institution-affiliated party who participates in such violation or noncompliance.

(2) *Failure to implement capital restoration plan.* The failure of a savings association to implement a capital restoration plan required under section 38, or this part, or the failure of a company having control of a savings association to fulfill a guarantee of a capital restoration plan made pursuant to section 38(e)(2) of the FDI Act shall subject the savings association or company to the assessment of civil money penalties pursuant to section 8(i)(2)(A) of the FDI Act.

(c) *Other enforcement action.* In addition to the actions described in paragraphs (a) and (b) of this section, the OTS may seek enforcement of the provisions of section 38 or this part through any other judicial or administrative proceeding authorized by law.

Dated: September 16, 1992.

By the Office of Thrift Supervision.

Timothy Ryan,

Director.

[FR Doc. 92-23182 Filed 9-28-92; 8:45 am]

BILLING CODE 4810-33 (¼), 6210-01 (¼), 6714-01 (¼), 6720-01 (¼)-M

federal register

Tuesday
September 29, 1992

Part V

Department of Transportation

Coast Guard

33 CFR Part 155
Discharge Removal Equipment for Vessels Carrying Oil; Proposed Rule

DEPARTMENT OF TRANSPORTATION

Coast Guard

33 CFR Part 155

[CGD 90-068]

RIN 2115-AD66

Discharge Removal Equipment for Vessels Carrying Oil

AGENCY: Coast Guard, DOT.

ACTION: Notice of proposed rulemaking.

SUMMARY: The Coast Guard proposes to establish regulations requiring vessels carrying oil in bulk as cargo to carry discharge removal equipment to contain and remove on-deck oil spills, install spill prevention coamings, and install emergency towing arrangements. The proposed regulations would implement provisions of the Federal Water Pollution Control Act, as amended by the Oil Pollution Act of 1990. The purpose of these regulations is to reduce the risk of oil spills, improve vessel oil spill response capabilities, and minimize the impact of oil spills on the environment. Proposed requirements for vessels to carry equipment for the removal of discharges of hazardous substances will be the subject of a separate rulemaking.

DATES: Comments must be received on or before October 29, 1992.

ADDRESSES: Comments may be mailed to the Executive Secretary, Marine Safety Council (G-LRA/3406) (CGD 90-068), U.S. Coast Guard Headquarters, 2100 Second Street SW., Washington, DC 20593-0001, or may be delivered to Room 3406 at the above address between 8 a.m. and 3 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 267-1477.

The Executive Secretary maintains the public docket for this rulemaking. Comments will become part of this docket and will be available for inspection or copying at Room 3406, U.S. Coast Guard Headquarters.

A copy of the material listed in "Incorporation by Reference" of this preamble is available for inspection at Room B-731, U.S. Coast Guard Headquarters.

FOR FURTHER INFORMATION CONTACT: Frank Wood, Project Manager, Oil Pollution Act (OPA 90) Staff, (202) 267-6739. This telephone is equipped to record messages on a 24-hour basis.

SUPPLEMENTARY INFORMATION:

Request for Comments

The Coast guard encourages interested persons to participate in this rulemaking by submitting written views, data, or arguments. Persons submitting comments should include their name and address, identify this rulemaking (CGD 90-068) and the specific section of this proposal to which each comment applies, and give the basis for each comment. Persons wanting acknowledgment of receipt of comments should enclose a stamped, self-addressed postcard or envelope.

The Coast Guard will consider all comments received during the comment period. It may change this proposal in view of the comments.

The Coast Guard plans no public hearing at this time. Persons may request a public hearing by writing to the Marine Safety Council at the address under "ADDRESSES." If the Coast Guard determines that the opportunity for oral presentations will aid this rulemaking, it will hold a public hearing at a time and place announced by a later notice in the **Federal Register**.

Drafting Information

The principal persons involved in drafting this document are Frank Wood, Project Manager, OPA 90 Staff, and Joan Tilghman, Project Counsel, OPA 90 Staff.

Statutory Authority and Background

In recent years, #several catastrophic oil spills have threatened the marine environment along the coastal areas of the United States. Among these spills were the EXXON VALDEZ in Prince William Sound, the AMERICAN TRADER in California's coastal waters, the PRESIDENTE RIVERA in the Delaware River, and the MEGA BORG in the Gulf of Mexico. The spills resulted in extensive damage to the marine environment, including the loss of fish and wildlife. In response to these disasters and others, Congress passed the Oil Pollution Act of 1990 (OPA 90) (Pub. L. 101-380, August 18, 1990).

Section 4202(a)(6) of OPA 90 amended section 311(j) of the Federal Water Pollution Control Act (FWPCA) (33 U.S.C. 1321) by adding a new paragraph (6) to require vessels that are operating on the navigable waters of the U.S. and that are carrying oil or a hazardous substance in bulk as cargo to carry appropriate discharge removal equipment on board. This equipment must employ the best technology economically feasible and be compatible with the safe operation of the vessel.

The President delegated the authority to implement this provision to the Secretary of Transportation in Executive Order 12777 (3 CFR, 1991 Comp.; 56 FR 54757) published in the **Federal Register** on October 22, 1991. The Secretary further delegated the authority to the Commandant of the Coast Guard in 49 CFR 1.46(m) on March 3, 1992.

Because the statutory requirements for vessels to carry discharge removal equipment for oil spills and to have oil spill response plans are related, the Coast Guard has considered both rulemakings concurrently. The Coast Guard is limiting this rulemaking to requirements for vessels carrying oil because of the statutory deadline for these vessels to submit response plans. For vessels that carry hazardous substances in bulk as cargo, regulations requiring carriage of discharge removal equipment will be the subject of a separate rulemaking.

Section 311(a)(8) of the FWPCA defines "remove or removal" as the "containment and removal of the oil or hazardous substances from the water and shorelines or the taking of such other actions as may be necessary to minimize or mitigate damage to the public health or welfare." For purposes of this proposed rule, removal equipment includes salvage equipment, lightering equipment, towing arrangements, sorbents, and other equipment that may be used to minimize or mitigate environmental damage from oil spills.

Section 311(j)(6) requirements apply to all vessels certificated as tank vessels under 46 CFR chapter I, subchapter D, all other certificated vessels that are permitted to carry limited quantities of oil as defined in section 311(a)(1) of the FWPCA, and any uninspected vessel, including foreign flag vessels, that carry oil in bulk as cargo or cargo residue. As used in this proposed rule, oil includes, but is not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with waste other than dredge spoils. This definition includes animal and vegetable oils.

Regulatory History

The Coast Guard published an advance notice of proposed rulemaking (ANPRM) on August 30, 1991 (56 FR 43534). In the ANPRM, the Coast Guard raised 59 questions for public comment and gave notice of a workshop scheduled for November 14, 1991. The Coast Guard received 147 comments on the questions posed on removal equipment in the ANPRM, and considered all of the comments in drafting the proposed rule.

The majority of the comments on the ANPRM stated that removal equipment should be carried on board vessels that carry oil in bulk as cargo. Comments on the type and amount of equipment to be carried ranged from extensive

containment and removal equipment for off-ship deployment to sorbents and mops for on-deck cleanup.

Many comments interpreted the statutory requirement to carry removal equipment as a requirement to carry booms and skimmers. A few comments proposed that self-inflating boom be installed on board vessels for remote deployment by crew members. Most agreed that anchoring boom in deep water was difficult, if not impossible. One suggested the use of sea anchors to maintain the boom in deep water. The majority indicated that, regardless of the equipment required, crew members should remain on board the vessel during an oil spill response and leave off-ship response to shore-based responders.

Comments varied regarding equipment capabilities. Suggested capabilities ranged from containment of the entire cargo to containment of deck spills of less than 10 barrels.

The public workshop was held in Washington, DC on November 14, 1991, with 196 participants. The Coast Guard prepared papers to focus discussion. The issue paper presented on requirements for vessel-carried equipment focused on the following: (1) Requirements for equipment for use on board the vessel to remove on-deck spills, assist in damage control and salvage, and lighter "over the top" to control the source of the discharge; (2) requirements for booms and skimmers on board vessels that transit remote areas or areas where contracted resources are not available; (3) deploying, securing, and maintaining containment booms, particularly in deep water, without physically tending booms from workboats in other than ideal conditions; and (4) warehousing removal equipment, specifically booms and skimmers, on board vessels for deployment by spill response contractors.

The discussions were generally consistent with comments to the ANPRM, but they clarified several options and better defined areas of agreement. Most participants identified emergency towing gear as appropriate equipment that should be required aboard tankers to facilitate assistance by a rescue vessel. (Under 46 U.S.C. 2101, "*tanker* means a self-propelled tank vessel constructed or adapted primarily to carry oil or hazardous material in bulk in the cargo spaces.") Although tankers often use single point mooring connections or the vessel's anchor chain for on-board towing capability, these connections are often unrigged and require considerable effort by the ship's crew to make the tanker ready for towing. The discussions did not address a design or specific requirements for an emergency towing package.

There was no agreement that it was appropriate to carry high-capacity, over-the-top lightering equipment aboard a vessel. Some participants recommended that tankers not carry high-capacity pumps on board for lightering or emergency cargo transfer because of safety concerns for the crew. Others expressed the opinion that only trained professionals should provide salvage and lightering equipment.

In response to an ANPRM question about boom technology, no one was able to verify proven technology for deploying and maintaining containment boom, particularly in deep water, in other than ideal conditions, without physically tending it from dedicated workboats. The majority of participants did not recommend requiring a boom that is designed for automatic deployment over the side and remote tending by the crew.

Most participants advised against warehousing removal equipment, such as booms and skimmers, aboard a vessel for deployment by contracted personnel. However, a minority of participants felt that warehoused containment boom might provide the only readily available source of equipment in some incidents, and the boom may significantly enhance an initial response effort. No one recommended that vessels carry portable storage tanks on board.

The Coast Guard taped the workshop proceedings and considered all comments in preparing the proposed rule. Audio tapes and a summary of the proceedings are available for review and copying in the public docket.

Because of the diversity of views and the absence of clearly preferable solutions, the Coast Guard published a notice of intent to form a negotiated rulemaking committee on November 18, 1991 (56 FR 58202). Based on the comments received on this notice, the Coast Guard established the Oil Spill Response Plan Negotiated Rulemaking Committee (the Committee). A notice announcing the establishment of the Committee was published on January 10, 1992 (57 FR 1139). The Committee sessions were held between January 8 and March 27, 1992, in Washington, DC.

In forming the Committee, the Coast Guard brought together representatives from various interests that would be affected by the proposed rules on vessel response plans and the proposed rules on carriage and inspection of discharge removal equipment. A Coast Guard representative was a member of the Committee. The Coast Guard used the information gathered from the public in comments to the ANPRM and from discussions at the public workshop that was held on November 14, 1991, to narrow the focus of the Committee discussions. The Coast Guard developed and identified issue-related questions for resolution by the Committee.

The Coast Guard agreed in the organizational protocols to consider the written statement of the Committee as the basis of this NPRM, consistent with the Coast Guard's legal obligations, and to draft the proposed regulations and preambles with the same substance and effect as the Committee statement. The consensus recommendations included in the Committee statement reflect the agreement of all Committee members, including the Coast Guard. The Coast Guard used the Committee consensus recommendations in drafting this proposed rule and identified the recommendations in the preamble discussion of the proposed rule. The Committee statement is filed in the public docket.

Committee Recommendations and Discussion of Proposed Regulations

In discussing requirements for vessels to carry discharge removal equipment, the Committee made recommendations concerning vessels to which the rules should apply. The Committee recommended that vessels that carry oil as primary cargo be separated into four categories: tankers, offshore tank barges, coastal tank barges, and inland tank barges. For the purposes of this proposed rule, a tanker is a self-propelled vessel engaged in the carriage of oil in bulk as cargo that has a Certificate of Inspection issued under 46 CFR chapter I, subchapter D, a Certificate of Compliance, or a Tank Vessel Examination letter. The definition of "tanker" includes integrated tug-barges (ITBs) that are designed for push-mode only.

An offshore tank barge is defined as any tank barge that is certificated under 46 CFR chapter I, subchapter D, for navigation in waters more than 20 nautical miles offshore in any ocean or the Gulf of Mexico, any tank barge in Great Lakes service, or any foreign flag tank barge. The definition of offshore tank barge includes ITBs that are designed for dual-mode navigation.

A coastal tank barge is any tank barge that is certificated under 46 CFR chapter I, subchapter D, for coastwise service. The definition of coastal tank barge includes ITBs that are designed for dual-mode navigation. An inland tank barge is any tank barge certificated

under 46 CFR chapter I, subchapter D, for river service or lakes, bays, and sounds service.

In addition to these vessel categories, the Committee discussed applying requirements for vessel-carried equipment to vessels that carry oil in bulk as secondary cargo. Vessels that carry oil as secondary cargo are those that are not principally engaged in the carriage of oil in bulk as cargo, but that are certificated under subchapters H or I and permitted to carry limited quantities of oil in bulk, and similar foreign flag vessels. Although the Committee did not make a recommendation concerning vessels that carry oil as secondary cargo, the Coast Guard is proposing vessel-carried equipment requirements for these vessels.

Discharge Removal Equipment for On-Deck Spills

In discussing on-deck spills, the Committee first considered the amount of oil that the equipment should be able to contain and remove from the deck of the vessel. The Committee recommended that ocean-going and coastal vessels less than 400 feet long carry equipment capable of containing and removing a spill of at least seven barrels (42 U.S. gallons/barrel) of oil from the deck of the vessel. For ocean-going and coastal vessels 400 feet long or longer, the Committee recommended that the vessel carry equipment capable of containing and removing a spill of at least 12 barrels of oil. For inland tank barges, the Committee recommended that the tank barge have equipment available that is capable of containing and removing a spill of at least one barrel of oil. The Committee derived these proposed volumes from suggestions in the public comments to the ANPRM.

Under the proposed rule, tankers, offshore tank barges, and coastal tank barges will be subject to the same requirements for equipment carriage for on-deck spills. The equipment specifically recommended by the Committee for onboard carriage includes non-sparking hand shovels and scoops, non-sparking portable pumps, sorbents, containers for holding recovered waste, personal protective clothing, and emulsifiers to clean the deck. The Coast Guard recognizes that emulsifiers may be necessary to remove oil from the deck to make the deck less slippery and safer for crew members. However, the Coast Guard emphasizes that emulsions and oily residue must be retained on board until the emulsions and oily residue can be safely discharged into a suitable receiving vessel or facility. It is illegal to discharge emulsions and oily residue into the marine environment.

Because most on-deck spills are small, sorbents, portable pumps and hand tools are the most effective equipment for containing and removing them. The Committee recommended that portable pumps be rigged and ready for use on the vessel during transfer operations in case an on-deck spill occurs. The Committee also recommended that containers, scoops, buckets, and shovels be required on deck to aid the crew in removing and containing the waste from the on-deck spill; and that protective clothing be available to protect the crew members or other responders who will be removing the on-deck spill.

The proposed requirements for inland tank barges differ from tankers, offshore tank barges, and coastal tank barges because inland tank barges are typically unmanned and have little or no secure stowage capacity for carried equipment. Therefore, for inland tank barges, the Committee recommended that the equipment for containment and removal of on-deck spills be immediately available for use on board the barge during cargo transfer operations, but not necessarily carried on board. The proposed rule would allow the vessel owner or operator to rely on equipment available at a facility, provided its use for vessel spills has been prearranged by contract or other means approved by the Coast Guard.

Although the Committee made no recommendation on requiring vessels carrying oil as secondary cargo to carry discharge removal equipment, the Coast Guard is proposing equipment carriage requirements for vessels carrying oil as secondary cargo because on-deck spills on these vessels also pose a risk to the environment. Under the proposed rule, the equipment must be capable of removing on-deck spills of at least one-half barrel.

Except as noted, the proposed rules for vessels to carry equipment to remove on-deck spills reflect the recommendations of the Committee.

Deck Edge Coamings for On-Deck Spills

In addition to recommending equipment carriage to remove on-deck spills, the Committee recommended that tankers install deck-edge coamings sufficient to contain on-deck spills of 7 barrels for vessels under 400 feet, and 12 barrels for vessels 400 feet and over, with the vessel on an even keel. The Committee did not recommend that offshore and coastal tank barges install deck-edge coamings, but did agree that the Coast Guard should publish deck-edge coaming requirements for these barges for public comment. The Committee made no recommendations with respect to deck coamings on inland tank barges. The Coast Guard reviewed the Committee's recommendation in light of existing coaming regulations (33 CFR 155.310), and is proposing requirements for deck-edge coamings that support the Committee's recommendation.

Existing 33 CFR 155.310 applies to all tank vessels, as "tank vessel" is defined in 33 CFR 154.105, of 250 barrel capacity or larger that carry oil or hazardous materials, regardless of service and overall length. Section 155.310 requires tank vessels other than tank barges to install a fixed container or enclosed deck area around the manifolds and transfer connections, the capacities of which range from one-half barrel to four barrels, depending upon the pipe sizes within the contained area.

This existing regulation requires that tank barges either (1) install the same containers or enclosures as required for other tank vessels, or (2) have a smaller container at the manifolds and transfer connections and install deck coamings sufficient to contain a one-half barrel spill per cargo hatch, manifold, and transfer connection within the enclosed deck area, under all expected conditions of vessel list and trim encountered during the loading operation. Coaming height for tank barges must be at least four inches but not more than eight inches. Under these regulations, it is not necessary for tank barges to locate the coamings along the deck edge, although this appears to be the common practice for many barges.

The proposed rule reflects the Committee's recommendation for installation of deck-edge coamings to contain oil on deck and prevent its discharge into navigable waters. However, the Committee's recommendation that the coaming be sufficient to contain a spill of 7 or 12 barrels of oil, depending on the length of the vessel, with the vessel on an even keel, could result in a coaming only a fraction of an inch high. Although a low-profile coaming may be sufficient to contain these spills on a vessel on an even keel, it would be insufficient to contain them with the vessel under even modest degrees of heel and trim.

Rather than proposing new requirements that are less protective of the environment than existing regulations, the Coast Guard proposes that the rules for deck-edge coamings be consistent with the requirements of 33 CFR 155.310, with respect to coaming height and with respect to conditions of heel and trim during loading, transfer, and discharge operations. The Coast

Guard proposes that two new paragraphs be added to 33 CFR 155.310 that require tankers and offshore and coastal tank barges carrying oil as cargo to install a peripheral coaming enclosing the cargo transfer connections, manifolds, and cargo hatches. The Coast Guard believes that this proposal reflects the substance and effect of the Committee's recommendation.

Although the Committee recommended that the requirement for deck-edge coamings apply to tankers, the Coast Guard proposes that these requirements be consistent with 33 CFR 155.310 with respect to vessel applicability and that they include offshore tank barges and coastal tank barges. The Coast Guard also proposes that these requirements apply to tankers and offshore and coastal tank barges that carry 250 barrels of oil or more, irrespective of length overall.

This proposed regulation would impose a new requirement on tankers, offshore tank barges, and coastal tank barges to install deck-edge coamings within 3 years of the publication date of the final rule. It would also eliminate the currently available option for offshore and coastal tank barges that carry oil to choose between compliance with the tanker requirements in paragraph (a) of 33 CFR 155.310 or the barge requirements in paragraph (b) of the same section. The Coast Guard is not proposing that inland tank barges install deck-edge coamings. Inland tank barges that carry oil will continue to have the option to choose between compliance with the requirements in paragraph (a) or the requirements in paragraph (b) of 33 CFR 155.310.

On-Water Containment and Removal Equipment

The Committee discussed whether vessels should warehouse equipment on board for use by shore-based response personnel. Suggestions for the types of equipment to be warehoused included sorbents, booms, and skimmers.

The Committee considered the issues of stowage, maintenance, equipment compatibility, and the crew safety in determining if warehousing was appropriate or economically feasible. One advantage of carrying response equipment aboard the vessel is that the equipment is readily available in the event of a discharge. The Committee considered and rejected requirements for the vessel's crew to be deployed off the vessel or to use this equipment in on-water recovery. It is the Coast Guard's position that the crew's primary responsibilities are the safety of the vessel and containment of the cargo. Deploying crew members over the side of the vessel may jeopardize their safety and the safety of the vessel.

The Committee also considered the requirements for vessel response plans to determine whether response requirements could be better met with shore-based equipment or vessel-carried equipment. The Committee did not recommend that vessels warehouse equipment on board, but agreed to set on-scene planning criteria for on-water containment and removal of spilled oil. Vessel owners or operators could meet these planning criteria with carried equipment or rapid mobilization of shore-based equipment.

Consistent with the Committee's recommendation, the Coast Guard is not proposing warehousing equipment on board for responses to discharges off the ship. Although some vessel operators do carry removal equipment on board, the Coast Guard does not believe that requiring all vessels to warehouse oil spill response equipment is practical, economically feasible, or always compatible with the safe operation of the vessel.

Internal Cargo Transfer Capability

The Committee recommended that if the vessel's existing cargo piping system is designed to facilitate cargo transfer in the event of damage to the vessel or the piping system, the vessel should not be required to carry additional hoses or reducers. However, the Committee recommended that all other tankers, offshore tank barges, and coastal tank barges carry hoses and reducers to facilitate internal transfer of cargo. Requiring vessels to have equipment that is appropriate and readily available could facilitate containment of the cargo on the vessel.

Several Committee members indicated that requiring hoses and reducers on board should not have a significant economic impact on tanker owners or operators because most tankers already have protected or redundant piping systems. Finally, the Committee did not recommend that inland tank barges carry additional hoses and reducers. The proposed rule reflects the Committee recommendations.

Lightering Equipment

The Committee discussed the possibility of requiring tankers, offshore tank barges, and coastal tank barges to carry high-capacity, portable, submersible pumps to facilitate both lightering and salvage operations and the intraship transfer of cargo. The Committee recognized the value of these pumps in lightering, but also recognized that pumping equipment is often available from shore-based locations. Several Committee members expressed concern that requiring these pumps to be carried on board the vessel was not economically feasible. Further, the pumps may be incompatible with the safe operation of the vessel if the pumps are employed before adequate stability information is available.

The Committee agreed that, before using pumps to transfer liquid cargo, the vessel's crew must be able to assess damage and have access to the vessel's calculated damage stability and residual structural strength characteristics. Considering the time required to adequately assess damage and perform the necessary stability calculations, some members noted that the difference in availability of pumps carried on board and those brought from shore may not be significant.

The Committee members recommended that a vessel develop an emergency lightering plan to identify the availability and location of necessary lightering resources, including fenders, transfer hoses and connections, portable pumps, lightering and mooring masters, and vessel and barge brokers. Further, the Committee recommended that lightering equipment not be required aboard vessels, but be available from shore-based locations to meet regulatory guidelines.

The Committee recommended that requirements for lightering plans be addressed in a separate rulemaking on vessel response plans (CGD 91–034). The proposed rule on vessel response plans incorporates the Committee recommendations.

Spill Tracking Devices

The Committee agreed that it would be desirable for vessels to carry a simple, spill tracking device. The tracking device would be deployed by the vessel at the time of the discharge to facilitate location of the leading edge of the spill by first responders for 12–24 hours, even in darkness and adverse weather.

The Coast Guard Research and Development (R&D) Center has evaluated several buoy designs for tracking oil spills. However, most were designed for satellite tracking, used more sophisticated technology, and were powered for longer periods of time than was recommended by the Committee for this application.

The Committee recommended that, within two years of the date of the final rule, the R&D Center undertake and complete research, development, and evaluation of a suitable design for a simple spill tracking device. Some

Committee members suggested that the Coast Guard evaluation include, as one of the potential designs, a device with the following characteristics:

(1) A 4–6 meter vertical component with a one-foot diameter radar reflector.

(2) A strobe light was a 24 hour battery.

(3) A counterweight capable of maintaining the device in a vertical position.

(4) A float capable of supporting the entire assembly.

The Committee recommended that the Coast Guard consider using OPA 90 title VII funds to conduct this research, and that tankers and offshore tank barges carry a device that is approved by the Coast Guard no later than 3 years after the publication of the final rule.

Based on the Committee's recommendation, the Coast Guard R&D Center will reevaluate tracking devices and determine if a device with these characteristics would be suitable. If this evaluation identifies a suitable device, the Coast Guard may propose in a separate rulemaking that tankers and offshore tank barges carry the device.

The Coast Guard invites public comment on a reliable practical device to facilitate the location of the leading edge of an oil spill.

Damage Stability Information

The Committee recommended that an owner or operator of a tanker, offshore tank barge, or coastal tank barge have prearranged, prompt access to computerized on-board or shore-based damage stability and residual structural strength calculation programs. The Committee stressed the importance of requiring an owner or operator to maintain vessel strength and stability characteristics on file in the program. Damage stability information is important in developing an effective response when hull failure, groundings, or strandings occur. The Committee recommended that the means of access to this program be identified in the vessel response plan. The proposed rule incorporates these recommendations.

Emergency Towing Capability for Certain Tank Barges

The Committee recommended that offshore and coastal tank barges carry an emergency tow wire rigged and ready for use.

Coast Guard policy has been to distinguish between integrated tug-barges (ITBs) that are designed for push-mode and those designed for dual-mode operation (capable of being pushed or towed). Previously, the Coast Guard has regulated these two designs separately. The Coast Guard invites public comment on emergency towing package requirements for ITBs.

Emergency Towing Capability for Tankers

The Coast Guard issued Navigation and Inspection Circular (NVIC) No. 8–89 on January 8, 1990, endorsing International Maritime Organization (IMO) Resolution A.535(13), Recommendations on Emergency Towing Requirements for Tankers, dated November 17, 1983. NVIC No. 8–89 is an official recommendation. The NVIC has no regulatory authority and cannot be enforced. The salient points of the Resolution include applicability provisions, and provisions for towing system components and connecting fittings.

First, the Resolution recommends strongpoints, chafing chains, and fairleads at the bow and stern of a vessel. Second, it requires fittings to facilitate passing the towing pennant from the rescue vessel using the rescue vessel's power. The Resolution recommends installation of these emergency towing components on all tankers greater than 50,000 deadweight tons (dwt) built after adoption of the Resolution, and on tankers greater than 100,000 dwt built before adoption of the Resolution. It requires installation on tankers built before the date of adoption (November 17, 1983) at the first drydocking, but not later than five years after adoption.

Some Committee members strongly recommended that the Coast Guard adopt the provisions of IMO Resolution A.535(13) in the proposed regulations. Adopting these provisions as regulation would go beyond the existing NVIC and make compliance mandatory and enforceable. Proponents of this position argued that the Resolution is an international standard that was developed by the International Maritime Organization, of which the United States is a member. Therefore, any regulations derived from the Resolution would be more readily enforceable, particularly with respect to foreign flag tankers, than regulations imposed unilaterally by the United States without international consensus.

Other Committee members proposed alternative regulations that would require a towing arrangement similar to that installed on many Trans Alaska Pipeline System (TAPS)-trade tankers. The Committee could not achieve a consensus on minimum emergency towing requirements and was unable to recommend one option. As a result, the Committee developed two regulatory options and recommended that both be published for comment in the NPRM.

Under the first option (Option 1), the Committee recommended that the applicability of the IMO towing requirements be extended. The Committee recommended that all tankers between 20,000 dwt and 50,000 dwt be required to install a strongpoint, fairlead, and chafing chain on one end of the vessel. The Committee also recommended that all tankers 50,000 dwt or greater, irrespective of their construction date, be required to install strongpoints, fairleads, and chafing chains on both ends of the vessel.

Further under Option 1, the Committee discussed modifying the phase-in period for the IMO provisions, and recommended that all tankers of 20,000 dwt and greater be required to install the emergency towing arrangements within three years of the date of the final regulation.

Proponents of the alternative option felt that IMO Resolution A.535(13) was not sufficient to facilitate connection between the rescuing and the rescued vessel in adverse weather. Consequently, these members recommended a second regulatory option.

Option 2 combines features of the IMO-recommended towing package and the requirements included in the Prince William Sound Emergency Towing Package, as identified in the Prince William Sound Tanker Spill Prevention and Response Plan, Volume 2. Towing packages containing features of these two standards are currently installed on many Trans-Alaska Pipeline System (TAPS) trade tankers that transit Prince William Sound, Alaska.

Under Option 2, tankers of 20,000 dwt and above would be required to comply with the recommendations of IMO Resolution A.535(13) regarding the provisions for strongpoints, fairleads, and chafing chains. In addition, Option 2 would require that tankers have on one end a 400 foot long towing wire pendant; a 600 foot long, floating, polypropylene pickup line; and a floating pickup buoy. The towing wire pendant would be constructed of 2½ to 3 inch diameter, 6×37 to 6×41, extra-improved plow steel, IWRC (independent wire rope core), galvanized wire. This option would also require that vessels preconnect and store the chafing chain, pendant wire, and polypropylene line to facilitate the deployment of the pendant by no more than three crew members on a vessel with no power (deadship).

The proponents of Option 2 argued that requiring the tanker to provide a pendant wire and pickup line would facilitate the connection between the tanker and the rescue vessel.

particularly in adverse weather, and minimize the need for tanker crew to rig and deploy the towing arrangement. The proponents of Option 1 argued that the crew of a rescue vessel (typically a tug) would prefer to use the tug's main tow wire than rely on a tanker's emergency wire which the tug crew neither inspected nor maintained.

To reach consensus, proponents of Option 1 recommended that the Coast Guard, in conjunction with the international shipping and salvage community, promote the evaluation and design of an emergency towing package to facilitate a rescue vessel taking a tanker under tow with minimum involvement by the tanker crew in rigging and deploying the towing arrangement. These Committee members recommended that the evaluation consider maintenance, costs, and retrofitting requirements. Under this option, the Coast Guard would propose that the Maritime Safety Committee (MSC) of IMO consider within a 2 year period the design and evaluation of a towing package, which could then be recommended to the Assembly for adoption.

The proponents of the second option agreed that there should be an evaluation, but recommended that within 18 months, the Coast Guard complete a study to evaluate recommended components of the combined towing package and promulgate minimum standards. The regulation would set out minimum design and performance specifications for a system that would provide for storage and facilitate the deployment of an emergency towing arrangement on a vessel without power. The regulations would require installation of the emergency towing arrangement on at least one end of the vessel. The towing arrangement would include a chafing chain, pre-rigged or designed for deployment without the crew physically handling it.

The proponents of the second option made further recommendations. First, they recommended that the approved system be required on all new tankers of 20,000 dwt and above and on existing tankers of 50,000 dwt and above within three years of the date of the regulation establishing the standards (approximately 4 years after the publication of the final rule for this rulemaking). Second, they recommended that the Coast Guard, supported by the involved shipping and towing industry who participated in the evaluation, forward minimum specifications to the IMO and propose that the Assembly update and reissue IMO Resolution A.535(13) to include the regulations for pendant-wire carriage arrangements. Finally, option 2 proponents recommended grandfathering emergency towing arrangements that are already installed on vessels engaged in the TAPS trade. The Coast Guard interprets this to apply to arrangements that are consistent with the arrangements identified in the Prince William Sound Tanker Spill Prevention and Response Plan, Volume 2, so long as they were maintained on board the tanker.

The Coast Guard has included draft regulatory language that would implement Option 2 in § 155.235 and is proceeding with further study and evaluation of these requirements. Comments that will aid this study are solicited. Any recommendation resulting from the evaluation would be the subject of future rulemaking. It should be noted that the effective date for paragraph (b) under Option 2 would be established by this separate rulemaking.

The Committee recommended that existing single hull vessels scheduled to be taken out of service before age thirty (calculated from the keel laying date, as defined in 46 CFR 30.10–37), rather than comply with the requirements of IMO Draft Regulation 13G of Annex I of MARPOL 73/78, be exempt from requirements to install the emergency towing equipment for 5 years after the date of the final regulation, if they are 20 years old or older as of the publication date of the final rule. The Committee made this recommendation to eliminate the cost of upgrading vessels whose deactivation was planned.

There is no practicable regulatory means of exempting some 20 year old tankers, but not others, on the basis of an owner/operator's discretionary schedule to deactivate a tanker or continue it in service. Therefore, in § 155.235 of the proposed rule, five-year phase-in periods are proposed for all tankers 20 year old or older as of the date the final rule is published. The Coast Guard requests comments on this provision because older vessels which benefit from this lengthened phase-in period probably pose a similar risk to the environment, and may pose a greater risk, than newer tankers whose proposed phase-in period is 3 years.

The Committee recommended that the Coast Guard publish both alternatives in the notice of proposed rulemaking. Section 155.235 of the proposed rule incorporates this recommendation, and presents both options for public comment.

Incorporation by Reference

The following material would be incorporated by reference in § 155.140: IMO Resolution A.535(13), Recommendations on Emergency Towing Arrangements for Tankers, dated November 17, 1983. Copies of the material are available for inspection where indicated under "**ADDRESSES.**" Copies of the material are available at the addresses in § 155.140.

Regulatory Evaluation

This proposal is not major under Executive Order 12291. This proposed regulation is significant under the Department of Transportation Regulatory Policies and Procedures (44 FR 11040; February 26, 1979) because of substantial public interest in the proposed rule. A draft Regulatory Evaluation is available in the docket for inspection or copying where indicated under "**ADDRESSES.**"

The Coast Guard does not expect this proposal to impose substantial new costs on tanker owners and operators for acquiring discharge-removal equipment to carry on board. The proposed equipment for containing and removing on-deck spills includes deck-edge coamings, athwartship barriers, sorbents, hand scoops, mops, buckets, and small portable pumps. Tankers already are in substantial compliance with the proposed requirements for on-board equipment. For owners or operators of offshore and coastal barges, the annualized costs of on-board spill response equipment is approximately $0.01 million; and for owners and operators of inland barges, $0.09 million. (Under the proposed rule, inland tank barges are not required to install deck-edge coamings.) The annualized costs of this equipment for vessels carrying oil in bulk as secondary cargo will amount to $0.5 million. The present value costs of the discharge removal equipment for the period 1993–2015 is $0.12 million for coastal and offshore barges, $.838 million for inland barges, and $4.45 million for secondary cargo carriers.

Proposed requirements for source control equipment (hoses) will impose an annualized cost of $7.37 million on tankers and $.72 million on offshore and coastal barges. The present value costs for source control are $73.66 million for tankers and $7.19 million for coastal and offshore barges.

Annual costs of the damage stability and structural strength calculation programs will be approximately $0.69 million for tankers and $0.09 million for offshore and coastal barges. The present value costs of the damage stability calculation programs are $5.8 million for tankers and $1 million for coastal and offshore barges.

The Coast Guard projects that the annualized cost of equipping tankers with an emergency towing package will be about $6.66 million. The annualized cost of equipping offshore and coastal tank barges will be about $1.84 million. The present value cost of the towing equipment is $62.85 million for tankers and $18 million for coastal and offshore barges.

The total annualized costs of this proposed regulation are $17.97 million, which amount to a per barrel cost of $0.003 to consumers. The total present value cost of the proposed rule is $142.43 million for tankers, $.838 million for inland barges, $26.31 million for coastal and offshore barges, and $4.45 million for secondary cargo carriers. The total present value cost for the proposed rule is $174.028 million. Therefore, this proposal will not result in annual costs of $100 million or more; will have no significant adverse effects on competition, employment, or other aspects of the economy; and will not result in a major increase in costs and prices.

The major benefit of the proposed rule is that it will reduce the risk of oil spills, improve vessel oil spill response capabilities, and mitigate oil spill damage to the environment by helping to ensure that on-deck spills will be contained on the vessel and removed quickly. Further, the proposed emergency towing package requirements will minimize the risk of a spill from a disabled or drifting vessel. Monetary benefits cannot be calculated for an emergency towing package. The benefit is the satisfaction of an international resolution and the ability to quickly and safely rig a tow for a stricken or disabled vessel and, thereby, prevent some of the problems that precipitated the breakup of the AMOCO CADIZ.

The Coast Guard estimates that the proposed requirements for equipment to contain on-deck spills will prevent 477.7 barrels of oil from spilling into the marine environment of the U.S. from 1992 to 2015. This amount includes 12.2 barrels for oceangoing and coastal barges, 21.6 barrels for inland barges, and 443.9 barrels for secondary carriers. The requirements for source control equipment for tank vessels will prevent 2,082 barrels of oil from spilling. The total amount of oil prevented from spilling is estimated to be 2,559.7 barrels over the 23 year period. To compare the costs and benefits of the proposed rule over the next twenty-three years in terms of cost per barrel prevented from spilling, we have discounted the number of barrels that would not be spilled.

It is estimated that the requirements for equipment to contain on-deck spills will prevent 158.67 discounted barrels of oil from spilling, using a 10% discount rate. This estimate includes 1 barrel for oceangoing and coastal barges, 1.77 barrels for inland barges, and 155.9 barrels for secondary carriers. The requirements for source control equipment are estimated to prevent 754 discounted barrels of oil from spilling. The total discounted barrels prevented from spilling over the twenty-three year period is 912.67. Based on the discount rate, we calculate the present value cost per barrel prevented from spilling to be $190,680.

One alternative to the proposed rule is requiring inland tank barges to install deck-edge coamings. The annualized costs of this provision would have been $1.54 million, with a present value cost of $17.66. The Coast Guard rejected this alternative because coamings on inland barges pose safety problems during barge operations and may be costly for older barges with external frames.

A second alternative is to require warehoused equipment on board tank vessels. The present value cost of this requirement would be $666 million over the period 1993–2015. Although some vessel operators do carry removal equipment on board, the Coast Guard rejected this alternative because requiring all vessels to warehouse oil spill response equipment is not practical, economically feasible, or always compatible with the safe operation of the vessel. At the recommendation of the Committee, the Coast Guard decided to propose strict response requirements and allow the vessel owner or operator to decide how best to meet these requirements with warehoused or shore-based equipment. The proposed rules do not preclude the vessel owner or operator from deciding what equipment should be carried on board.

Finally, the Coast Guard considered requiring pumps on board tankships to facilitate lightering and salvage operations and the intraship transfer of cargo. The annualized cost of the pump requirement would be $41.53 million, and the net present value cost for the period 1993–2015 would be $288.69 million. The Coast Guard rejected this alternative because pumps may be incompatible with the safe operation of the vessel. The Coast Guard recognizes the value of these pumps in lightering, but also recognizes that pumping equipment is often available from shore-based locations. Considering the time required to adequately assess damage and perform the necessary stability calculations, the difference in availability of pumps carried on board and those brought from shore may not be significant.

Small Entities

Under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), the Coast Guard must consider whether this proposal will have a significant economic impact on a substantial number of small entities. "Small entities" include independently owned and operated small businesses that are not dominant in their field and that otherwise qualify as "small business concerns" under section 3 of the Small Business Act (15 U.S.C. 632). "Small entities" also includes small, not-for-profit organizations and small governmental jurisdictions.

Most of the small businesses in the marine transportation industry are inland barges and vessels which carry oil in bulk as secondary cargo. This rule imposes costs of less than $0.1 million annually for inland barges and approximately $500,000 annually for secondary vessel industries, with annual costs per company of less than $250 for inland barge companies and less than $1,000 for secondary vessel companies. For barge and secondary vessel owners and operators, the Coast Guard expects the cost burden for equipment to be considerably less than the costs for tankers. Ninety-six percent or $17.38 million of the total annualized costs will be paid by the tanker industry.

The Coast Guard certifies under 5 U.S.C. 605(b) that this proposal, if adopted, will not have a significant economic impact on a substantial number of small entities. If, however, you think that your business qualifies as a small entity and that this proposal will have a significant economic impact on your business, please submit a comment (see "**ADDRESSES**") explaining why you think your business qualifies and in what way and to what degree this proposal, alone or in combination with other Coast Guard rulemaking initiatives under OPA 90, will economically affect your business.

Collection of Information

Under the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), the Office of Management and Budget (OMB) reviews each proposed regulation that contains a collection of information requirement to determine whether the practical value of the information is worth the burden imposed by its collection. Collection of information requirements include reporting, recordkeeping, notification, and other similar requirements. The proposed rule contains no new collection of information requirement.

Federalism

The Coast Guard has analyzed this proposed rule under the principals and criteria contained in Executive Order 12612, Federalism, and has determined that this proposal does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment. This proposed rule would establish regulations requiring certain vessels to carry discharge removal equipment. In *Ray* v. *Atlantic Richfield*, [435 U.S. 51, 98 S.Ct. 988, [1978]), the Supreme Court found that vessel design and equipment standards fall within the exclusive province of the Federal Government. The OPA 90 Conference Report explicitly says that provisions in section 1018 of OPA 90 preserving certain State authority are not meant to disturb this Supreme Court decision (House Conf. Rep., p. 122). Therefore, the Coast Guard intends this final rule to preempt State action addressing the same subject matter.

Environmental Impact

The Coast Guard has prepared a preliminary Environmental Assessment (EA) for this action under the Council on Environmental Quality regulations (40 CFR parts 1500–1800), and Coast Guard policy (COMDTINST M16475.1B) implementing the National Environmental Policy Act (NEPA). The EA discusses the environmental consequences of the proposed action and alternatives, including a no-action alternative. The preliminary EA is available in the docket. After receipt of all comments to this proposed rulemaking action and comments to the EA, the Coast Guard will make a final decision whether to draft an Environmental Impact Statement (EIS).

List of Subjects in 33 CFR Part 155

Hazardous substances, Incorporation by reference, Oil pollution, Reporting and recordkeeping requirements.

For the reasons set out in the preamble, the Coast Guard proposes to amend 33 CFR part 155 as follows:

PART 155—OIL OR HAZARDOUS MATERIAL POLLUTION PREVENTION REGULATIONS FOR VESSELS

1. The authority citation for part 155 is revised to read as follows:

Authority: 33 U.S.C. 1231, 1321(j)(1)(C), (j)(5), and (j)(6); sec. 2, E.O. 12777, 56 FR 54757; 49 CFR 1.46. Sections 155.100 through 155.130, 155.350 through 155.400, 155.430, 155.440, and 155.470 also issued under 33 U.S.C. 1903(b), and sections 155.830 and 155.880 issued under 33 U.S.C. 2735.

Supart A—[Amended]

2. Section 155.140 is added to subpart A to read as follows:

§ 155.140 Incorporation by reference.

(a) Certain material is incorporated by reference in this part with the approval of the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. To enforce any edition other than that specified in paragraph (b) of this section, the Coast Guard must publish a notice of change in the **Federal Register** and the materials must be available to the public. All approved material is on file at the Office of the Federal Register, 800 North Capitol Street NW., Washington, DC, 20002 and at the U.S. Coast Guard, Marine Environmental Protection Division (G–MEP), 2100 Second Street SW., Washington, DC 20593–0001, and is available from the sources indicated in paragraph (b) of this section.

(b) The material approved for incorporation by reference in this part and the sections affected are:

International Maritime Organization (IMO)

Publications Section, 4 Albert Embankment, London SE1 75R, United Kingdom, Telex 23588

Resolution A.535(13), Recommendations on Emergency Towing Requirements for Tankers, November 17, 1983 ..... 155.235

3. The table of contents for subpart B is amended by adding entries for §§ 155.200 through 155.240 and revising the entry for § 155.310 to read as follows:

Subpart B—Vessel Equipment

* * * * *

4. Sections 155.200 through 155.240 are added to subpart B to read as follows:

§ 155.200 Definitions.

As used in this subpart:

Coastal tank barge means a tank barge, including dual-mode integrated tug-barges, certificated under 46 CFR chapter I, subchapter D, for coastwise service.

Inland tank barge means a tank barge certificated under 46 CFR chapter I, subchapter D, for river service or lakes, bays, and sounds service.

Offshore tank barge means a tank barge, including dual-mode integrated tug-barges, certificated under 46 CFR Chapter I, subchapter D, for ocean service or Great Lakes service, or any foreign flag tank barge.

Tanker means a self-propelled vessel, including push-mode integrated tug-barges, with the principle purpose of carrying oil in bulk as cargo and that has a Certificate of Inspection issued under 46 CFR chapter I, subchapter D, a Certificate of Compliance, or a Tank Vessel Examination letter.

Vessel carrying oil as secondary cargo means a vessel carrying oil pursuant to a permit under 46 CFR 30.01–5, 46 CFR 70.05–30, or 46 CFR 90.05–35 or pursuant to an International Oil Pollution Prevention (IOPP) or Noxious Liquid Substance (NLS) certificate required by §§ 151.33 or 151.35 of this chapter; or any uninspected vessel that carries oil in bulk as cargo.

§ 155.205 Discharge-removal equipment for vessels 400 feet or greater in length.

(a) Tankers, offshore tank barges, and coastal tank barges with an overall length of 400 feet or more must carry appropriate equipment and supplies for the containment and removal of on-deck oil cargo spills of at least 12 barrels.

(b) The equipment and supplies must include—

(1) Sorbents;

(2) Non-sparking hand scoops, shovels, and buckets;

(3) Containers suitable for holding recovered waste;

(4) Emulsifiers for deck cleaning;

(5) Protective clothing; and

(6) Non-sparking portable pumps and hoses.

(c) During cargo transfer operations, the equipment and supplies must remain ready, and pumps and hoses must be rigged, for immediate use.

§ 155.210 Discharge-removal equipment for vessels less than 400 feet in length.

(a) Tankers, offshore tank barges, and coastal tank barges with an overall length of less than 400 feet must carry appropriate equipment and supplies for the containment and removal of on-deck oil cargo spills of at least 7 barrels.

(b) The equipment and supplies must include—

(1) Sorbents;

(2) Non-sparking hand scoops, shovels, and buckets;

(3) Containers suitable for holding recovered waste;

(4) Emulsifiers for deck cleaning;

(5) Protective clothing; and

(6) Non-sparking portable pumps and hoses.

(c) During cargo transfer operations, the equipment and supplies must remain ready, and pumps and hoses must be rigged, for immediate use.

§ 155.215 Discharge-removal equipment for inland tank barges.

(a) During cargo transfer operations, inland tank barges must have appropriate equipment and supplies ready for immediate use to control and remove on-deck oil cargo spills of at least one barrel.

(b) The equipment and supplies must include—

(1) Sorbents;

(2) Non-sparking hand scoops, shovels, and buckets;

(3) Containers suitable for holding recovered waste;

(4) Emulsifiers for deck cleaning;

(5) Protective clothing; and

(c) The tank barge owner or operator may rely on facility-provided equipment if the equipment availability has been pre-arranged by contract or other means approved by the Coast Guard.

§ 155.220 Discharge-removal equipment for vessels carrying oil as secondary cargo.

(a) Vessels carrying oil as secondary cargo must carry appropriate equipment and supplies for the containment and removal of on-deck oil cargo spills of at least one-half barrel.

(b) The equipment and supplies must include—

(1) Sorbents;

(2) Non-sparking hand scoops, shovels, and buckets;

(3) Containers suitable for holding recovered waste;

(4) Emulsifiers for deck cleaning;

(5) Protective clothing.

(c) The equipment and supplies must be ready for immediate use during cargo transfer operations.

§ 155.225 Internal cargo transfer capability.

Tankers, offshore tank barges, and coastal tank barges must carry suitable hoses and reducers for internal transfer of cargo to tanks or other spaces within the cargo block, unless the vessel's installed cargo piping system is capable of performing this function.

§ 155.230 Emergency towing capability for tank barges.

(a) Offshore and coastal tank barges must carry an emergency tow wire or tow line rigged and ready for use.

(b) The emergency tow wire or tow line must have the same towing characteristics as the primary tow wire or tow line.

§ 155.235 Emergency towing capability for tankers.

OPTION 1 FOR § 155.235

(a) Except as provided in paragraph (c) of this section, by [*Insert date 3 years after the effective date of the final rule.*], all tankers of 20,000 deadweight tons (dwt) or more but less than 50,000 dwt must comply with the emergency towing provisions of sections 2.2 through 2.7 of IMO Resolution A.535(13) on at least one end of the vessel.

(b) Except as provided in paragraph (c) of this section, by [*Insert date 3 years after the effective date of the final rule.*], all tankers of 50,000 dwt or more must comply with the emergency towing provisions of sections 2.2 through 2.7 of IMO Resolution A.535(13) on both ends of the vessel.

(c) Tankers that are at least 20 years old (calculated from the keel laying date, as defined in 46 CFR 30.10–37) as of [*Insert the effective date of the final rule.*] must comply with the requirements of paragraphs (a) and (b) of this section by [*Insert date 5 years from the effective date of the final rule.*].

OPTION 2 FOR § 155.235

(a) By [*Insert date 3 years after the effective date of the final rule.*], all tankers of 20,000 deadweight tons (dwt) or more must comply with the emergency towing provisions of sections 2.2 through 2.7 of IMO Resolution A.535(13) on both ends of the vessel.

(b) All tankers of 20,000 dwt or more, constructed after [*Insert the effective date of the final rule.*], must be fitted on at least one end of the vessel with—

(1) A 400 foot long towing wire pendant constructed of 2½ to 3 inch diameter, 6×37 to 6×41, extra-improved plow steel, IWRC, galvanized wire;

(2) A 600 foot long, floating, polypropylene pickup line; and

(3) A floating pickup buoy.

(c) The equipment required in paragraph (b) of this section must be preconnected and stored in a manner that will facilitate the deployment of the pendant on a vessel with no power (deadship) by no more than three crew members.

(d) Tankers of 50,000 dwt or more, delivered before [*Insert the effective date of the final rule.*], must comply with the provisions of paragraph (b) of this section by [*Insert date 3 years after the effective date of the final rule.*].

(e) Tankers engaged in the Trans-Alaska Pipeline System (TAPS) trade and fitted with the emergency towing package described in paragraph (b) of this section as of [*Insert the effective date of the final rule.*] are exempted from the requirements in paragraphs (a) and (c) of this section as long as the emergency towing package is maintained on board the tanker.

(f) Tankers that are at least 20 years old (calculated from the keel laying date, as defined in 46 CFR 30.10–37 as of [*Insert the effective date of the final rule.*] must comply with the requirements of paragraphs (a) through (d) of this section by [*Insert date five years from the effective date of the final rule.*].

§ 155.240 Damage stability information.

(a) Owners or operators of tankers, offshore tank barges, and coastal tank barges shall ensure that their vessels have prearranged, prompt access to computerized onboard or shore-based damage stability and residual structural strength calculation programs.

(b) Vessel baseline strength and stability characteristics must be pre-entered into such programs and be consistent with the vessel's existing configuration.

(c) Access to the calculation program must be available 24 hours a day.

(d) The means of access to the calculation program must be identified in the vessel response plan required in subpart D of this part.

5. In § 155.310, the section heading and paragraph (b) introductory text are revised and paragraphs (c) and (d) are added to read as follows:

§ 155.310 Containment of oil and hazardous material cargo discharges.

* * * * *

(b) An offshore or coastal tank barge with a capacity of 250 or more barrels that is carrying hazardous material as cargo, and an inland barge with the capacity of 250 or more barrels that is carrying oil or a hazardous material as cargo must meet paragraph (a) of this section or be equipped with—

* * * * * *

(c) In addition to the requirements of paragraphs (a) and (b) of this section, by [*Insert date 3 years after the effective date of the final rule.*], all tankers and offshore and coastal tank barges with a capacity of 250 or more barrels that are carrying oil as cargo must have peripheral coamings, including port and starboard deck-edge coamings and

forward and aft athwarships coamings, completely enclosing the cargo deck area, cargo hatches, manifolds, transfer connections, and any other openings where cargo may overflow or leak.

(1) Coamings must be at least 4 inches high except in the aft corners.

(2) In the aft corners (port and starboard) of a vessel, the coamings must be at least 8 inches high and extend—

(i) Forward at least 14 feet from each corner; and

(ii) Inboard at least 8 feet from each corner.

(3) Each area enclosed by the coaming required under this paragraphs must have—

(i) A means of draining or removing oil from the enclosed deck area without discharging oil into the water; and

(ii) A mechanical means of closing each drain and scupper in the enclosed deck-area.

(4) For tankships, as "tankship" is defined in 46 CFR 30.10–67, the coaming or other barrier required in 46 CFR 32.56–15 may serve as the aft athwarships coaming if the tankship is otherwise in compliance with the requirements of this paragraph(s).

(d) In addition to the requirements of paragraphs (a) and (b) of this section, an offshore or coastal tank barge, as defined in § 155.200, with a capacity of 250 or more barrels that is carrying oil as cargo must have—

(1) A fixed or portable container under each oil loading manifold and each oil transfer connection within the coaming, that holds at least one-half barrel;

(2) A mechanical means of closing each drain and scupper within the coaming; and

(3) A means of draining or removing discharged oil from the fixed or portable container and from within the coamings without discharging the oil into the water.

Dated: September 23, 1992.

J.W. Kime,

Admiral, U.S. Coast Guard, Commandant.

[FR Doc. 92–23562 Filed 9–28–92; 8:45 am]

BILLING CODE 4910–14–M

federal register

Tuesday
September 29, 1992

Part VI

Department of Transportation

Federal Aviation Administration

14 CFR Part 121

Aircraft and Proposed Advisory Circular on Ground Deicing and Anti-Icing Program; Interim Final Rule and Notice

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 121

[Docket No. 26930; Amendment No. 121-231]

RIN 212-AE51

Aircraft Ground Deicing and Anti-Icing Program

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Interim final rule; request for comments.

SUMMARY: This amendment establishes a requirement for part 121 certificate holders to develop an FAA-approved ground deicing/anti-icing program.

This rule is necessary because several accidents and the 1992 International Conference on Airplane Ground Deicing indicate that, under present procedures, the pilot in command may be unable to effectively determine whether the aircraft's critical surfaces are free of all frost, ice, or snow prior to attempting a takeoff.

The rule is intended to provide an added level of safety to flight operations in adverse weather conditions. This rule and associated airport and air traffic control procedures will provide enhanced procedures for safe takeoffs during adverse weather conditions.

DATES: This interim final rule is effective November 1, 1992. Additional comments must be received not later than April 15, 1993.

ADDRESSES: Comments on this interim final rule should be mailed, in triplicate, to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-10), Docket No. 26930, 800 Independence Ave., SW., Washington, DC 20591. Comments delivered must be marked Docket No. 26930. Comments may be examined in room 915G weekdays between 8:30 a.m. and 5 p.m., except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Larry Youngblut, Flight Standards Service, Regulations Branch, AFS-240, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591, telephone (202) 267-3755.

SUPPLEMENTARY INFORMATION:

Background

On July 23, 1992 (47 FR 32846) the FAA published a Notice of Proposed Rulemaking that would establish requirements for part 121 certificate holders to develop and comply with an FAA-approved ground deicing/anti-icing program. The proposed rule was developed in response to a number of airplane accidents caused in part by icing and to recommendations from an international conference on deicing/anti-icing that considered measures that could be taken to prevent such accidents.

Section 121.629(a) of the Federal Aviation Regulations (14 CFR 121.629(a)) states, in pertinent part, that no person may dispatch or release an aircraft when, in the opinion of the pilot in command or aircraft dispatcher, icing conditions are expected or met that might adversely affect the safety of flight. Section 121.629(b) states, in pertinent part, that no person may take off an aircraft when frost, ice, or snow is adhering to the wings, control surfaces, or propellers of the aircraft. These requirements, which have been virtually unchanged for over 40 years, are based on what is commonly referred to as the "clean aircraft concept." The basis of this concept is that the presence of even minute amounts of frost, ice, or snow (referred to as "contamintion") on particular aircraft surfaces, can cause degradation of aircraft performance and changes in aircraft flight characteristics.

Under the Federal Aviation Regulations, in icing conditions, as in all other conditions, ultimate responsibility for determining whether the aircraft is free of contamination—which is necessary for the aircraft to be airworthy—resets with the pilot in command. When conditions conducive to the formation of frost, ice, or snow or aircraft surfaces exist at the time of takeoff, or it is suspected that these contaminants are adhering to aircraft surfaces, common practice developed by the North American and European aviation communities over many years of operational experience is to deice and/or anti-ice the aircraft before takeoff.

Deicing is a procedure by which frost, ice, or snow is removed from the aircraft in order to provide clean surfaces. Anti-icing is a precautionary procedure which provides protection against the formation of frost or ice and accumulation of snow to treated surfaces of the aircraft for a limited period of time. Two principal types of deicing/anti-icing fluids are used. Type I fluids are unthickened fluids that are normally applied as a mixture of glycol and water. These fluids mainly provide protection against refreezing when no delays or only short delays occur between deicing and takeoff. Type II fluids are thickened fluids. They provide protection against refreezing for longer periods and can be used when longer delays can be anticipated. Type II fluid is used extensively in Canada and Europe, but is used less often in the United States. Type II fluid provides longer holdover times. Holdover time is the estimated time deicing/anti-icing fluid will prevent the formation of frost or ice and the accumulation of snow on the protected surfaces of an aircraft.

According to the National Transportation Safety Board (NTSB), in the last 23 years there have been 15 accidents related to the failure to deice aircraft adequately before takeoff. In all of these accidents, contamination on the aircraft surfaces during takeoff was the cause or a contributing cause of the accident. On March 22, 1992, USAir flight 405 crashed on takeoff from La Guardia Airport in a snowstorm during nighttime operations. While the NTSB has not yet issued a probable cause finding for this accident, the FAA has proceeded on the assumption that the accident was caused, at least in part, by icing. The airplane had been deiced approximately 35 minutes before takeoff.

As a result of this and earlier accidents, the FAA mounted a sharply focused effort to address the issues surrounding ground deicing before the winter of 1992/1993. On May 28 and 29, 1992, the FAA held the International Conference on Airplane Ground Deicing in Reston, Virginia. The conference brought together leading experts from all over the world to share information on ground deicing/anti-icing of transport category airplanes and to recommend actions for preventing accidents caused by icing, and for continuing improvement of flight safety under adverse weather conditions.

The two-day conference was attended by representatives from air carriers and air carrier associations, crewmember associations, manufacturers and manufacturing associations, airport operators, and air traffic controllers and other FAA personnel, as well as by scientific experts on weather, deicing fluids, and deicing equipment. Over 800 people attended the conference. Areas covered by working groups at the conference were aircraft design; ground deicing and anti-icing systems; air traffic control and sequencing; deicing personnel, procedures, and training; and ice detection, recognition, and crew training.

Two major recommendations, which support this rulemaking, made by the working groups are: (1) Critical aircraft surfaces must be kept free of frost, ice, and snow; and (2) Each air carrier should have an approved aircraft deicing program that will ensure full

compliance with the clean aircraft concept. The program should include ground deicing procedures, a comprehensive training program for flight crewmembers, holdover timetables to be used as guidelines, and criteria for determining if a pretakeoff check after deicing is needed.

The FAA based the proposed rule on these recommendations and accident history. As proposed, the rule would require part 121 certificate holders to develop and comply with an FAA-approved ground deicing/anti-icing program that includes procedures that must be followed whenever ground conditions exist that might result in frost, ice, or snow adhering to the aircraft surfaces, unless it uses the alternate check procedures described below under "Implementation of Program." The program is intended to provide the pilot in command with more complete information, training procedures, and ground support, which he or she needs for deciding if takeoff can be safely accomplished. Each program would include a detailed description of how the certificate holder determines that ground deicing/anti-icing procedures must be in effect, who is responsible for deciding that such procedures must be in effect, the operational procedures for implementing ground deicing, and the specific duties and responsibilities of each operational position or group responsible for getting the aircraft safely airborne while such procedures are in effect.

To be approved, each ground deicing/anti-icing program would have to cover at least the following areas:

(1) Ground training and testing requirements for all flight crewmembers and qualification requirements for all other personnel the certificate holder uses in implementing the approved ground deicing/anti-icing program.

(2) Procedures for the use of holdover times.

(3) Deicing/anti-icing and accompanying checking procedures.

Differences between the proposed rule and the final rule involve pretakeoff check requirements, short term training and qualification/testing requirements, implementation plans, use of holdover timetables, definitional changes, and flight with underwing frost under certain conditions. These changes are discussed in the "Discussion of Comments" section of this preamble.

This rule, when implemented, will ensure that the FAA and part 121 certificate holders have taken every practical step possible to improve safety in icing conditions before the 1992/1993 winter season. In this regard, the FAA is aware that part 121 certificate holders have already, under the leadership of the ATA, taken steps to develop a standard model industry training program that would meet the goals of this rulemaking.

NTSB Recommendations

As a result of accident investigations, the NTSB has issued 30 safety recommendations that address issues involving aircraft ground icing and deicing.

These recommendations cover such subjects as informing operators about the characteristics of deicing/anti-icing fluids; informing flight crews about ice formation after deicing; reviewing information that air carrier operators provide to flight crews on runway contamination and engine anti-ice during ground operations; requiring flight crew checks before takeoff if takeoff is delayed following deicing; emphasizing to air carrier maintenance departments the importance of maintaining ground support equipment; and requiring air carrier training programs to cover the effect of wing leading edge contamination on aerodynamic performance.

This final rule as well as previous FAA actions address these recommendations. Previous actions included dissemination of advisory circulars, bulletins, memoranda, informative articles, and notices related to winter operations, as well as publishing Air Carrier Operations Bulletins, Maintenance Bulletins, and Maintenance Action Notices. These materials were intended to impress upon operators the dangers of aircraft wing and control surface contamination and the need to assist the pilot in determining if the aircraft is free of contamination before takeoff.

Long-Term FAA Actions

The problem of airplane ground deicing/anti-icing is much broader than just the issue of the last-minute decision of a pilot in command on whether to attempt a takeoff. Airport and air traffic control procedures, airplane design, pilot awareness training, airplane performance characteristics, and other factors have been considered in NTSB recommendations, and many of them were addressed at the Reston conference. The FAA and the aviation industry are continuing their efforts to address these and other related issues. Efforts in some areas, such as airport and air traffic control procedures, are already underway and will continue during this rulemaking. Other issues, such as the effects of airplane design and their interaction with wing contamination and pilot flying technique, for example, require research. The potential value of aircraft type specific pilot training on procedures for use during ground icing conditions will also be studied, either by the FAA alone or as joint government/industry projects. Many aspects of aircraft design, performance characteristics, handling qualities, and flying technique must be examined along with their interactions, in order to fully understand why the accident history appears to reflect an imbalance among accident rates experienced by different aircraft designs.

Discussion of Comments

Additional Comment Period

A number of commenters object to the 15-day comment period and the rush to place this rule in effect before the 1992–1993 winter season. As discussed elsewhere in this preamble and as was discussed in the NPRM, the FAA has determined that it is in the interest of aviation safety to establish additional ground deicing/anti-icing rules before this winter. The International Conference on Airplane Ground Deicing in general supports the FAA's decision. Nevertheless, the FAA recognizes that less than four months have elapsed between the International Conference and this final rule and that the general public had only 15 days to comment on the NPRM. Therefore, the FAA has determined that it is in the public interest to make this an interim final rule and provide an additional comment period to obtain comments on the actual implementation of this rule this winter. All comments received before April 15, 1993 will be carefully considered. If warranted, the FAA will make changes to the rule before the next winter season.

Comments should identify the regulatory docket number to the Rules Docket address specified above. Commenters wishing the FAA to acknowledge receipt of their comments must include a preaddressed, stamped postcard on which the following statement is made: "Comments to Docket No. 26930." The postcard will be date stamped and mailed to the commenter.

General

Over 40 comments were submitted by associations representing airlines, pilots, and dispatchers and by parts 121 and 135 certificate holders, the NTSB, and other interested individuals. While most of the commenters generally favor FAA action to improve aviation safety in potential icing conditions, virtually all of

the commenters make recommendations in specific areas, and a number of commenters express concern that the FAA's short timetable could lead to less than the most effective regulatory action. As indicated, several commenters asked that the comment period be extended. The FAA has carefully considered all of the comments received and has modified the proposal in some instances. A full discussion of comments and FAA responses follows.

Applicability and Justification

Several commenters questioned the applicability of the proposed rule to part 121 certificate holders. A number of commenters (including the National Transportation Safety Board) state that the proposed requirements should also apply to operations under parts 125 and 135. These commenters state that icing conditions apply equally to smaller aircraft and larger aircraft, and that there should be no difference in the level of safety required. One commenter states that since all aircraft are required to comply with the clean aircraft concept, the required deicing program should apply to operations under parts 91, 125, and 135. Several commenters stated that the supporting data cited by the FAA justifies the proposed rule's applicability to turbojet aircraft but not to turbopropeller aircraft, and one commenter states that most jet or turbine powered aircraft have operated safely under current rules and recommends that the proposed rule should only address specific aircraft types that have a history of icing related problems. A few commenters suggest that the proposed rule is an overreaction by FAA, since the accidents cited in the supporting data can be explained and distinguished in a way that could lead the FAA to conclude that better monitoring of compliance with existing regulations would address any problems that exist.

Several commenters state that it is unfair to U.S. carriers for the proposed rule not to apply to foreign air carriers. One foreign air carrier states that it and other foreign operators that use Type II fluids could be adversely affected, apparently on the assumption that its takeoff could be delayed to allow the takeoff of a U.S. aircraft that must take off within five minutes after the aircraft has been determined to be free of frost, ice, and snow (see § 121.629 (c)(4) and (d)).

FAA Response

The intent of this interim final rule is to put in place before this winter a rule to improve safety during icing conditions. The FAA determined that limiting the rule's application to operations under part 121 would have the most far-reaching impact. The FAA will continue to study part 125 and 135 operations to determine if future rulemaking is required. Although most icing related accidents have involved turbojet aircraft, the FAA believes part 121 turbopropeller aircraft should be included in this rule since the very real potential for problems in icing conditions exists and there does not appear to be any technical reason for saying that turbopropeller aircraft are immune from wing contamination related icing accidents. The FAA believes, as stated in the preamble to the proposed rule, that this rule is needed based on the accidents discussed and on the recommendations of the Reston Conference described previously in this preamble. These recommendations were not limited to specific aircraft types.

As to the comments that part 129 foreign air carriers will have an unfair advantage, while the FAA does not believe that foreign air carriers will have any significant competitive advantage, the FAA, as stated in the NPRM, will request that the ICAO initiate a review of deicing and anti-icing procedures used by all air carriers. The FAA will continue to work aggressively with other nations' civil aviation authorities to learn from their safety regulatory experiences and to share those of the U.S. so that we all may develop and adopt the most effective and efficient regulations to improve the safety of all aircraft during icing conditions.

The FAA does not envision a situation in which a foreign operator would be adversely affected by a U.S. operator who is subject to this rule because, in the circumstances described above, normal air traffic control procedures would be observed.

In any case, the FAA solicits continued information from anyone who sees specific instances in which a competitive advantage has been obtained by any air carrier as a result of the application of this rule. The competitive effect of the FAA's rules is an important consideration, and, if there is an adverse result on competition, the FAA would consider amendments that do not degrade the overall level of safety achieved by this rule.

Note on Terminology Change

(1) The notice of proposed rulemaking provided alternative conditions for taking off after expiration of a holdover time. One condition was that a takeoff could occur after a "pretakeoff inspection" determines that the aircraft is clean. This procedure is more properly called a "check," since airworthiness related "inspections" are usually performed by certified mechanics, and this procedure will in most instances be performed by the flight crew. Therefore, throughout this document the term "pretakeoff contamination check" is used, even when referring to the NPRM.

(2) The notice of proposed rulemaking in proposed § 121.629(d) provided an alternative procedure for certificate holders that do not have an approved anti-icing/deicing program. Throughout this document the paragraph (d) procedure is referred to as an "outside-the-aircraft check."

In addition, this document uses two terms "aircraft deicing/anti-icing procedure" and "pretakeoff check", which were not used in the NPRM. These terms are discussed and explained later in this section of the preamble.

The Use of Holdover Times

Over half of the commenters to the NPRM address the issue of the use of holdover times. The majority of these comments concern the following issues: (1) appropriateness of holdover times being specific either to a certificate holder or to an aircraft type; (2) use of holdover times as mandatory rather than as guidelines; (3) determining or changing holdover times.

General Discussion of Holdover Times

This rule requires certificate holders to develop holdover times with data acceptable to the Administrator. The only holdover time date currently readily available to the industry and acceptable to the FAA is that developed by the Society of Automotive Engineers (SAE) and the International Organization for Standardization (ISO). Certificate holders may develop other tables; however, certificate holders should be aware that the FAA may need considerable time to verify the acceptability of newly developed tables.

Holdover times developed by the SAE/ISO have been compiled into tables that are specific to fluid type, Type I or Type II, rather than being specific to any particular aircraft type. The tables use outside air temperature (OAT) ranges, fluid concentrations or freezing point (FP) limitations, and the general type of contamination existing, (i.e., frost, freezing fog, snow, freezing rain, and rain on a cold soaked wing) to determine an approximate holdover time range. See figure 1 reproduced from the draft FAA advisory circular, "*Pilots Guide to Large Aircraft Ground Deicing.*"

The tables specifically state that "the responsibility for the application of these data remains with the user". The tables caution they are for use in departure planning only and shall be used in conjunction with pretakeoff check procedures. These tables only provide approximate time ranges and are subject to individual interpretation. The FAA has determined that takeoff after exceeding any maximum holdover time in a certificate holder's table, for the existing weather conditions, is permitted only when other actions are taken.

It should be noted that the FAA and the SAE have initiated studies to develop more precise holdover timetables and as new data becomes available new tables will be developed and made available to the industry.

BILLING CODE 4910-13-M

Table 1. Guideline for Holdover Times Anticipated by SAE Type II and ISO Type II Fluid Mixtures as a Function of Weather Conditions and OAT.

CAUTION! THIS TABLE IS FOR USE IN DEPARTURE PLANNING ONLY. IT SHOULD BE USED IN CONJUNCTION WITH PRE-TAKEOFF CHECK PROCEDURES.

OAT		Type II Fluid Concentration Neat-Fluid /Water [% by Volume]	Approximate Holdover Times Anticipated Under Various Weather Conditions (hours: minutes)				
°C	°F		FROST	FREEZING FOG	SNOW	FREEZING RAIN	RAIN ON COLD SOAKED WING
0 and above	32 and above	100/0	12:00	1:15-3:00	0:25-1:00	0:08-0:20	0:24-1:00
		75/25	6:00	0:50-2:00	0:20-0:45	0:04-0:10	0:18-0:45
		50/50	4:00	0:35-1:30	0:15-0:30	0:02-0:05	0:12-0:30
below 0 to -7	below 32 to 19	100/0	8:00	0:35-1:30	0:20-0:45	0:08-0:20	CAUTION! clear ice may require touch for confirmation
		75/25	5:00	0:25-1:00	0:15-0:30	0:04-0:10	
		50/50	3:00	0:20-0:45	0:05-0:15	0:01-0:03	
below -7 to -14	below 19 to 7	100/0	8:00	0:35-1:30	0:20-0:45	List of Symbols °C = Celsius °F = Fahrenheit Vol = Volume OAT = Outside Air Temp.	
		75/25	5:00	0:25-1:00	0:15-0:30		
below -14 to -25	below 7 to -13	100/0	8:00	0:35-1:30	0:20-0:45		
below -25	below -13	100/0 if 7°C(13°F) Buffer is maintained	A buffer of at least 7°C(13°F) must be maintained for Type II used for anti-icing at OAT below -25°C(-13°F). Consider use of Type I fluids where SAE or ISO Type II cannot be used.				

THIS TABLE DOES NOT APPLY TO OTHER THAN SAE OR ISO TYPE II FPD FLUIDS.

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

BILLING CODE 4910-13-C

Table 2. Guideline for Holdover Times Anticipated by SAE Type I, and ISO Type I Fluid Mixtures as a Function of Weather Conditions and OAT.

CAUTION! THIS TABLE IS FOR USE IN DEPARTURE PLANNING ONLY. IT SHOULD BE USED IN CONJUNCTION WITH PRE-TAKEOFF CHECK PROCEDURES.

Freezing Point of Type I fluid mixture used must be at least 10°C(18°F) below OAT.

Outside Air Temperature		Approximate Holdover Times Anticipated Under Various Weather Conditions (hours:minutes)				
°C	°F	FROST	FREEZING FOG	SNOW	FREEZING RAIN	RAIN ON COLD SOAKED WING
0 & above	32 & above	0:18-0:45	0:12-0:30	0:06-0:15	0:02-0:05	0:06-0:15
below 0 to -7	below 32 to 19	0:18-0:45	0:06-0:15	0:06-0:15	0:01-0:03	CAUTION! Clear ice may require touch for confirmation
below -7	below 19	0:12-0:30	0:06-0:15	0:06-0:15		

THIS TABLE DOES NOT APPLY TO OTHER THAN SAE OR ISO TYPE I FPD FLUIDS.

THE RESPONSIBILITY FOR THE APPLICATION OF THESE DATA REMAINS WITH THE USER.

A specific discussion of comments on the three major issues and FAA responses follows.

• *Certificate Holder or Aircraft Specific Holdover Times*

Several commenters object to the proposed language of § 121.629(c)(3) which states that an approved deicing program must include "the certificate holder's holdover times, specific to each aircraft type * * *." These commenters state that holdover time should not be aircraft type specific. Most of these commenters also believe that holdover times should be standard for all certificate holders. One commenter states that holdover times, while not aircraft type specific, are specific to the type of fluid used and that the FAA should establish "not to exceed" times when aircraft are dependent on Type I fluids.

FAA Response

As previously stated, the only holdover timetables readily available to the industry and acceptable to the FAA are those developed by the SAE/ISO and these holdover times are not aircraft type specific. Because holdover times are generally given as acceptable ranges, however, it is quite conceivable that a rational analysis could lead to an acceptable deicing program in which type-specific holdover times are provided within the ranges of acceptable holdover times given in the SAE/ISO tables. The language in the final rule, therefore, does not prohibit the use of type-specific holdover times, but they are not required.

• *Mandatory vs. Guideline Holdover Times*

Several commenters state that holdover times were developed to be used as guidelines and not as mandatory times. One commenter states that the holdover time guidance provided in current and proposed advisory circulars is too general to be of real use, and that the FAA should immediately commission SAE to "recalibrate" its charts to match standard National Weather Service reporting criteria.

FAA Response

As stated above, each certificate holder must develop its own holdover times with data acceptable to the Administrator and if the maximum holdover time developed by the certificate holder is exceeded, other actions must be accomplished before the aircraft can take off. The FAA will continue to work with the National Weather Service to enhance reporting criteria in order to provide flight crewmembers with current information required in the use of holdover timetables.

• *Determining or Changing Holdover Times*

Two commenters (the Airline Dispatchers Federation and an individual dispatcher) state that the proposed rule does not adequately reflect the role of the dispatcher under existing part 121 rules. These commenters recommend that the dispatcher's role be reflected in the rule language and that the dispatcher and pilot in command must work together in determining holdover times. One suggests that the dispatcher is in a better position to enforce holdover times than is the pilot in command. Several commenters suggest that the proposed rule language places an unreasonable burden on the pilot in command, particularly in a case where a pilot in command would be expected to

increase or decrease the determined holdover time based on changing conditions. Commenters suggest that it would be better to establish at each airport one central agency to determine and revise as appropriate holdover times for all certificate holders operating at that airport.

FAA Response

The information required to determine or change the proper holdover time includes outside air temperature, type and concentration of fluid, weather conditions, and time the last application of fluid began. This information is most readily available to the pilot in command, allowing him or her to determine quickly from the holdover timetable the appropriate holdover time. The certificate holder's program may include holdover time coordination with the dispatcher; however, the information required to determine or change the proper holdover time may be available only to the pilot in command.

Type I and Type II Fluids

A number of commenters expressed views on the potential uses of Types I and II fluids under the proposed rule. Several commenters recommend that the FAA mandate or at least encourage the use of Type II fluids. Others raised questions about the use of Type II fluids, ranging from potential environmental problems (dealt with elsewhere in this preamble) to higher cost and limited availability for the 1992/1993 winter. One commenter questions whether Type II fluids are better in most situations and states that Type II usage in Europe is declining.

FAA Response

Each specific certificate holder determines the type of fluids used in its operations. As stated in the NPRM and in this preamble, each type fluid has its benefits and intended usage. All the information presently available to the FAA indicates that there is no availability problem associated with Type II fluids and that their use continues to grow in Europe and Canada.

Pretakeoff Contamination Check

A number of commenters raise questions concerning the proposed pretakeoff contamination check defined in proposed § 121.629(c)(4) and the optional outside the aircraft check in proposed § 129.629(d). The most frequently raised concern is that the proposed five-minute limitation in § 121.629(c)(4) and (d) is impractical because most airports do not now have a facility at a location near enough to the end of the takeoff runway to perform these checks.

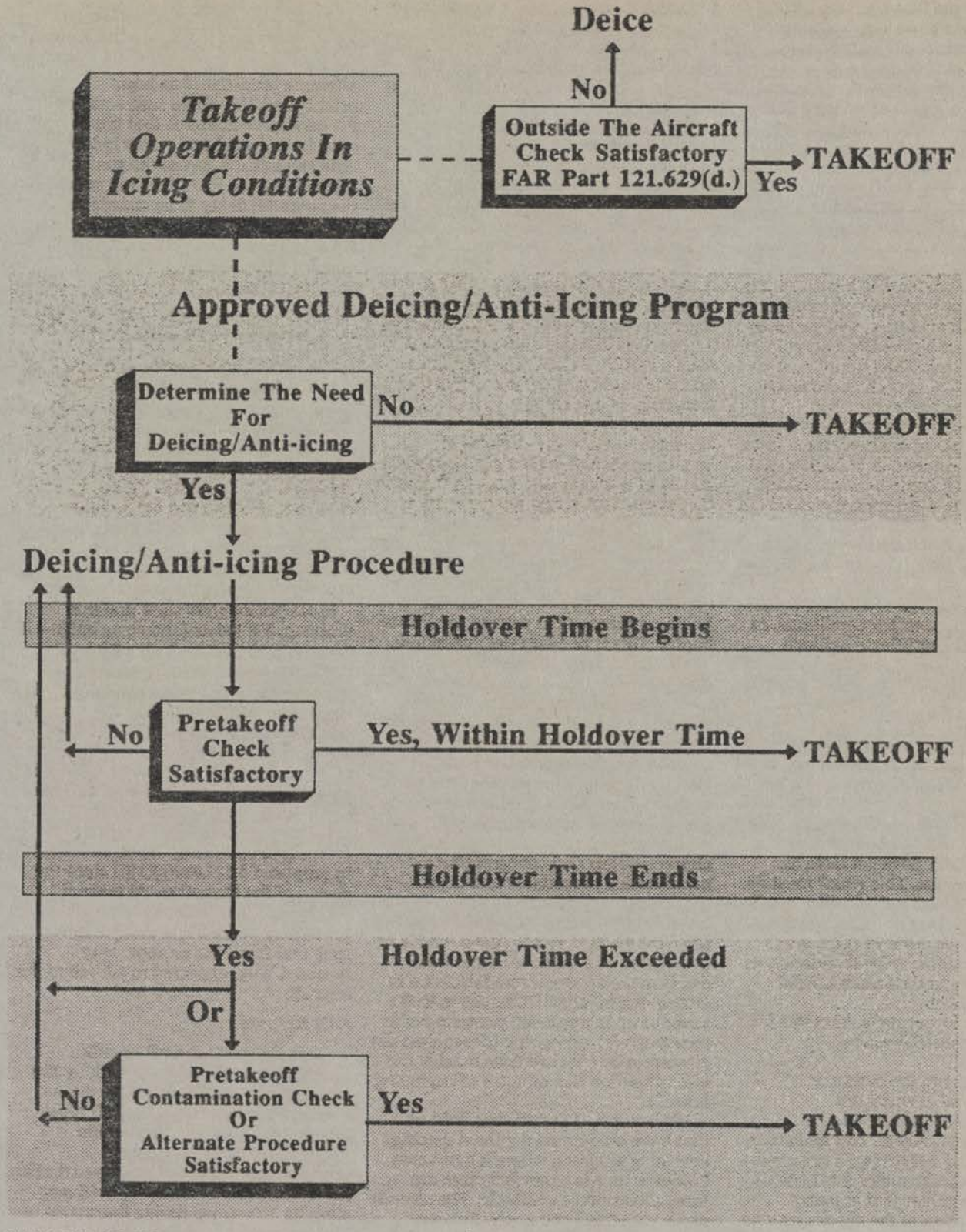
Other concerns are: (1) Pretakeoff contamination checks with the engines running (particularly propeller driven aircraft) are inherently unsafe; (2) a pretakeoff contamination check should be required following ground operations in all icing condition operations, not just when holdover times are exceeded; (3) checks from within the aircraft should be allowed in all cases according to some commenters and should never be allowed according to others.

FAA Response

Section 121.629(c)(3) and (c)(4) of the proposed rule would allow a takeoff after the expiration of a holdover time if a check conducted within five minutes prior to takeoff determines that the wings, control surfaces, and other critical surfaces are free of frost, ice, or snow, and if the check is "accomplished from outside the aircraft unless the program specifies otherwise." Section 121.629(d) of the proposed rule would also allow for a check that must be conducted within five minutes prior to takeoff as an optional alternative for a certificate holder who does not have a deicing program but this check must be accomplished from outside the aircraft.

Some commenters have confused the pretakeoff contamination check referenced in proposed § 121.629(c)(3) and (c)(4) with the outside-the-aircraft check that is required by § 121.629(d). The following describes the different procedures, and checks contained in the final rule. (See Figure 2)

BILLING CODE 4910-13-M



BILLING CODE 4910-13-C

(1) *Aircraft deicing/anti-icing procedure.* This procedure is completed by ground personnel. The procedure includes checking wings, control surfaces, propellers, engine inlets, and other critical surfaces as defined in the aircraft manufacturer's maintenance manual or Advisory Circular (AC) 121–XXX Aircraft Ground Deicing and Anti-Icing Program and is an integral part of the deicing process. It is referenced in the beginning of § 121.629(c)(4).

(2) *Pretakeoff check.* This check is completed any time the aircraft is deiced or anti-iced and is integral to the use of holdover times. It is accomplished within the holdover time, and normally is accomplished by the flight crew from inside the aircraft. The aircraft's wings or representative aircraft surfaces are checked for contamination. For clarification, and to be consistent with the intended use of holdover timetables, this check is included in § 121.629(c)(4).

(3) *Pretakeoff contamination check.* This check is to determine the condition of an aircraft after the maximum holdover time has been exceeded. This check may be performed from either the inside or the outside of the aircraft depending upon type of aircraft, lighting conditions, and weather conditions, as specified in the certificate holder's approved program. When the pretakeoff contamination check is used, it must be accomplished within five minutes of beginning the takeoff. The aircraft's wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, must be checked.

(4) *Part 121.629(d) outside-the-aircraft check.* This check is required only if a certificate holder does not have an approved program. This check must be accomplished from outside the aircraft within five minutes of beginning the takeoff. The aircraft's wings, control surfaces, and other critical surfaces, as defined in the manufacturer's AFM, must be checked.

These checks are not substitutes for an Airworthiness Directive requirements.

With respect to the concerns commenters raise about the practicability of the five minute limitation on pretakeoff contamination checks under § 121.629(c)(4) or outside-the-aircraft checks under § 121.629(d), the FAA recognizes that in many situations neither of the checks may be viable at certain airports, at certain peak departure times, and during certain weather conditions. Over the long term, as airport remote deicing and checking facilities are built or expanded, those checks may become more feasible. However, the FAA points out that the five minute limitation arises only in two situations. One is when a certificate holder does not have an approved ground deicing/anti-icing program. The other is after a maximum holdover time is exceeded.

The FAA assumes that a certificate holder will elect not to have an approved ground deicing/anti-icing program only if it concludes that it would be more cost effective to operate without such a program. In electing not to have an approved program the certificate holder has taken into consideration the possibility that it would have to delay or even cancel flights in icing conditions. As a practical matter, the FAA does not expect that such a certificate holder's operations under this rule will differ significantly from its past operations.

The outside-the-aircraft check conducted within five minutes of beginning takeoff is the only alternative means of operating in icing conditions in the absence of an approved program under paragraph (c). That is, even if a certificate holder was to use the deicing facilities of another certificate holder who has an approved program, the first certificate holder could not use the holdover times of the deicing certificate holder. This is because the five-minute limitation under § 121.629(d) recognizes that pilots who operate without an operator approved program, as compared to pilots who operate under an approved program, may lack proper training and the knowledge to effectively determine whether the aircraft is free of contamination prior to takeoff. Proper training includes reviewing precipitation categories, fluid characteristics and concentrations, coordination procedures and check requirements. Without the proper training provided under an approved program the pilot in command who is in possession of a holdover time could easily make an uninformed decision in attempting to takeoff. Therefore, in the absence of an approved program under paragraph (c), paragraph (d) requires the aircraft to be checked from outside the aircraft within five minutes of beginning takeoff.

With respect to certificate holders that have an approved ground deicing/anti-icing program, where a maximum holdover time is exceeded there are three alternatives available. The aircraft can be redeiced and a new holdover time established. The aircraft can takeoff if the certificate holder has obtained approval of an alternate procedure (e.g. a new technology) that is capable of determining that the wings, etc., are clean. The third alternative is to accomplish a pretakeoff contamination check and begin the takeoff within five minutes of completing the check. Thus, if the takeoff could not be initiated within the five minute limitation, and if no alternate procedure has been established, the worse case scenario for the certificate holder is that the aircraft must be redeiced and a new holdover time established. Given the goals of this rulemaking, the FAA does not consider the potential delay to be unacceptable given the risks of taking off when there would be considerable uncertainty about the possibility of aircraft surface contamination.

Inspections for Specific Airplane Types by Airworthiness Directive (AD)

The NPRM preamble pointed out that the FAA had previously issued ADs requiring a tactile inspection any time ground icing conditions might exist for certain airplanes without wing leading edge devices (i.e., airplanes commonly referred to as "hard wing"). FAA invited comments on the need for a similar mandatory requirement for any other airplane types. Several commenters address this request, but none recommend additional airplane types.

Most commenters state that this problem, if it exists (and some believe it does not), should be dealt with by the FAA as it has been in the past by issuance of an AD when warranted. One commenter states that the FAA's belief that non-slatted wings are more susceptible to loss of lift than wings with leading edge slats is not supported by any known aerodynamic data. One commenter recommends that the significance of airplane design be recognized by adding "or on an aircraft" to proposed § 121.639(c)(1)(i) since the design of the aircraft could make it susceptible to contamination while conditions at the airport may not be such that frost, ice, or snow may reasonably be expected to adhere to the aircraft.

FAA Response

As in the past, aircraft specific requirements will be dealt with by the issuance of ADs. Commenters did not indicate any additional aircraft types that warrant a mandatory tactile inspection at this time. Any manufacturer that does not agree that an AD is warranted when proposed may state its objections during the course of that rulemaking.

Deicing programs for aircraft not covered by an AD may voluntarily include a tactile inspection of an aircraft's wing; this could be done immediately after deicing is accomplished or to determine if deicing

is even necessary. Certificate holders should specify in their deicing/anti-icing program any intended use of tactile inspections. As to adding "or on an aircraft" to § 121.629(c)(1)(i), the FAA has determined that the words "at an airport" should be deleted so that the paragraph includes any conditions where frost, ice, or snow may reasonably be expected to adhere to the aircraft.

Takeoff Decision

Several commenters express concern that nothing in the proposed rulemaking should change the existing policy that places the ultimate responsibility for a takeoff on the pilot in command. Two commenters believe that the dispatcher's role in releasing an aircraft, possibly including the determination of holdover times jointly with the pilot in command, should be spelled out in the final rule language.

FAA Response

The FAA agrees that nothing in this rule changes § 91.3(a) which states that "The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft." As stated in the preamble to the NPRM, the new approach taken by this rulemaking is to give the pilot in command additional guidance and certificate holder-developed procedures and, under certain conditions, ground personnel support, in determining the aircraft's airworthiness in potential icing conditions. While this rule will ensure that the pilot in command and supporting personnel receive additional training and that the certificate holder establishes additional procedures for potential icing situations, the ultimate authority and responsibility for the operation of the aircraft remain with the pilot in command.

The FAA does not agree that the role of the dispatcher needs to be further addressed in § 121.629(c). Paragraph (c) states clearly that "no person may dispatch * * * an aircraft any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, unless the certificate holder has an approved deicing program and unless the dispatch, release, and takeoff comply with that program." Thus, the dispatcher is part of the team that will initially determine whether it is safe for a flight to be dispatched in existing and anticipated icing conditions. As discussed elsewhere in this preamble, a dispatcher might not have all or the most current icing and weather information that becomes available to the pilot in command, and that is used by the pilot in command in initially determining and possibly changing a holdover time.

Training of Flight Crewmembers and Other Personnel

A number of commenters express concerns with the proposed training provisions of the certificate holder's approved deicing program. The most significant concerns deal with the short time available to train and qualify affected personnel, training requirements for ground personnel employed by contractors rather than by certificate holders, and the need to ensure that FAA's principal operations inspectors are themselves trained. Commenters also make a few specific training recommendations. Each of these areas and others are specifically addressed below.

• *Training and Qualification Deadline*

Several commenters state that it is impractical to train and complete testing or qualification before November 1, 1992, particularly for ground personnel who work for contractors and not directly for the certificate holder. Suggested solutions are: to require only written notice of new procedures to affected persons before November 1, 1992; to require training only, with testing or qualification delayed until the next scheduled recurrent training program; and to develop a universal training program that could be used for all ground personnel.

One commenter stated its concern that FAA's principal operations inspectors are themselves in need of more effective training if they are to determine the adequacy of a proposed program.

FAA Response

The FAA agrees that it would be impractical to complete both formal training and testing for flight crewmembers and formal training and qualification for other affected personnel before November 1, 1992. Therefore, in order to complete flight crewmember training and testing and training and qualification for other affected personnel for this first year, the FAA will allow certificate holders maximum flexibility in providing the required training and testing/qualifications (e.g., take home brochures, video tapes, self-grading quizzes, or other appropriate review materials). With respect to the training and qualification of persons who work for contractors, the FAA believes that certificate holders must be held responsible for these personnel as they are for their own employees. For those contract personnel who do not normally provide deicing/anti-icing service to the certificate holder, proper deicing/anti-icing procedures and supervision must be assured by a trained flight crewmember, mechanic, or other person employed by the certificate holder using the procedures authorized in their approved program. While training of FAA principal operations inspectors is addressed later in this preamble under the "Program Implementation" section, FAA agrees that thorough and better training of all personnel in government and industry is vital to reducing the incidence of icing-related accidents.

Certificate holders who cannot complete training and qualification of their personnel before the effective date of this rule have the option of using the alternative procedure in § 121.629(d).

• *Dispatcher Training*

The Airline Dispatchers Federation recommends that dispatchers be specifically included in § 121.629(c)(2)(iii) to ensure that dispatchers are trained so that they can carry out with the pilot in command and with Air Traffic Control (ATC), the duties imposed by §§ 121.99, 121.533(c)(d), and 121.535(c)(d).

FAA Response

Section 121.629(c)(2) specifically identifies "aircraft dispatchers" as one of the groups of personnel covered by the term "all other affected personnel." It is not, therefore, necessary to identify dispatchers specifically in the list of areas to be covered under § 121.629(c)(2).

• *Training Program Content*

The Airline Pilots Association (ALPA) states that Advisory Circular (AC) 20-117 has not been as widely distributed to pilots or incorporated into specific training programs as the FAA originally intended, and recommends that approved deicing training programs mandate that all pertinent advisory circulars become an integral part of the training program. Fokker Aircraft recommends that pilot training programs emphasize again the effect of airframe icing on the aircraft's ability to fly. Fokker recommends that training programs include a takeoff technique, recommended by it and other aircraft manufacturers that during ground icing conditions pilots should use a slower rate of rotation to a lower pitch angle. Fokker also recommends that an air carrier's ground deicing program address the advantages of Type II fluids and the disadvantage of Type I fluids in detail.

FAA Response

One of the major areas included in this rule is training of all those personnel involved in the ground deicing/anti-icing process. Each certificate holder in its approved program must include all the applicable material and guidance regarding deicing/anti-icing operations to ensure its personnel are properly trained. The FAA is developing a new Advisory Circular to provide additional guidance to certificate holders. In addition, the following documents are excellent sources for obtaining guidance material:

Advisory Circular 20–117, "Hazards Following Ground Deicing and Ground Operations in Conditions Conducive to Aircraft Icing"

International Standard Organization (ISO) 11075, "Aircraft Deicing/Anti-icing Newtonian Fluids ISO Type I"

ISO 11076, "Aircraft Deicing/Anti-icing Methods with Fluids"

ISO 11077, "Deicing/Anti-icing Self-Propelled Vehicles—Functional Requirements"

ISO 11078, "Aircraft Deicing/Anti-icing Non-Newtonian Fluids ISO Type II"

Society of Automotive Engineers (SAE) Aerospace Recommended Practice (ARP) 4737, "Aircraft Deicing/Anti-icing Methods with Fluids, for Large Transport Aircraft"

FAA Order 8400.10, Air Transportation Operations Inspector's Handbook, Volume 4, chapter 8, Sections 1 and 2.

The FAA also agrees that pilot training for ground icing conditions should include recognition of changes in aircraft handling characteristics and instruction on the takeoff techniques to use, such as decreasing the rotation rate and reducing the angle of rotation of different aircraft types. The FAA plans to work with aircraft manufacturers and industry associations to develop appropriate training material as early as possible.

Airport/ATC Roles

Two commenters state that deicing/anti-icing programs should be jointly developed and implemented by air carriers and airports to ensure fair and uniform procedures and to reduce the burden on air carriers. One commenter discusses a number of airport responsibilities that relate to deicing, for example, ensuring that any materials used will not cause harm or endanger aircraft or their systems, and ensuring that these materials are disposed of properly. This commenter recommends that airports meet with air carriers in developing sound deicing programs.

Other commenters say that the role of ATC must be fully coordinated with that of the air carriers and airports to ensure the proper use of holdover times, to prevent delays after deicing, and to ensure a smooth traffic flow during icing conditions. ATC should also be aware of the differences related to deicing procedures for Part 121 and 135 operations and ensure that both types of operations are treated fairly.

One commenter states that many airports are already developing deicing/anti-icing programs and that these may not be compatible with the proposed rule or part 121 programs under development. Another commenter states that if airports, air carriers, and ATC were to coordinate their efforts, it would be difficult to implement any programs before the November 1, 1992 deadline.

Some commenters provide specific recommendations for airports and ATC in implementing deicing programs. One commenter says that airports should make provisions for end-of-the-runway deicing to reduce delays. Another says that the FAA should review ATC responsibilities related to flow times, take-off and landing sequencing in adverse weather conditions.

FAA Response

The FAA agrees that involvement of airport operators and ATC is essential to increasing aviation safety in potential icing conditions. Officials in FAA's Flight Standards Service have been working with ATC and FAA's airport offices throughout the course of this rulemaking. This effort is short term to ensure the maximum possible effort for this winter and long term to deal with actions that cannot be accomplished quickly. The FAA also agrees that certificate holders should coordinate their deicing/anti-icing programs with the operators of each specific airport where they will be using their deicing program.

Prevention of Delays

Some commenters express concern about delays resulting from deicing, checking, and re-deicing. This could create gridlock in air traffic flow and be extremely costly to airlines and inconvenient for passengers. Commenters also argue that the proposed rule poses a disadvantage to domestic carriers who would face delays from checking requirements while foreign carriers will be able to depart without such delays; this, it is suggested, would create competitive inequality for U.S. carriers and lead to an erosion of revenue for these carriers. Alternatively, one commenter says that the proposal would force foreign airports to deal with disruption to traffic flows due to U.S. carrier deicing and check requirements; this could result in discrimination against U.S. carriers.

Two commenters recommend utilizing gate-hold procedures to reduce delays between deicing and takeoff. In addition, one commenter recommends that the FAA re-examine the Enroute Spacing Program to allow aircraft to be released immediately when cleared.

One commenter recommends that to reduce competitive inequality the FAA should hold discussions with Joint Airworthiness authorities about compatible standards and practices.

FAA Response

The FAA recognizes that there may be some additional delays resulting from this rule if airplanes return for redeicing or if a pretakeoff contamination check is accomplished. However, most weather-related delays already occur under the existing rule and, as discussed under the "Economic Evaluation" section of this preamble, the FAA does not believe that the delay costs associated with this amendment will be significant. As discussed in the preamble to the proposed rule, while this rule does not directly affect operations of foreign air carriers, the FAA will continue to work aggressively with other nations' civil aviation authorities and will request that ICAO initiate a review of pretakeoff deicing and checking procedures used by all air carriers. In the meantime, as is discussed more fully under "International Trade Impact Statement," the FAA does not believe that the competitive disadvantage to U.S. operators is significant.

Underwing Frost

Several commenters express concern that the proposed rule language could lead to rescinding previous FAA policy that allows takeoffs with a small amount of frost on the underside of the wing in the area of fuel tanks when consistent with the aircraft manufacturer's operating and servicing instructions.

FAA Response

The FAA does not intend to change its policy of permitting takeoff with small amounts of frost on the underwings of airplanes caused by cold soaked fuel within aircraft manufacturer established limits accepted by FAA aircraft certification offices and stated in aircraft maintenance manuals and aircraft flight manuals. Language has been added to the final rule to make it clear that takeoffs with frost under the wing in the area of the fuel tanks are

permitted if authorized by the Administrator. Affected certificate holders should include the type of aircraft involved and justification for these operations, including manufacturer supplied data showing how these operations are safely accomplished, as part of their proposed deicing program.

Program Implementation

Some commenters state that implementation of deicing programs should be done by a central organization to ensure uniform standards. One supports an industry-wide solution, rather than delegating the approval of each program to the local level. One commenter states that the rule provides too much discretion to local FAA offices in approving deicing plans which could cause operational discrepancies among carriers and airports. This commenter recommends that the FAA provide comprehensive guidance to local offices in developing deicing programs. Another commenter says that, because the timeline for compliance is so short, implementation should be flexible and determined locally.

Another commenter recommends that the FAA monitor implementation of FAA-approved deicing programs this winter. In addition, the FAA should continue to address actions designed to reduce the time that airplanes are exposed to icing conditions between deicing/anti-icing and takeoff (e.g., aircraft design, deicing/anti-icing technology, air traffic control).

Another commenter recommends that the FAA provide inspectors for post-deicing checks and this could be funded by the aviation trust fund. One commenter is against locating deicing program requirements in current operations specifications; minor modifications to deicing practices will require specifications amendments, resulting in delays. This commenter recommends that FAR 121.629 mandate that air carriers have approved programs in place and follow these programs (which would be monitored by each carrier's principal operations inspector). Details of an approved deicing program should be outlined in an Advisory Circular that facilitates getting as much implemented as possible by November 1, 1992. Several other commenters support using an advisory circular either in addition to or instead of a rule.

One commenter discusses the safety problems for passengers who must walk through deicing fluid in ramp areas to board aircraft; this could also damage the interior of the aircraft.

Two commenters discuss their products related to deicing and express interest in collaborating with the FAA in using these products. One product is a detection system for overwing clear ice or measurement of contamination on the surface. Another product is an anti-icing product. This latter commenter also maintains that the proposed rule could adversely affect its patent as well as its ability to compete with foreign producers of Type II fluids; and that the FAA should shape the rule so as not to diminish the value of the patent nor impede the marketing of the product.

FAA Response

The FAA has conducted and continues to provide training in this area for all principal operations inspectors and principal maintenance inspectors. In addition to this training to facilitate the review of certificate holder programs, the FAA has appointed regional coordinators who will assist local inspectors and who will forward issues to the FAA Headquarters that cannot be resolved locally. The FAA, besides developing Inspector Handbook guidance, is also developing an Advisory Circular that provides guidance to certificate holders and principal inspectors.

The FAA will be closely monitoring the implementation of this rule and, as stated previously, will continue to work with all involved parties to smoothly implement the requirements of this rule.

As previously stated in this preamble, it is ultimately the responsibility of each pilot in command to determine whether his or her aircraft is free of contamination and thus airworthy. The responsibility for checks after deicing cannot be delegated to the FAA. Each certificate holder's operations specifications should refer to the specific locations in the certificate holder's manuals that contain its approved deicing/anti-icing program. The whole program does not have to be physically included with the certificate holder's operations specifications. Finally, ACs provide examples and one method of complying with regulations. They are not mandatory.

The ramp area safety issues mentioned should be addressed in each certificate holder's program.

The FAA encourages innovation to solve the problem of identifying contamination on the aircraft surface and § 121.629(c)(3)(ii) provides an alternate procedure for obtaining approval by the Administrator of an appropriate innovative approach. Also, the FAA does not recommend which type of fluid a certificate holder should use, Type I or Type II, and does not recommend any particular company's product in this rule.

As stated previously in the "Applicability and Justification" section of this preamble, the FAA has determined that all part 121 turboprop aircraft should be included in this rulemaking and will continue to analyze operations under other parts to determine if future rulemaking is required.

Miscellaneous

Other general comments about the proposed rule include discussions of the accidents cited in the NPRM. One commenter says that NTSB accident statistics related to icing problems do not address the thousands of successful takeoffs made annually during icing conditions. Another commenter says that the NTSB investigation of the 1982 Air Florida accident shows that improper engine thrust was the main cause and that perhaps icing problems alone were not the problem. Another commenter says that in the section of the NPRM entitled "Part 121 Passenger Carrier Benefits Section," paragraph (2) should clarify that the five mentioned accidents involved large passenger-carrying air carriers.

One commenter says that the FAA should include in the docket any studies that it relied upon to reach its conclusions in the NPRM, such as the conclusion that non-slatted wing aircraft are more susceptible to lift loss than slatted aircraft.

FAA Response

The NTSB's recommendations are based on its accident investigations and its other studies and thus do, in effect, consider successful operations. Also the NTSB in its investigation of the Air Florida accident cites as one of the probable causes the flight crew's decision to take off with snow and ice on the aircraft's airfoil surfaces.

The FAA has included in the docket a summary of wind tunnel tests of hard leading edge wings and slatted leading edge wings completed by the NASA Lewis Research Center, though the difference in accident history of these designs may not be fully explained by design differences. Pilot techniques, including rotation rates and angles, are also important factors to be considered in assessing stall propensity, along with the rotation speed and the initially computed climb speed. One factor alone has not been isolated as the major explanation for differences in accident rates which have been experienced.

Cost

The comments in this section are separated into subject categories: Delay costs, deicing fluid costs, international trade impact, training and personnel costs, and other costs.

Comments on Delay Costs

One commenter states that the cost of implementing the proposed rule should be calculated including input from the part 121 air carriers and should include estimated delay costs using air carrier data and input.

Another commenter states that checking the upper surfaces of a B–747 would be impractical, would cause delays, and would impose severe restrictions on the departing aircraft flow. The commenter also states that such a requirement would preclude their ad hoc charter operations from many airports during adverse weather, thus imposing a severe economic penalty on them.

Another commenter states that some elements of the proposed rule, as confirmed by the FAA in the NPRM, may not be amenable to accurate cost analysis. The impact on flight delays is difficult to project on short notice, and would require a study beyond the range of the 15-day comment period provided by FAA. The commenter describes a worse case scenario in which approved deicing programs are not completed, and numerous carriers at a large airport are attempting to perform external checks on a 5-minute cycle. This would effectively close the airport under conditions which were previously negotiable. The expense of airport closures is extremely high, as passengers have to be accommodated over a period of a day or more, and airport and crew rotations have to be unscrambled.

A commenter states that they are unable to provide cost data related to specific provisions of the rule in the time permitted for comments. They point out the differences between passenger carriers and integrated express carriers such as UPS. A single aircraft missing the national sort requires them to charter up to thirty executive jets to make their service commitment. In light of the nature of the business, they believe the FAA cost estimates are grossly understated.

One commenter stated that airports will experience various degrees of gridlock from airplanes requiring external checks or returning to be deiced. The increase in delays is estimated to be ten fold during freezing precipitation. During 1991/1992, the commenter claims it suffered 802 deicing delays. It estimated that 700 of these occurred during periods of precipitation. They believe that this could explode to 7,000 delays in 1992/1993. These delays could produce external checking and equipment costs of $30 million.

FAA's Response

The NPRM requested cost information, including estimated delay costs, from part 121 air carriers. Reliable information from commenters is considered in this evaluation.

The proposed rule could increase delays by requiring longer and more detailed inspections of airplane surfaces. However, it would provide flexibility by allowing either the use of an approved deicing program or an outside check five minutes before takeoff. In some instances, the proposed rule could decrease delays. For example, if the pilot decides to return for re-deicing, an outside check could reveal that the airplane surface is actually clear of ice, thereby avoiding a needless deicing.

There are two types of delays: (1) Delays due to the existing rule and (2) delays due to the proposed rule. In either case, an airplane may not take off if its surface is contaminated. The cost information that the commenter provided does not differentiate between these two types of delays, nor does the commenter explain how it arrived at these estimates.

Consequently, the FAA is not able to respond to the specific cost estimates provided by the commenters. However, the FAA does agree with the commenters to the extent that their estimates demonstrate that delay costs could increase.

Deicing Fluid Costs

One commenter believes that the costs are very conservative and do not present a true total, and that, regardless of the cost, the traveling public will ultimately pay for it. The commenter indicates that delays are the same regardless of the type of fluid since delays could result from weather, staff, equipment failure, etc." Also, the type fluid used does not matter because ground holdover times can expire with either fluid. Type II fluids may be beneficial for long term/overnight requirements, but is very costly and impractical for the average ground time of a turn-around type operation that is less than 3-4 hours on the ground.

Another commenter states that carriers have committed from $1–5 million each for plans to acquire new anti-icing equipment and convert old deicing equipment for application of Type II fluids. In addition, the total cost of Type II fluids applied is 3–4 times the cost of Type I fluids. The commenter also states that of the two glycols (ethylene and propylene glycol), ethylene glycol appears to be the most cost effective product due to the fact that there are more suppliers of ethylene glycol; therefore, the competitive influences in the marketplace dictate a lower cost. Ethylene glycol is an inherently less costly molecule to manufacture than propylene glycol. Consequently, by focusing on overall cost effectiveness, and because the possibility exists that propylene glycol may be applied in undiluted form in circumstances where it is not recommended by the aircraft manufacturer, economic and safety considerations give ethylene glycol a preference.

One commenter believes that the FAA concludes erroneously that this is not a major rule. This commenter believes that the shift from Type I to Type II fluids will increase airline unit fluid costs by the difference in price between Type II and Type I fluids, and may also result in a requirement for increased fluid volume. Competition will be lessened because the FAA's encouragement of the use of Type II fluid will likely inhibit and possibly preclude this commenter's entry into the airline market, thereby negating the competitive restraint which Type I anti-adhesion Airborne 99 would otherwise have on Type II pricing.

In addition to the above problems, the commenter states that the NPRM does not fully address the potential adverse effects specified in 5 U.S.C. 601 which specifies the following additional concerns: Employment, investment, productivity innovation, and the ability of U.S. based enterprises to compete with foreign-based enterprises in domestic or foreign export markets. For example, some deicing fluids have the potential to improve airport productivity by providing prolonged anti-icing protection through prevention of ice adhesion. In the event that aircraft were delayed on the taxiway beyond the nonformation holdover time of their Type II fluids, they would presumably have to be brought back to the deicing facility for another treatment.

The commenter also states that if the FAA promulgates the proposed rule, it will effectively define anti-icing as the use of Type II thickened fluids. This will create a major barrier both to the use of existing alternative anti-icing systems like Airborne 99 and to the development of innovative new anti-icing technologies. Also, the commenter states that if the proposed regulation in any

way unnecessarily impedes the marketing of the commenter's products, foreign suppliers of Type II fluids will receive an improper benefit from the reduced domestic investment.

FAA's Response

The FAA disagrees with the commenters for several reasons. First, the rule does not mandate the usage of Type II fluid. Second, the holdover tables of the final rule do not differ from the current industry standards enough to cause a significant shift in deicing fluid usage. Third, the FAA recognizes the increasing acceptance of Type II fluid among U.S. carriers. This acceptance is the result of an already wide acceptance by European and Canadian carriers. One of the advantages of using Type II fluid is its longer holdover time. Another advantage is that less fluid is required than Type I fluid.

International Trade Impact

A commenter states that unlike the reasonably uniform levels of safety and economic cost sharing between domestic and foreign air carriers in the aircraft security program, no such attempt has been made with this program. This virtually assures inequalities in airline costs not to mention foreign government cooperation. This issue will pose significant problems for U.S. supplemental air carriers attempting to take advantage of opportunity markets. Accordingly, alternatives must be found to prevent U.S. carriers from suffering even further from regulations of this type.

The commenter further argues that in the International Trade Impact discussion of the docket, a case is made that average costs would increase approximately 4 cents per round trip ticket. Although this might be true for a carrier operating to a scheduled location where ongoing training would be possible, this is not true for operators taking advantage of unscheduled opportunities. In these instances the costs could be prohibitive. As an example, a typical round trip cost between the East Coast and Europe might be $36,000. If it were possible, and enough lead time given, an individual could be sent ahead of the aircraft, conduct training, and assure compliance with the current NPRM. The cost of compliance would be approximately $2,500, or approximately a 14 percent increase. This increase would pose a significant economic burden on a carrier that might operate to a particular location once every 2–5 years. This seems unreasonable and contrary to the assurances that a "competitive disadvantage" is remote as stated in the NPRM.

Another commenter questions the reasoning that domestic carriers should bear the training and equipment costs of the proposed rule, while foreign carriers do not.

Another commenter states that the FAA misunderstands the competitive issues involved in a rule exempting foreign carriers. As suggested above, pretakeoff contamination checking requirements imposed by the rule could introduce serious delays for U.S. carriers. If, under these circumstances, foreign carriers could depart from the same airport without the delays and confusion, passengers and shippers would rush to those carriers if consistent with their travel or shipping needs.

They go on to say that it is not the out-of-pocket costs of the proposed rule which make the most significant difference in international competition; it is the potential perception by laymen that foreign carriers can safely depart without delay under conditions requiring domestic carriers to take delays. The unfair bias will apply under the proposal both at domestic origins as well as foreign ones. The FAA must not create this inequality leading to erosion of U.S. carrier revenues.

FAA's Response

While it is true that foreign air carriers would not incur costs imposed by the proposed rule, they would hardly have a competitive advantage. This is because the cost of compliance incurred by U.S. air carriers is expected to be offset by an increase in aviation safety both real and perceived by the flying public. The expected increase of 4 cents in cost of an average international round trip ticket would not be high enough to lower the demand of travel from U.S. and foreign consumers. The United States has always been perceived as pioneers in aeronautical engineering and especially aviation safety. The rule continues that track record.

In addressing another comment, any air carrier engaged in non-scheduled services does not compete in the same market as scheduled air carriers. Therefore, no adverse impact is expected to be incurred by U.S. scheduled air carriers.

Training and Personnel Costs

One commenter argues that during winter months, they visit 50 cities in North America that are subjected to severe, moderate, or light winter conditions. They argue that the cost per day to send a qualified person to verify that each deicing contractor meets the requirements of the proposed rule is at or above $500 per day not including travel expense.

One commenter states that their flight crewmembers receive ground training on the subjects of deicing/anti-icing and the effects of ice, snow and frost on aircraft performance. These subjects are included in all of the initial and recurrent courses in their approved training program.

A commenter states that up to 20,000 personnel would be covered by the training and qualification testing requirement at the larger companies. This commenter also questions the FAA estimate of training costs. The proposed rule could require initial and recurrent training and qualification costs for over 100,000 employees. A first estimate is one-half day of training for each employee each year, which would indicate over $20 million per year. The present value of 10 years training costs at this rate would exceed FAA's estimate of total cost.

One commenter estimates the annual cost of additional training for flight crewmembers and other affected personnel, as required by the rule, to be $2.5 million.

FAA's Response

The NPRM does not require that each air carrier send a qualified person to verify that each deicing contractor meets the requirements of the proposed rule, therefore, the air carrier would not be required to incur this cost.

Information available to the FAA indicates that air carriers already provide initial and recurrent training in the subject areas of ground deicing and anti-icing. The FAA calculated the incremental cost of added training associated with the requirements of the proposed rule.

The FAA has calculated an initial cost of training for the proposed rule. In subsequent years, however, the added training should be incorporated as a part of the current training that is already taking place. The FAA does not expect any additional future training cost because air carrier employees are routinely provided on-going training to keep them up to date on a number of aviation related issues and practices. The additional procedures required by this rule will likely be a continuation of existing training.

Other Cost Comments

A commenter argues that gate returns for re-deicing will be extremely costly as equipment needed for re-deicing will be in use. This same commenter questions whether the FAA considered a percentage factor of accidents to actual

take-offs made in the 15 year time frame involving ice, snow, and frost or freezing conditions.

Another commenter argues that the FAA has clouded the main issue of deicing/anti-icing costs with cost diagnostics, international trade impact, etc. They argue that these issues are very small contributory items and should not be the concern of the FAA.

One commenter believes that it will cost at least $450 million "to deal with space and environmental issues at the 30 airports required by the FAA to submit de-icing plans."

FAA's Response

The cost of any airplane returning for another re-deicing is not a cost of the current rule since it mandates that no aircraft may take off if ice, snow, or frost is adhering to the surfaces. The FAA recognizes that the proposed rule could result in more airplanes being redeiced due to improved detection procedures. However, the cost of these additional redeicings is difficult to estimate.

There may be some costs associated with dealing with space and environmental issues. The FAA is not convinced that these estimates would be considered reasonable because many variables will affect the final cost outcome. For example, some air carriers are already shifting to Type II fluids and would have switched regardless of the final rule. In addition, flow control procedures at some airports might negate the need for additional space. That is, airplanes as a result of this final rule may line up in queue at the gate instead of the taxiway.

Finally, the FAA is required by mandates from Congress, the President, and the Office of Management and Budget to address the impact that FAA regulations have on small businesses and on international trade. Thus, these topics are very much the concern of the FAA.

Rule Language Changes

The following is a paragraph by paragraph description of significant changes in the final rule language that have been discussed in this preamble. In addition minor editorial changes have been made.

In § 121.629(b) the following sentence has been added: "Takeoffs with frost under the wing in the area of the fuel tanks may be authorized by the Administrator."

In § 121.629(c) the following changes are made:

In paragraph (c)(1)(i) the words "at an airport" are deleted.

In the introductory paragraph of paragraph (c)(3) the words "times, specific to each aircraft type" are deleted and the word "timetables" inserted; the words "the final application of" are added to the description of holdover times; and the words "wings, control surfaces, propellers, engine inlets, and other critical surfaces" are deleted.

In § 121.629 (c)(3)(i) the word "inspection" is replaced by "contamination check" and in § 121.629(c) (3)(i) and (ii) the phrase "as defined in the certificate holder's program" is inserted after "critical surfaces." In § 121.629(c)(3) (i), (ii), and (iii) the words "propellers, engine inlets" are deleted.

In § 121.629(c)(4) the term "pretakeoff check" and the following definition of this term are added: "A pretakeoff check is a check of the aircraft's wings or representative aircraft surfaces for frost, ice, or snow within the aircraft's holdover time." In addition in paragraph (c)(4) the term "pretakeoff inspection" is changed to "pretakeoff contamination check."

Environmental Analysis

This rule is a federal action that is subject to the National Environmental Policy Act (NEPA). Under applicable guidelines of the President's Council on Environmental Quality and agency procedures implementing NEPA, the FAA normally prepares an environmental assessment (EA) to determine the need for an environmental impact statement (EIS) or whether a finding of no significant impact (FONSI) would be appropriate. (40 CFR 1501.3; FAA Order 1050.1D appendix 7. par. 3(a)). In the NPRM the FAA invited comments on any environmental issues associated with the proposed rule, and specifically requested comments on the following: (1) Whether the proposed rule will increase the use of Type I deicing fluid, (2) whether the proposed rule will encourage the use of Type II deicing fluid, (3) the impact, if any, of using these deicing fluids on taxiways "just prior to takeoff," and (4) containment methods currently used that can be adapted to other locations on an airport. Only a few commenters address these environmental issues and most of these commenters focus more on the effect of Federal, State, and local environmental requirements and the lack of local facilities, than on the questions of the potential environmental impact of deicing fluids. A summary of the comments received, the FAA's response and the findings of the FAA's Environmental Assessment follow.

Some commenters say that both Type I and Type II fluids cause environmental problems. One commenter says that the rule would require increased use of Type I fluids to clean aircraft wings prior to Type II application, and that this combination is environmentally hazardous.

One commenter questions what it characterizes as discussions in the United States that Type II fluids are less environmentally acceptable than Type I fluids since, as this commenter points out, both are based on glycols.

Another commenter questions whether airports have the facilities to collect and recycle deicing fluids at takeoff points.

Two commenters believe that environmental constraints will inhibit the operation of remote deicing facilities and recommend that the FAA seek relief from EPA reporting requirements for remote facilities for one to two years. Alternatively, one commenter recommends that the FAA petition the EPA to raise the reportable quantity of ethylene glycol (Type I) from one pound to 1,000 pounds or to exempt the airline industry from all ethylene glycol reporting due to critical safety requirements.

Other commenters also recommend that air carriers be exempt from state and local environmental regulations, which may be even more restrictive than EPA regulations.

One commenter recommends that current environmental constraints be reviewed and additional flexibility for deicing operations be provided in order for the rule's objectives to be met.

One commenter provides recommendations to reduce the discharge of deicing fluids into streams and states that an environmental impact statement should be required where such discharge seems likely.

FAA Response

An Environmental Assessment (EA) that supports a Finding of No Significant Impact (FONSI) is included in the docket for this rulemaking. The EA discusses in detail the potential effect of this rule and addresses in general terms the issues raised by the comments summarized above. The following discussion addresses the major issues raised by commenters.

Presently § 121.629(b) states that no person may takeoff an aircraft when frost, snow, or ice is adhering to the wings, control surfaces, or propellers of the aircraft. As the NPRM preamble, this preamble, and the EA point out, this rule is necessary because several accidents, and recommendations of the 1992

Conference on Airplane Ground Deicing, which was held as a result of these accidents, indicate that under present procedures, the pilot in command may be unable to determine effectively whether the aircraft's critical surfaces are free of all frost, ice, or snow prior to attempting a takeoff. This rule addresses this problem by requiring increased training of appropriate personnel, the use of holdover times, and additional checks of the aircraft's surfaces, all of which are to ensure that an aircraft does not take off if critical aircraft surfaces are contaminated. In essence, this interim final rule, which is necessary before the winter of 1992–1993, requires certain certificate holders to develop a program that will provide the pilot in command with more complete information which he or she needs for deciding whether takeoff can be safely accomplished. Concern with the environmental impacts of this rule emanate principally from the chemical composition of deicing fluids e.g. ethylene glycol has been listed as a hazardous air pollutant under Title III of the Clean Air Act Amendments of 1990. While this rule does not mandate additional use of either Type I or Type II fluids, it could accelerate somewhat the existing trend for U.S. air carriers to follow the European and Canadian practice of increased use of Type II fluids because of the longer holdover times associated with Type II fluids. However, although Type II fluid has a higher biochemical oxygen demand (BOD) that impacts surface water and the fish and other marine life than Type I fluid, it requires approximately 50% less fluid to effectively deice and anti-ice a typical aircraft. Also the use of Type II fluids will significantly reduce the number of redeicings that would be required if Type I fluids were used. These factors along with improved ATC and airport procedures should reduce the use of deicing/anti-icing fluids over the long term.

With respect to the potential environmental effects of both type fluids, as the EA discusses, because of their low volatilities, low ecotoxicities, low toxicity to humans, and biodegradibility, no additional impacts are expected over those already experienced for deicing/anti-icing operations carried out under the current regulations.

With respect to the issues of reporting requirements, relief from state and local environmental requirements, and the availability of collection/recycling facilities, certificate holders that presently use deicing fluids and the operators of airports at which these fluids are used must already comply with all of these requirements when they are applicable. Since this rule requires no additional use of fluids than currently required under the existing clean aircraft requirement, if there are increases in the use of fluids that trigger environmental requirements, those requirements must be met by the airport operator, certificate holder, or other appropriate party, as they would under the present rule. If any of these requirements, or the lack of facilities limit the use of deicing/anti-icing fluids, the result would be that the certificate holder would have to find another means of ensuring that the critical aircraft surfaces are clean before a takeoff is attempted or discontinue operations. Nonetheless, as part of its long term efforts, the FAA will work with certificate holders and with airport operators to monitor the actual and potential environmental effects of this rule and help address any problems that might arise.

Paperwork Reduction Act

Information collection requirements in the amendment to § 121.629 have been approved by the Office of Management and Budget (OMB) under the provisions of the Paperwork Reduction Act of 1980 (Pub. L. 96–511) and have been assigned OMB Control Number 2120–0567.

Regulatory Evaluation Summary

This section summarizes the regulatory evaluation prepared by the FAA. The regulatory evaluation provides more detailed information on estimates of the potential economic consequences of this rule. This summary and the evaluation quantify, to the extent practicable, the estimated costs of the rule to the private sector, consumers, and Federal, State, and local governments, and also the anticipated benefits.

Executive Order 12291, dated February 17, 1981, directs Federal agencies to promulgate new regulations or modify existing regulations only if potential benefits to society for each regulatory change outweigh potential costs. The order also requires the preparation of a Regulatory Impact Analysis of all "major" rules except those responding to emergency situations or other narrowly defined exigencies. A " major" rule is one that is likely to result in an annual effect on the economy of $100 million or more, a major increase in consumer costs, or a significant adverse effect on competition.

The FAA has determined that this rule is not "major" as defined in the executive order. Therefore, a full regulatory impact analysis, which includes the identification and evaluation of cost-reducing alternatives to the rule, has not been prepared. Instead, the agency has prepared a more concise document termed a "regulatory evaluation," which analyzes only this rule without identifying alternatives. In addition to a summary of the regulatory evaluation, this section also contains a final regulatory flexibility determination required by the 1980 Regulatory Flexibility Act (Pub. L. 96–354) and an international trade impact assessment. If the reader desires more detailed economic information than this summary contains, then he or she should consult the regulatory evaluation contained in the docket.

Costs

This rule will increase costs to the industry and to society in five ways. First, airlines will have to develop a deicing program and the FAA will have to approve it. Second, flight and ground crews will have to be trained for and tested in the new procedures. Third, pretakeoff contamination check procedures will have to be implemented. Fourth, airlines, as an option, could purchase additional deicing equipment to deice closer to the takeoff point. Finally, air carriers and passengers could experience an increase in delays.

The total costs are separated into two categories—small and large air carriers. This was done because this rule will impact small carriers differently than it will large carriers.

Small and Large Part 121 Air Carriers

Small carriers are defined as those that own or operate nine or fewer aircraft under part 121. FAA information indicates that of the 53 part 121 air carriers, 31 are large and 22 are small. Of the 4,151 airplanes that are operated under part 121, small air carriers operate approximately 114 or 2.7 percent and large air carriers operate 4,037 or 97.3 percent.

The number of employees at large and small part 121 air carriers was estimated by allocating the total number of employees based on the number of airplanes that these carriers operate. Based upon information provided by the Airline Transport Association (ATA), approximately 20,000 pilots, 30,000 copilots, 10,000 engineers, and 20,000 mechanics work for part 121 air carriers. If the number of employees at large and small carriers is directly related to the number of airplanes that air carriers operate, then large part 121 carriers have 97.3 percent of the total number of

employees in each category and small carriers have 2.7 percent.

Deicing Program

The FAA expects that the industry will develop a generic deicing program as a normal course of business. This generic industry program is expected to have an initial development cost of $7,200. After the program is developed, each air carrier will likely modify the program for its own operations. The initial cost of the program refinement to all 31 large air carriers will be $224,000 and $5,100 to all 22 small air carriers.

Each air carrier's program will have to be approved and reviewed by the principal operations inspectors assigned to each of the air carriers. The FAA estimates that its initial or first year cost will be $15,300 for the review of all programs.

Training and Qualification Testing

Each certification operator that has a deicing program will be required to provide training for all personnel involved with deicing. The FAA estimates that the initial cost of training will be $8.04 million for large air carriers and $80,400 for small air carriers for a total of $8.1 million. Recurrent training is also required. However, the incremental cost of recurring training will be minimal because the air carrier employees are routinely provided on-going training and materials to keep them up to date on a number of aviation related issues and practices.

This final rule also requires testing for flight crewmembers and qualification for all other personnel concerning the specific requirements of the program and each person's responsibilities and duties under it. The recurrent qualification testing will require an additional 15 minutes per individual. The total annual cost will be $2.03 million ($2.01 million to large firms plus $20,109 to small firms). The initial cost associated with qualification testing is expected to be minimal.

Pretakeoff Contamination Checks

Pretakeoff contamination checks will be implemented under this rule. The program must provide that takeoff after the expiration of the holdover time will be permitted only when one of several conditions such as a pretakeoff contamination check takes place. For purposes of this analysis, the check will be made by individuals who operate the additional deicing equipment that will be purchased for redeicing airplanes at the runway. Thus, the cost of a check is incorporated in the labor costs associated with the additional deicing equipment.

Additional Deicing Equipment

Another cost component associated with the rule is deicing equipment, which consists of the capital equipment, operating and maintenance costs, and labor costs. The total one-time cost of the deicing equipment for all affected airports is estimated to be $10,720,000 to provide 67 portable deicing stations at 28 airports. The total recurring annual maintenance and operating costs at all affected airports will be $1,286,400. The FAA estimates the total recurring annual labor cost at all affected airports to be approximately $139,500.

The total undiscounted cost associated with deicing equipment over the next 10 years will be $25 million. This 10 year-cost is comprised of a one time cost of $10,720,000 for capital equipment, $12,864,000 maintenance and operating costs, and $1,395,000 in labor costs.

Delay Costs

In the NPRM, the FAA stated that delays could not be reliably estimated at that time. The Agency then presented a general step-by-step procedure to estimate potential delay costs. Comments from the industry were not useful in calculating these costs. Even though no additional data have been made available, the FAA has made an estimate of potential delay costs imposed by this rule. This estimate, however, as will be discussed later, should be viewed with its limitations.

As stated previously, after a holdover time has been exceeded a pretakeoff contamination check is one of the options available under this rule. Hence, the rule could increase air carrier delays during ice and snow conditions. Increased delays will increase costs to air carrier operators and passengers.

The FAA expects the pretakeoff contamination check to require between 5 to 15 minutes to complete. The regulatory evaluation assumes for the purposes of this estimate a delay of 10 minutes. The value of passenger time is estimated at $39 per passenger per hour and air carrier operating costs at $1,800 per hour. The delay cost estimate was based on 49 of the largest U.S. airports, for which the FAA had both icing and departure data. These 49 airports account for approximately two-thirds of part 121 operations.

The FAA has estimated a range of air carrier delay costs based on different assumptions about the number of aircraft receiving a pretakeoff contamination check. These estimates are based on data from the past three winters on delays that occurred during snow and ice conditions at U.S. airports. The lower of the two estimates measures delay costs to air carrier operators and passengers who were delayed 20 minutes or more due to snow and ice conditions. By looking only at departures with snow and ice delays of 20 or more minutes, the FAA tried to estimate those airplanes that exceeded their holdover times and would then undergo a 10 minute pretakeoff contamination check. The higher estimate assumes that all departures during snow and icing conditions experience a 10 minute pretakeoff contamination check delay.

Scenario One: This scenario represents the low end of the delay cost estimate. It measures delay costs to air carrier operators and passengers when all part 121 airplane departures that are delayed 20 minutes or more due to snow and ice conditions conduct a pretakeoff contamination check. Each pretakeoff contamination check is assumed to take 10 minutes. The 10-year discounted air carrier delay cost, assuming all aircraft experiencing a 20 minute delay during snow and ice conditions receive a pretakeoff check, is $15 million (discounted).

Scenario Two: The second scenario represents the high cost estimate. It measures delay costs to air carrier operators and passengers due to 10-minute pretakeoff checks for all part 121 departures during icing or snowing conditions. This estimate of the incremental air carrier delay costs is $41 million (discounted).

These estimates omit three critical factors that are needed to determine the total impact of the rule. First is the potential system impacts or "ripple effect" on air carrier delays. The FAA attempted to estimate the cost of this effect; however, it was unsuccessful due to the extreme complexity. Second, the potential decrease in delays due to a shift towards Type II deicing fluids is difficult to estimate because the data is not available to make this estimate. The third factor omitted from the delay cost estimate is the delays due to ice adhering to the surfaces of the aircraft. The estimated number of existing delays represents delays that occurred due to snow and ice (e.g., runway closures, poor braking action, etc.). The presence of delays due to snow and ice does not necessarily mean that snow or ice was adhering to the surfaces of the aircraft.

Re-deicing Delay Costs

The costs and benefits of this rule are a result of the increased checking for and detection of ice adhering to the surface of an airplane. This increased detection could result in additional

delays due to redeicing, though redeicing of contaminated airplanes is already a result of the existing rule. The exact number of delays that occurs as a result of having to return for redeicing cannot be determined at this time due to lack of data. The data needed to measure this cost would be the number of air carriers that have taken off with ice contamination. The FAA has no such measure. However, since Scenario Two above assumes that all future departures for part 121 airplanes will be delayed due to the new procedures of this rule, some of the potential re-deicing costs have been accounted for. In short, this scenario assumes that there would be delays due to pretakeoff contamination checks for all departures during ice and snow conditions. This is a worst case scenario for three reasons. First, not all airplanes would undergo such pretakeoff contamination checks because they would depart before their respective holdover times expire. Second, some airplanes would have alternate procedures to determine if the aircraft is free of contamination. Third, some aircraft would return for redeicing/anti-icing rather than accomplish a pretakeoff contamination check.

The total cost of the final rule is estimated to be between $52 million and $78 million (discounted). Of this total, air carriers would incur non-delay costs of $37 million and delay costs of between $15 million and $41 million.

Benefits

The benefit of the rule is enhanced safety. This safety will be achieved by ensuring that airplanes do not take off with contamination on the surfaces. The analytical approach employed to estimate the potential monetary benefits (safety) of achieving this goal focuses on two existing practices. First, the final rule will implement procedures (pretakeoff contamination checks) that will help prevent airplanes from taking off with ice on surfaces of the aircraft. Second, the final rule will ensure that aircraft that need deicing are actually deiced. Most of the benefits would come from the improved checking procedures (i.e., a formalized deicing/anti-icing procedure that includes standardized holdover tables). Under the current rule, the pilot would perform a visual contamination check before departure. Under this rule, the pilot will spend more time with better information to correctly ascertain whether ice is or is not on the surfaces of that aircraft. The remaining benefits will be derived from deicings due to contamination detected at the time of the check. The FAA cannot estimate the frequency of these occurrences.

The FAA expects the rule to generate total potential safety benefits over the next ten years estimated at $218 million ($1991). On a discounted basis, total potential benefits will amount to an estimated $131 million. This discounted total estimate of benefits is comprised of $125 million for significantly reducing the likelihood of ice-related accidents for passenger-carrying part 121 airplanes and $6 million for part 121 cargo airplanes.

Part 121 Passenger Carrier Benefits

Under the current rule, it is the responsibility of the pilot to decide whether ice, frost, or snow has accumulated on the structure of an airplane. This decision can be very difficult to make, especially when the airplane is sitting at the end of a runway waiting to take off during inclement weather. It is at these times that the likelihood of the pilot making the wrong decision is greatest. The benefits of the rule will come from reducing the likelihood of a pilot making the wrong decision.

Over the past 15 years, there have been five passenger-carrying air carrier accidents where ice, frost, or snow accumulations on the airplane was the primary factor. These accidents resulted in 135 fatalities and 66 serious injuries. In addition, four of the airplanes were destroyed and the other sustained substantial damage.

Based on historical accident and casualty rates, the FAA expects that over the next 10 years, approximately 4 accidents would occur, with 131 fatalities and 64 serious injuries. The present value dollar benefits of preventing these accidents and casualties is estimated to be $166 million (discounted 10 years, 10 percent).

The FAA has attempted to develop a rule that will be effective in preventing all accidents by incorporating program development, training, testing, capital equipment, maintenance, etc. There is some uncertainty, however, as to how effective these components will be. It is conceivable that some aircraft could pass through the system due, in part, to human error and adverse whether conditions, thereby, reducing the effectiveness of the rule. While the actual effectiveness rate would be lower than 100 percent, the FAA estimates that a rate of 75 percent would reflect the reality of correcting a problem that is influenced by a multitude of factors (whether, human error, etc.). Multiplying the $166 million benefits by the 75 percent effectiveness rate results in adjusted benefits of $125 million ($166 million × .75).

Part 121 Cargo Carrier Benefits

The rule will also potentially reduce accidents among large part 121 cargo aircraft. Over the past eight years, there have been three accidents involving large cargo aircraft. These three accidents resulted in two facilities and two serious injuries. Two of the aircraft were substantially damaged and one was destroyed.

Based on these rates the FAA estimates that over the next ten years, there will be approximately 2 accidents, 1 fatality, and 1 serious injury. The estimated value of preventing these accidents is estimated to be $8.4 million (discounted). Multiplying the $8.4 million in cargo benefits by the 75 percent effectiveness rate results in adjusted benefits of $6 million ($8.4 million × .75).

Summary of Benefits

In conclusion, the rule will enhance air carrier safety under conditions of ground icing. The rule will reduce pilot error related to taking off with ice on the airframe by using holdover times and pretakeoff contamination checks. The rule is expected to generate potential total part 121 passenger and cargo carrier benefits of $131 million ($125 million + $6 million).

Benefit-Cost Comparison

The present value cost of the rule, which now includes delay costs, is estimated to range between $52 million and $78 million over the next 10 years. These costs also include program development, training, qualification testing, and capital expenditures. These estimates also do not include the cost of overseas operations.

The benefits of the rule are estimated to be $131 million (discounted) over the next decade. These benefits are derived from preventing accidents due to reduced risk during ground icing conditions.

While the FAA has estimated the cost of delays, it was not able to estimate the ripple effect of those delays nor the effect of increased usage of Type II fluids. However, if the present value cost of the ripple effect of delays ranges between $53 million and $79 million, this rule will still be cost beneficial.

International Trade Impact

The rule is not expected to have a significant incremental impact on international trade. This assessment is based on the belief that while U.S. part 121 operators are expected to incur total

compliance costs of $122 million (undiscounted), they will not be placed at a competitive trade disadvantage.

The average cost of an international round trip airplane ticket is approximately $650. With a potential average cost increase of 4 cents per round trip ticket representing less than one-hundredth of a percent of the total cost of a ticket (without consideration of potential delay costs), the likelihood of U.S. air carriers being placed at a competitive trade disadvantage becomes extremely remote. For a now detailed analysis, the reader is referred to the full international trade impact assessment contained in the docket.

Final Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities (small business and small not-for-profit organizations that are independently owned and operated, and small government jurisdictions) are not unnecessarily and disproportionately burdened by Federal regulations. The RFA requires regulatory agencies to review rules that may have "a significant economic impact on a substantial number of small entities." A substantial number of small entities means a number that is not less than eleven and that is more than one-third of the small entities subject to a proposed or existing rule.

The final rule potentially impacts operators of an aircraft for hire with nine aircraft owned but not necessarily operated. Of the 53 active U.S. commercial domestic carriers, the FAA has identified 22 that own or operate nine or fewer aircraft under part 121. The FAA has determined that this is a substantial number since all 22 of these small entities are expected to be affected by the final rule.

To determine whether there is a significant cost impact on small part 121 operators, the annualized cost of the rule must exceed the annualized cost threshold established by FAA Order 2100.14A. The threshold established by the Order for scheduled operators of aircraft for hire falls under two categories. The first category is scheduled operators whose entire fleet has a seating capacity of over 60. The cost threshold for these operators is $112,600. The second category is other scheduled operators with seating capacities less than 60. Their cost threshold is $62,900.

The FAA estimated the annualized cost of the rule to an individual small operator to be $20,800. This number was derived by first summing the undiscounted costs for small operators. These costs are:

Initial Program Development	$5,145
Initial Training	80,436
Qualification Testing	180,981
Initial Capital	289,440
Recurring Maintenance & Operating Costs	384,990
Potential Delay Costs ($69,265,870 x .027)	1,870,178
Total Undiscounted Costs	$2,811,170

The delay costs for small entities were estimated by multiplying the potential $70 million in undiscounted delay costs (high end of cost range) by the 2.7 percent of part 121 carriers that are small. This gives a cost of $1.9 million ($69,265,870 x .027).

The total undiscounted cost, $2.8 million, is then divided by the 22 small operators to get a $127,780 average undiscounted cost for any single small operator. This number is then multiplied by a capital recovery factor of .16275 (10% interest rate for 10 years) to give an annualized cost of $20,800.

The $20,800 annualized cost does not exceed the $62,900 cost threshold prescribed above. Thus, the final rule will not impose a significant cost on a substantial number of small part 121 operators.

Federalism Implications

The regulations herein will not have substantial direct effects on the states, on the relationship between the national government and the states, or on the distribution of power and responsibilities among the various levels of government. Therefore, in accordance with Executive Order 12612, it is determined that this regulation will not have sufficient federalism implications to warrant the preparation of a Federalism Assessment.

Conclusion

For the reasons discussed in the preamble, and based on the findings in the Regulatory Flexibility Determination and the International Trade Impact Analysis, the FAA has determined that this regulation is not major under Executive Order 12291. In addition, the FAA certifies that this regulation will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. This regulation is considered significant under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). A final regulatory evaluation of the regulation, including a final Regulatory Flexibility Determination and International Trade Impact Analysis, has been placed in the docket. A copy may be obtained by contacting the person identified under **"FOR FURTHER INFORMATION CONTACT."**

List of Subjects in 14 CFR Part 121

Air carriers, Air safety, Air transportation, Aircraft, Airmen, Aviation safety, Charter flights, Safety, Transportation.

The Amendment

In consideration of the foregoing, the Federal Aviation Administration amends part 121 of the Federal Aviation Regulations (14 CFR part 121) as follows:

PART 121—CERTIFICATION AND OPERATIONS: DOMESTIC, FLAG, AND SUPPLEMENTAL AIR CARRIERS AND COMMERCIAL OPERATORS OF LARGE AIRCRAFT

1. The authority citation for part 121 continues to read as follows:

Authority: 49 U.S.C. App. 1354(a), 1355, 1356, 1357, 1401, 1421–1430, 1472, 1485, and 1502; 49 U.S.C. 106(g).

2. Section 121.629 is amended by revising paragraph (b) and by adding new paragraphs (c) and (d) to read as follows:

§ 121.629 Operation in icing conditions.

* * * * *

(b) No person may take off an aircraft when frost, ice, or snow is adhering to the wings, control surfaces, propellers, engine inlets, or other critical surfaces of the aircraft or when the takeoff would not be in compliance with paragraph (c) of this section. Takeoffs with frost under the wing in the area of the fuel tanks may be authorized by the Administrator.

(c) Except as provided in paragraph (d) of this section, no person may dispatch, release, or take off an aircraft any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, unless the certificate holder has an approved ground deicing/anti-icing program in its operations specifications and unless the dispatch, release, and takeoff comply with that program. The approved ground deicing/anti-icing program must include at least the following items:

(1) A detailed description of—

(i) How the certificate holder determines that conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft and that ground deicing/anti-icing

operational procedures must be in effect;

(ii) Who is responsible for deciding that ground deicing/anti-icing operational procedures must be in effect;

(iii) The procedures for implementing ground deicing/anti-icing operational procedures;

(iv) The specific duties and responsibilities of each operational position or group responsible for getting the aircraft safely airborne while ground deicing/anti-icing operational procedures are in effect.

(2) Initial and annual recurrent ground training and testing for flight crewmembers and qualification for all other affected personnel (e.g., aircraft dispatchers, ground crews, contract personnel) concerning the specific requirements of the approved program and each person's responsibilities and duties under the approved program, specifically covering the following areas:

(i) The use of holdover times.

(ii) Aircraft deicing/anti-icing procedures, including inspection and check procedures and responsibilities.

(iii) Communications procedures.

(iv) Aircraft surface contamination (i.e., adherence of frost, ice, or snow) and critical area identification, and how contamination adversely affects aircraft performance and flight characteristics.

(v) Types and characteristics of deicing/anti-icing fluids.

(vi) Cold weather preflight inspection procedures.

(vii) Techniques for recognizing contamination on the aircraft.

(3) The certificate holder's holdover timetables and the procedures for the use of these tables by the certificate holder's personnel. Holdover time is the estimated time deicing/anti-icing fluid will prevent the formation of frost or ice and the accumulation of snow on the protected surfaces of an aircraft. Holdover time begins when the final application of deicing/anti-icing fluid commences and expires when the deicing/anti-icing fluid applied to the aircraft loses its effectiveness. The holdover times must be supported by data acceptable to the Administrator. The certificate holder's program must include procedures for flight crewmembers to increase or decrease the determined holdover time in changing conditions. The program must provide that takeoff after exceeding any maximum holdover time in the certificate holder's holdover timetable is permitted only when at least one of the following conditions exists:

(i) A pretakeoff contamination check, as defined in paragraph (c)(4) of this section, determines that the wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, are free of frost, ice, or snow.

(ii) It is otherwise determined by an alternate procedure approved by the Administrator in accordance with the certificate holder's approved program that the wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, are free of frost, ice, or snow.

(iii) The wings, control surfaces, and other critical surfaces are redeiced and a new holdover time is determined.

(4) Aircraft deicing/anti-icing procedures and responsibilities, pretakeoff check procedures and responsibilities, and pretakeoff contamination check procedures and responsibilities. A pretakeoff check is a check of the aircraft's wings or representative aircraft surfaces for frost, ice, or snow within the aircraft's holdover time. A pretakeoff contamination check is a check to make sure the wings, control surfaces, and other critical surfaces, as defined in the certificate holder's program, are free of frost, ice, and snow. It must be conducted within five minutes prior to beginning take off. This check must be accomplished from outside the aircraft unless the program specifies otherwise.

(d) A certificate holder may continue to operate under this section without a program as required in paragraph (c) of this section, if it includes in its operations specifications a requirement that, any time conditions are such that frost, ice, or snow may reasonably be expected to adhere to the aircraft, no aircraft will take off unless it has been checked to ensure that the wings, control surfaces, and other critical surfaces are free of frost, ice, and snow. The check must occur within five minutes prior to beginning takeoff. This check must be accomplished from outside the aircraft.

Issued in Washington, DC on September 24, 1992.

Thomas C. Richards,

Administrator.

[FR Doc. 92-23652 Filed 9-25-92; 11:12 am]

BILLING CODE 4910-03-M