may (but is not required to) establish a policy under which the student's award for the payment period is recalculated. If such a policy is established, it must apply to all students.

(20 U.S.C. 1070a)

§ 690.81 Fiscal control and fund accounting procedures.

(a)(1) An institution shall establish and maintain on a current basis financial records that reflect all program transactions. The institution shall establish and maintain general ledger control accounts and related subsidiary accounts that identify each program transaction and separate those transactions from all other institutional financial activity.

(2) The institution shall account for the receipt and expenditure of Pell Grant funds in accordance with generally accepted accounting principles.

(b) A separate bank account for Pell Grant funds is not required. However, the institution shall notify any bank in which it deposits Pell Grant funds of all accounts in that bank in which it deposits Federal funds. This notice must be given by including in the name of each such account that Federal funds are deposited therein.

(c) Except for funds received for administrative expenses, funds received by an institution under this part may be used only to pay Pell Grants to students. The funds are held in trust by the institution for the intended student beneficiaries and may not be used or hypothecated for any other purpose.

(20 U.S.C. 1070a)

§ 690.82 Maintenance and retention of records.

(a) Each institution shall maintain adequate records (including those related to verification) which include the fiscal and accounting records that are required under § 690.81, records required for audits in 34 CFR 668.20, the Student Aid Report of each student applying for a Pell Grant, and records indicating—

(1) The eligibility of all enrolled students who have submitted valid SARs to the institution;

(2) The name and social security number of and the amount paid to each student;

(3) The amount and date of each payment;

(4) The amount and date of any overpayment that has been restored to the program account;

(5) Each student's cost of attendance;

(6) How each student's full or part-time enrollment status was determined; and

(7) Each student's enrollment period.

(b)(1) The institution shall make the records listed in paragraph (a) of this section available for inspection by the Secretary's authorized representative at any reasonable time in the institution's offices. It shall keep the records for each award year for five years after that award year has ended.

(2) For any disputed expenditures in any award year for which the institution cannot provide records, the Secretary determines the final authorized level of expenditures.

(c) The institution shall keep records involved in any claim or expenditure questioned by Federal audit until resolution of any audit questions.

(d) An institution may substitute microform copies in lieu of original records in meeting the requirements of this section.

(20 U.S.C. 1070a, 1232f)

(Approved by the Office of Management and Budget under OMB Control numbers 1840-0132)

§ 690.83 Submission of reports.

(a) An institution shall submit to the Secretary all SAR Payment Documents for a given award year by December 31 following the end of that award year.

(b) An institution shall submit in accordance with deadline dates established by the Secretary, through publication in the **Federal Register**, other reports and information the Secretary requires in connection with the funds advanced to it and shall comply with the procedures the Secretary finds necessary to ensure that the reports are correct.

(20 U.S.C. 1070a)

(Approved by the Office of Management and Budget under OMB Control numbers 1840-0132)

§ 690.84 Audit and examination.

(a) *Federal audits.* The institution shall give the Secretary, the Comptroller General of the United States, or their duly authorized representatives, access to the records specified in § 690.81 and § 690.82 and to any other pertinent books, documents, papers, and records.

(b) *Non-Federal audits.* (1) The institution shall have a financial and compliance audit of Pell Grant Program transactions. The audit must be conducted by an independent auditor in accordance with the general standards and the standards for financial and compliance audits in the U.S. General Accounting Office publication, *Standards for Audit of Governmental Organizations, Programs, Activities, and Functions.* Procedures for audits are contained in audit guides developed by, and available from the Office of the Inspector General of the Department. These audit guides do not impose any requirements beyond those imposed under applicable statutes and regulations and GAO's standards.

(2) The audit must be completed not less frequently than once every two years, and be submitted to the Secretary within 9 months of the end of the audit period. Each audit must cover the institution's activities for the entire period since the preceding audit.

(3) The institution must have an audit performed at least once very two years.

(c) *Submission and access.* The institution shall submit audit reports to the institution's local regional office of the Department of Education's Audit Agency. It shall give the Audit Agency and the Secretary access to records or

other documents necessary to the audit's review.

(20 U.S.C. 1070a)

Subpart H—Administration of Grant Payments—Alternate Disbursement System (ADS)

§ 690.91 Scope.

This subpart deals with program administration by an ADS institution of higher education. Under the ADS, the Secretary calculates and pays the Pell Grant awards to students.

(20 U.S.C. 1070a)

§ 690.92 Institutional participation agreement—Alternate Disbursement System (ADS).

(a) The Secretary may enter into an agreement with an institution of higher education under which the Secretary calculates and pays Pell Grant awards to students enrolled at that institution based upon the information provided to the Secretary by the institution and the student.

(b) The agreement is on a standard form provided by the Secretary and contains the necessary terms to carry out this subpart.

(20 U.S.C. 1070a)

§ 690.93 Disbursement system changes.

(a) *Change to Regular Disbursement System (RDS).* The Secretary may allow an ADS institution to change its method of participation in the Pell Grant Program to the Regular Disbursement System (RDS).

(2) In order to make the change, the institution shall—

(i) Notify the Secretary no later than January 31 of its desire to make the change for the succeeding award year;

(ii) Submit all required reports by April 30; and

(iii) Sign a new participation agreement.

(3) If the Secretary agrees to the change, the new participation agreement goes into effect on July 1 of the succeeding award year.

(b) *Voluntary change to the Alternate Disbursement System (ADS).* (1) The Secretary may allow an RDS institution to voluntarily change its method of participation in the Pell Grant Program to the ADS.

(2) In order to make the change, the institution shall—

(i) Notify the Secretary no later than January 31 of its desire to make the change for the succeeding award year,

(ii) Submit all required reports through the February 15 Progress Report for that award year by April 30; and

(iii) Sign a new participation agreement.

(3) If the Secretary agrees to the change, the new participation agreement goes into effect on July 1 of the succeeding award year.

(c) *Change to ADS after termination of RDS agreement.* If the institution's RDS agreement is terminated by the Secretary according to § 690.73(a), the Secretary may allow the institution to enter into an ADS agreement.

(20 U.S.C. 1070a)

§ 690.94 Termination of agreement alternate disbursement system.

(a) *Termination by the Secretary.* The Secretary may terminate the agreement with an institution according to the procedures established by Subpart G of the Student Assistance General Provisions (34 CFR Part 668).

(b) *Termination by the Institution.* The institution may terminate the agreement by giving the Secretary written notice. The termination becomes effective on June 30 of the award year in which the institution provides the written notice. The institution shall carry out the agreement for the remainder of the award year.

(c) *Termination because of change in the ownership that results in a change of control.* (1) The agreement terminates when an institution undergoes a change of ownership that results in a change of control.

(2) The Secretary may enter into an agreement with the new owner after the institution complies with the requirements of § 668.18 of the Student Assistance General Provisions regulations (34 CFR 668.18).

(d) *Limitation of agreement.* (1) Instead of terminating the agreement, the Secretary and the institution may jointly agree to limit the agreement.

(2) The Secretary may limit the agreement in accordance with Subpart G of the Student Assistance General Provisions, 34 CFR 668.71–668.88.

(20 U.S.C. 1070a)

§ 690.95 General procedures for receiving payment.

An eligible student attending an ADS institution shall apply for and receive a Pell Grant as follows:

(a)(1) The student shall submit a Student Aid Report (SAR) to the institution within the deadline date for submitting the SAR to the institution set forth in § 690.61(b) and the limitation set forth in § 690.61(c).

(b)(1) Upon receipt of an SAR, the institution shall give the student a Pell Grant request for Payment Form (ED Form 304) which the student uses to request a Pell Grant payment from the Secretary.

(2)(i) On the ED Form 304, the student shall provide his or her name, social security number and address. The address provided by the student must be his or her residence and not the address of the institution, unless the student resides at the school or is incarcerated; in which case the student may use the institution's address; and

(ii) The student shall sign the Statement of Educational Purpose/Registration Compliance (This statement is the same statement set forth in 34 CFR 668).

(3) On the ED Form 304, the institution shall provide information regarding a student's eligibility to receive a Pell Grant, as well as the student's enrollment status, cost of attendance and dates of attendance.

(4) With regard to the student's eligibility for a Pell Grant, the institution shall determine that the student—

(i) Has presented a valid SAR to the institution as required by § 690.61;

(ii) Has met the eligibility requirements set forth in § 690.4;

(iii) Is maintaining satisfactory academic progress in his or her course of study;

(iv) Is not in default on—

(A) A National Defense/Direct Student Loan made by the institution;

(B) A Guaranteed Student Loan or PLUS Program Loan received for attendance at that institution; or

(C) A PLUS Program Loan received by the student as a parent of another student for attendance at that institution; and

(v) Does not owe a refund on a Pell Grant, a Supplemental Grant, or a State Student Incentive Grant received for attendance at that institution. (In determining whether the student owes a refund on a grant, the institution is entitled to rely on information in its possession).

(5) If an institution determined that, at the beginning of a payment period, the student is not maintaining satisfactory academic progress, but reverses the determination before the end of the payment period, the institution may certify ED Form 304 for the entire payment period.

(6) If an institution determines that, at the beginning of a payment period, the student is not maintaining satisfactory academic progress, but reverses the determination after the end of the payment period, the institution may not certify ED Form 304 for that payment period. The Secretary does not make adjustments in subsequent Pell Grant payments to compensate for the loss of Pell Grant aid for that payment period.

(c) If the institution determines that the student has a valid SAR and is eligible for a Pell Grant it shall certify the accuracy of the information it provides on the ED Form 304 and return the SAR and the certified ED Form 304 to the student.

(d) The student shall submit both the valid SAR and the certified ED Form 304 to the Secretary before the deadline date established in § 690.61

(e) Upon receipt of the SAR and the certified ED Form 304 the Secretary calculates a student's award in accordance with Subpart F of this part.

(f)(1) In each payment period, the Secretary pays a student at such times and in such installments as the Secretary determines will best meet the student's needs.

(2) The Secretary makes only one payment to a student if a portion of an academic year occuring within one award period is less than three months.

(3) The Secretary may pay funds due a student for any completed period of enrollment in one lump sum. The student's enrollment status for that period is determined according to work already completed.

(g)(1) The Secretary also sends the student an ADS Student Report (ED Form 304–1). This form—

(i) Notifies the student of the amount of his or her Scheduled Pell Grant, the amount of expected disbursement, and the amount of the first payment; and

(ii) Is used to request subsequent payments from the Secretary during the award year.

(2) The institution shall provide the information requested on the ED Form 304–1 and shall certify that the information included on the ED Form 304–1 is accurate and that the student is eligible for payment.

(3) The student shall submit the certified ED Form 304–1 to the Secretary to receive an additional grant payment before the deadline date established in § 690.61

(20 U.S.C. 1070a)

§ 690.96 Verification of information on the SAR.

(a) An institution shall require a student to verify the information included on his or her SAR if—

(1) Directed to do so by the Secretary;

(2) The institution has documentation which indicates that the information on the SAR used to calculate the student's award is inaccurate; or

(3) The institution believes, but does not have documentation, that the information on the SAR used to calculate the student's award is inaccurate.

(b)(1) If the institution requests that the student verify the information on his or her SAR for the reasons stated in paragraph (a)(1) or (2) of this section, it may not certify the student's ED Form 304 until it is satisfied that the information on the SAR is correct.

(2) If the institution requests that the student verify the information of his or her SAR for the reason stated in paragraph (a)(3) of this section, it shall—

(i) Certify ED Form 304; and

(ii) Notify the Secretary.

(c) If a student is selected for verification under paragraph (a)(1) or (2) of this section the institution shall require a student to submit acceptable documentation in accordance with the procedures in § 690.77 (c) and (d).

(d)(1) If, as a result of the verification process, the SAR needs to be corrected, the student shall correct the SAR by—

(i) Putting accurate information on the SAR;

(ii) Getting the necessary signatures on the SAR; and

(iii) Resubmitting the SAR to the Secretary.

(2) The student shall resubmit the reprocessed SAR he or she receives to the institution.

(3) The institution shall certify ED Form 304 if it is satisfied that the information on the resubmitted SAR is accurate.

(e)(1) If a student submits the verified SAR to the institution before the appropriate deadline specified in § 690.61, the Secretary pays the student the amount of the payment based on the verified SAR.

(2) The student may submit the verified SAR to the institution after the appropriate deadline specified in § 690.61, but within an established additional time period set by the Secretary through publication in the **Federal Register.** If the verified SAR is submitted to the institution during the established period after the deadline, payment is based on—

(i) The original SAR, if the student aid index on the verified SAR is lower than the student aid index on the original SAR; or

(ii) The verified SAR, if the student aid index on the verified SAR is higher than the student aid index on the original SAR.

(3) If the student does not provide the requested documentation, and if necessary a reprocessed, verified SAR, within the established time period—

(i) The student forfeits the Pell Grant for the award year; and

(ii) Any grant payments the student previously received for that award year must be returned to the Secretary.

(f) For situations, including but not limited to suspected fraud or abuse, the Secretary may determine not to process any Pell Grant application for a student until that student has verified the information about which there is a discrepancy or the Secretary decides there is no further need for verification.

(20 U.S.C. 1070a)

§ 690.97 Withdrawals and refunds.

(a)(1) The institution shall notify the Secretary of the date that a student officially or unofficially withdraws or is expelled for a payment period for which the student was paid.

(2) If the institution also participates in any other title IV programs, the institution shall comply with § 668.21 of the Student Assistance General Provisions regulations and provide the Secretary with the information required by § 668.21(a)(3).

(3) For purposes of this section, the date of a student's unofficial withdrawal must be determined under § 668.21(c)(4).

(b) If the date provided by the institution under paragraph (a) of this section is before the mid-point of the payment period for which the student has been paid, the student shall refund a prorated portion of the payment as determined by the Secretary.

(20 U.S.C. 1070a)

§ 690.98 Recovery of overpayments.

(a) The student is liable for any overpayment made to him or her.

(b)(1) The institution is liable for any overpayment made to a student by the Secretary on the basis of inaccurate information provided by the institution.

(2) The institution shall repay to the Secretary the amount of the overpayment for which it is liable even if the overpayment cannot be collected from the student.

(c) If an overpayment is made for which the institution is not liable, the institution shall help the Secretary to recover the overpayment by providing the Secretary with the student's name, social security number, and most recent address, and other relevant information.

(20 U.S.C. 1070a)

§ 690.99 Recalculation of a Pell Grant award.

(a) If the student's expected family contribution changes, the Secretary recalculates his or her Pell Grant award.

(b) The Secretary adjusts the award and pays the student the amount he or she is entitled to for the award year if the expected family contribution is recalculated because of—

(1) A clerical or arithmetic error as described in § 690.13; or

(2) Extraordinary circumstances which effect the expected family contribution as described in §§ 690.39 and 690.48.

(c) If a student's expected family contribution is recalculated because of a correction of the information requested under § 690.96, the student's grant for the award year is adjusted by the Secretary as provided for in § 690.96. Where possible, the adjustment is made within the same award year.

(d) If the recalculation takes place in a subsequent award year, the student—

(1) Is eligible to receive payment unless prohibited under the provisions of § 690.96; and

(2) Shall return any overpayment.

(20 U.S.C. 1070a)

§ 690.100 Maintenance and retention of records.

(a) An institution shall establish and maintain the following:

(1) The Student Aid Report for each student.

(2) A copy of ED Form 304 and Form 304–1 that the institution certifies for each student.

(3) The name and social security number of each student.

(4) The student's cost of attendance.

(5) How the student's full or part-time enrollment status was determined.

(6) The student's enrollment period.

(7) Information collected in compliance with § 690.96.

(8) Information necessary to determine whether the student was eligible to receive a Pell Grant.

(b)(1) For each of its Pell Grant recipients an institution shall maintain records which are—

(i) Systematically organized;

(ii) Maintained for five years after the award year in which the recipient ceased enrollment; and

(iii) Readily available for review by the Secretary or a designated ED official at the geographical location where the student is to receive a degree or certificate of program or course completion.

(2) An institution may substitute micro-file copies for original records in meeting the requirements of this section.

(20 U.S.C. 1070a)

(Approved by the Office of Management and Budget under OMB control numbers 1840–0132, 1840–0063 and 1840–0008)

§ 690.101 Submission of reports.

An institution shall submit any reports and information the Secretary requires in connection with the participation of an institution in the Alternate Disbursement System.

(20 U.S.C. 1070a)

(Approved by the Office of Management and Budget OMB control number 1840–0025)

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