

aviation medical examiner is delegated to the Federal Air Surgeon; the Manager, Aeromedical Certification Division; and each Regional Flight Surgeon. Where the person does not meet the standards of §§ 67.107(c), 67.109(b), 67.113(b), 67.207(c), 67.209(b), 67.213(b), 67.307(c), 67.309(b), or 67.313(b), any action taken under this paragraph other than by the Federal Air Surgeon is subject to reconsideration by the Federal Air Surgeon. A certificate issued by an aviation medical examiner is considered to be affirmed as issued unless an FAA official named in this paragraph (authorized official) reverses that issuance within 60 days after the date of issuance. However, if within 60 days after the date of issuance an authorized official requests the certificate holder to submit additional medical information, an authorized official may reverse the issuance within 60 days after receipt of the requested information.

(d) The authority of the Administrator, under section 609 of the Federal Aviation Act of 1958 (49 U.S.C. App. 1429), to re-examine any civil airman to the extent necessary to determine an airman's qualification to continue to hold an airman medical certificate, is delegated to the Federal Air Surgeon and his or her authorized representatives within the FAA.

§ 67.409 Denial of medical certificate.

(a) Any person who is denied a medical certificate by an aviation medical examiner may, within 30 days after the date of the denial, apply in writing and in duplicate to the Federal Air Surgeon, Attention: Manager, Aeromedical Certification Division, AAM-300, Federal Aviation Administration, P.O. Box 26080, Oklahoma City, Oklahoma 73126, for reconsideration of that denial. If the person does not ask for reconsideration during the 30-day period after the date of the denial, he or she is considered to have withdrawn the application for a medical certificate.

(b) The denial of a medical certificate—

(1) By an aviation medical examiner is not a denial by the Administrator under section 602 of the Federal Aviation Act of 1958 (49 U.S.C. App. 1422);

(2) By the Federal Air Surgeon is considered to be a denial by the Administrator under section 602 of the Act; and

(3) By the Manager, Aeromedical Certification Division, or a Regional Flight Surgeon is considered to be a denial by the Administrator under section 602 of the Act except where the applicant does not meet the standards of §§ 67.107(c), 67.109(b), or 67.113(b); 67.207(c), 67.209(b), or 67.213(b); or 67.307(c), 67.309(b), or 67.313(b).

(c) Any action taken under § 67.407(c) that wholly or partly reverses the issue of a medical certificate by an aviation medical examiner is the denial of a medical certificate under paragraph (b) of this section.

(d) If the issue of a medical certificate is wholly or partly reversed by the Federal Air Surgeon; the Manager, Aeromedical Certification Division; or a Regional Flight Surgeon, the person holding that certificate shall surrender it, upon request of the FAA.

§ 67.411 Medical certificates by flight surgeons of Armed Forces.

(a) The FAA has designated flight surgeons of the Armed Forces on specified military posts, stations, and facilities, as aviation medical examiners.

(b) An aviation medical examiner described in paragraph (a) of this section may give physical examinations for the FAA medical certificates to applicants who are on active duty or who are, under Department of Defense medical programs, eligible for FAA medical certifications as civil airmen. In addition, such an examiner may issue or deny an appropriate FAA medical certificate in accordance with the regulations of this chapter and the policies of the FAA.

(c) Any interested person may obtain a list of the military posts, stations, and facilities at which a flight surgeon has been designated as an aviation medical

examiner from the Surgeon General of the Armed Force concerned or from the Manager, Aeromedical Education Division, AAM-400, Federal Aviation Administration, P.O. Box 26082, Oklahoma City, Oklahoma 73125.

§ 67.413 Medical records.

(a) Whenever the Administrator finds that additional medical information or history is necessary to determine whether an applicant for or the holder of a medical certificate meets the medical standards for it, the Administrator requests that person to furnish that information or to authorize any clinic, hospital, physician, or other person to release to the Administrator all available information or records concerning that history. If the applicant or holder fails to provide the requested medical information or history or to authorize the release so requested, the Administrator may suspend, modify, or revoke all medical certificates the airman holds or may, in the case of an applicant, deny the application for an airman medical certificate.

(b) If an airman medical certificate is suspended, modified, or revoked under paragraph (a) of this section, that suspension, modification, or revocation remains in effect until the requested information, history, or authorization is provided to the FAA and until the Federal Air Surgeon determines whether the person meets the medical standards under this part.

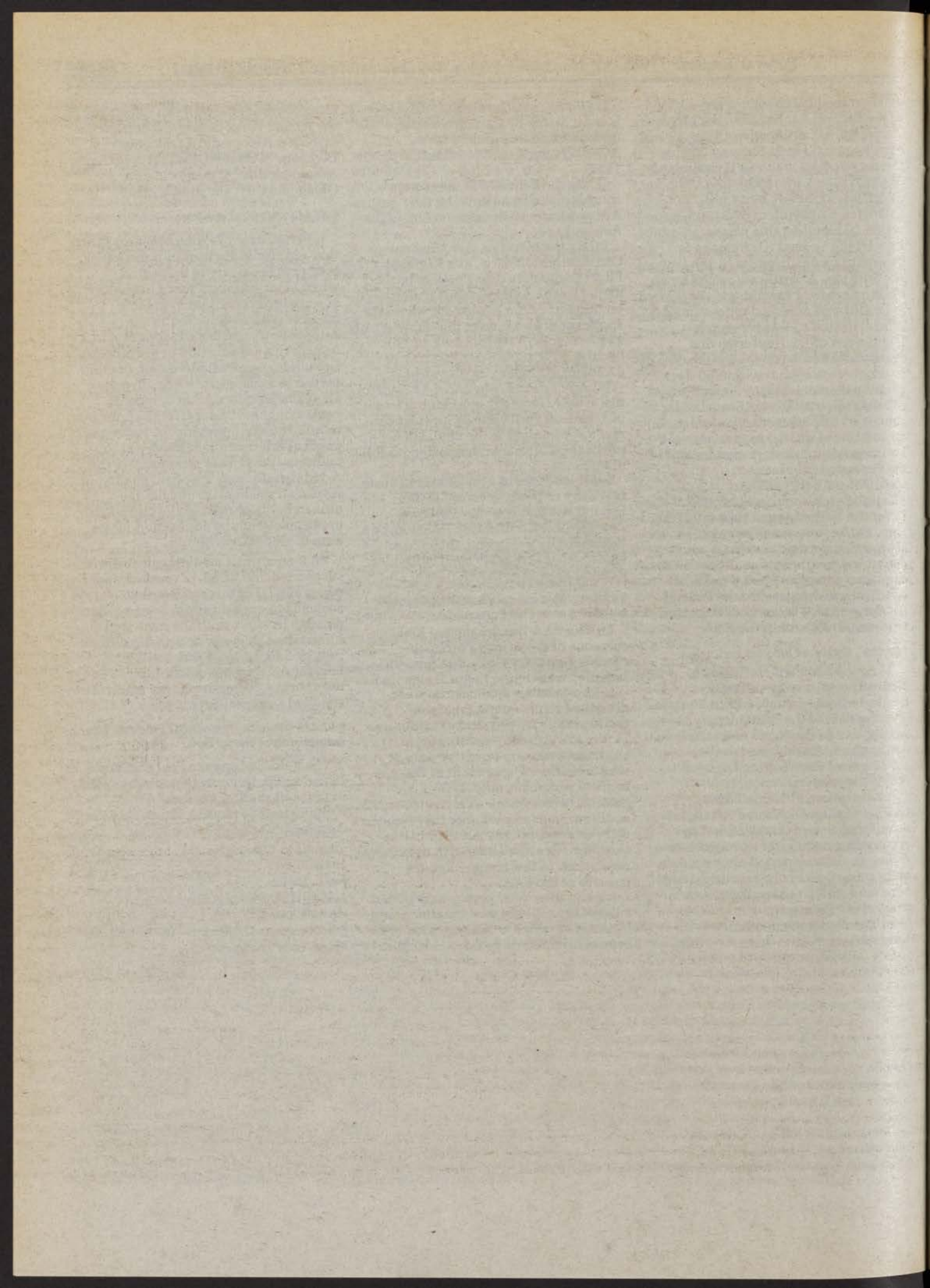
§ 67.415 Return of medical certificate after suspension or revocation.

The holder of any medical certificate issued under this part that is suspended or revoked shall, upon the Administrator's request, return it to the Administrator.

Issued in Washington, D.C. on October 17, 1994.

Jon L. Jordan,
Federal Air Surgeon, Federal Aviation
Administration.

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Friday
October 21, 1994

Part III

**Department of
Energy**

Office of the Secretary

10 CFR Part 600

**Financial Assistance Rules;
Implementation of OMB Circular A-110;
Interim Final Rule**

DEPARTMENT OF ENERGY

Office of the Secretary

10 CFR Part 600

RIN 1991-AB13

Financial Assistance Rules;
Implementation of OMB Circular A-110

AGENCY: Department of Energy.

ACTION: Interim final rule.

SUMMARY: The Department of Energy (DOE) today is amending its Financial Assistance Rules (Rules) to implement Office of Management and Budget (OMB) Circular A-110, "Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals, and Other Non-Profit Organizations," to reorganize the subparts of the Rules, to update citations throughout the Rules, and to change citations to conform to the reorganization.

DATES: This regulation is effective November 21, 1994. Written comments on the interim final rule must be received by December 20, 1994.

ADDRESSES: Comments should be addressed to: Gwendolyn Cowan, Director, Business and Financial Policy Division (HR-521.2), Office of Procurement and Assistance Management, U.S. Department of Energy, 1000 Independence Ave., SW, Washington, D.C. 20585.

FOR FURTHER INFORMATION CONTACT: Cheryl Seckinger, Business and Financial Policy Division, (HR-521.2), U.S. Department of Energy, 1000 Independence Avenue, SW., Washington, D.C. 20585, (202) 586-8192.

SUPPLEMENTARY INFORMATION:

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I. Introduction

OMB Circular A-110 was published in final form on November 29, 1993 (58 FR 62992) with the direction to Federal agencies that they were to implement the Circular by regulation. For DOE that implementation is taking place through

this rulemaking. Subpart B of the Financial Assistance Rules (10 CFR Part 600) is DOE's implementation of the previous version of Circular A-110. In this rulemaking, Subpart B will be revised as a modified version of the published text of Circular A-110, as explained below.

As part of this rulemaking, DOE is restructuring the Financial Assistance Rules. Current Subpart E, which is DOE's implementation of the Common Rule on Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments, is being moved to Subpart C. It contains the general administrative rules for awards to governmental entities and is being moved forward for more prominence. Current Subpart C is being moved to Subpart D. Current Subpart D is being moved to Subpart E. There are no substantive changes made by this rule in the text of these three Subparts except for changing the references due to the restructuring.

II. Changes to 10 CFR Part 600

Sections 600.2, 600.4, 600.5, 600.7, 600.9, 600.10, 600.14, 600.15, 600.20, 600.25, 600.26, 600.28, 600.29, 600.31, 600.32, and 600.33 of Subpart A are amended to correct the references resulting from this implementation of OMB Circular A-110 and to make some minor technical changes to revise cross-references, update citations, and reflect DOE organizational changes.

The current text of Subpart B is being revised as a modified version of OMB Circular A-110, which was published in the *Federal Register* on November 29, 1993 (58 FR 62992). A discussion of the modifications that were made to A-110 for this implementation is contained below in the section entitled "Incorporation of OMB Circular A-110 Into the Financial Assistance Rules."

Sections 600.200, 600.202, 600.203, 600.206 and 600.207 of Subpart C are amended to correct the references resulting from this implementation of OMB Circular A-110 and to correct some existing minor errors in citations and grammar.

Sections 600.302, 600.303, 600.306 and 600.314 of Subpart D are amended to correct the references resulting from this implementation of OMB Circular A-110 and to correct some existing typographical errors.

Section 600.441 of Subpart E is amended to correct a reference resulting from this implementation of OMB Circular A-110 and to correct an existing error.

Incorporation of OMB Circular A-110
Into the Financial Assistance Rules

In the process of incorporating Circular A-110 into the Financial Assistance Rules, several types of changes have been made to the text of the Circular as it was published by OMB. Those changes are categorized and discussed below.

A. Provisions Involving Change From
Circular to Regulatory Language

Office of Management and Budget (OMB) Circular A-110 is a directive to all Federal agencies. Consequently, specific agency terms are not used and some of the text is phrased as OMB speaking to Federal agencies. Therefore, portions of this rulemaking have been rewritten to be phrased as the DOE speaking to affected recipients. For example, the fourth sentence of the definition of "program income" in A-110 begins: "Except as otherwise provided in Federal awarding agency regulations * * *." In this rulemaking it begins: "Except as otherwise provided in this subpart, Program regulations, or the * * *."

Those sections of the rulemaking in which changes were made from the text of A-110 to be more appropriately phrased as a rulemaking by DOE directed at affected recipients rather than as a circular by OMB directed at Federal agencies are as follows:

The words "Federal," "Federal Government," "Federal awarding agency(ies)" were changed to "DOE" or "the DOE" in the following sections of the interim final rule: In § 600.102, the definitions of the following terms: Award, closeout, cost sharing or matching, date of completion, disallowed costs, funding period, program income, project period, recipient, suspension, termination, unobligated balance; §§ 600.110; 600.111(a) and (b); 600.114(a); 600.115; 600.121(b)(1), (c), and (d); 600.122(c), (d), (e), (f)(1), (f), (h), (h)(1), (i)(1); 600.123 (c) and (c)(2); 600.124(c); 600.125(c), (e)(1), (f), (j), (k), and (m); 600.128; 600.131; 600.132(a), (b), (c), and (c)(2); 600.133(a)(1) and (2), (b); 600.134(c), (d), (e), (f)(1)(ix), (f)(4), (g), (g)(1), (g)(3), (h), (h)(2), and (h)(3); 600.136(a), (c) and (d); 600.140; 600.141; 600.144(b), (d), (e), and (e)(1)(d); 600.148(c), (d), and (e); 600.148(c) and (d); 600.151(b), (f), (g), and (h); 600.152(a)(1)(i), (a)(1)(iii), (a)(1)(iv), (a)(2)(i), (a)(2)(iii), (a)(2)(iv), (a)(2)(v), (b)(1), (b)(2); 600.153(a), (b), (b)(3), (c), (d), (e), and (f); 600.161(a)(1), (a)(2), and (a)(3); 600.162(a), (a)(1), and (b); 600.171(a), (b), (c), (d), (e), and (g); 600.172(a)(1) and (b); 600.173(a) and (b).

The word "circular" was changed to "subpart" in the following sections: §§ 600.100; 600.102; 600.104; 600.114(a); 600.123(a)(7); 600.125(e); 600.144(e)(1); and 600.148(e).

The phrases "Federal awarding agency regulations" or "Federal awarding agency" were changed to the appropriate terminology to integrate the Circular into the DOE rules, such as "contracting officer," "program regulations," "terms and conditions of the award," "Subpart," or some combination of the four in the following sections: the definition of "program income" in §§ 600.101; 600.124(b), (d), (e), (f), and (h); 600.125(c)(6), (e), (e)(4), and (f); 600.126(b); 600.152(a)(1)(ii), (a)(2)(v), and (b)(3).

The words "shall" or "shall be authorized to" that refer to Federal agency or recipient were changed to "will" when referring to DOE or the recipient, as appropriate, in the following sections: §§ 600.115; 600.122(c)(3), (e)(2), (f), (h) and (j); 600.132(c); 600.134(g); and 600.152(a)(2)(i).

B. Agency Options

Circular A-110 contains a number of opportunities for Federal agencies to exercise options as to what policies they want to follow. The list and description of the options that DOE has selected are as follows:

In § 600.101 Definitions, DOE has decided to include commercial organizations in the definition of "recipient."

In § 600.104 Subawards, the applicability of this subpart to commercial organizations is included to be consistent with existing DOE policy as provided in the current subpart B.

In § 600.123(a)(6) under Cost sharing, "when required by the Federal awarding agency" is deleted to reflect that DOE is requiring cost-sharing contributions to be shown in the approved budget.

In § 600.123(b) under Cost sharing, "only with the prior approval of the Federal awarding agency" is deleted to reflect that DOE is permitting unrecovered indirect costs to be included in cost sharing.

In § 600.124(f) under Program income, "If authorized by Federal awarding agency" is deleted and replaced with "Unless program * * * provide otherwise" to reflect that DOE is permitting incidental costs to be deducted from program income unless there are contravening program regulations.

In § 600.125 (c)(5) under Revision of budget and program plans, "if approval is required by the Federal awarding agency" is deleted and replaced by "If

required by program regulations" to reflect that DOE is permitting rebudgeting between direct and indirect costs without prior approval, unless program regulations provide otherwise.

In § 600.125(c)(6) under Revisions of budget and program plan "the Federal awarding agency" is deleted and replaced by "program regulations or the terms and conditions of award" to reflect that the prior approvals included in the Circulars and regulations cited in the subparagraph are required unless specifically waived in DOE program regulations or in the specific award document.

In § 600.125(e) pertaining to prior approval requirements, "Federal awarding agencies are authorized, at their option" and "Circular and OMB Circulars A-21 and A-122" are deleted and replaced by "program regulations may" and "subpart and its Appendices" to reflect that DOE is choosing to limit the waivers of prior approvals to those contained in program regulations or in this implementation of Circular A-110 and not extending it to waive prior approval requirements contained in the cost principal Circulars A-21 and A-122.

In § 600.125(f) on rebudgeting, "The Federal awarding agency may, at its option" is deleted and replaced by "Program regulations may" to reflect that DOE is choosing to allow unrestricted rebudgeting by a recipient (provided the uses are consistent with the original appropriation) unless program regulations provide otherwise.

In § 600.125(i) regarding imposing other prior approval requirements, "unless a deviation has been approved by OMB" is deleted and replaced by "Except in accordance with the deviation procedures in § 600.4 or as may be provided for in program regulations" and "by the DOE" to reflect that there may be program regulations that need to be considered in understanding what prior approval requirements may exist for a particular financial assistance program. Additionally, "may" has been changed to "will" to more emphatically state what DOE policy is.

In § 600.125(l) on budget request formats, the entire text is deleted and replaced by "Requests for budget revisions may be made by letter" to reflect DOE policy that the use of budget forms are not required (although, of course, they may be used) for requesting budget revisions.

In § 600.126 (c) and (d) on Non-Federal audits, the entire text is deleted and replaced with the language shown to reflect DOE policy that the Contracting Officer has wide discretion

in determining the nature of the audits needed for hospitals not covered by A-133 and commercial organizations. In addition, subparagraph (e) is added to address audits of individuals who are financial assistance recipients.

In § 600.130 Property Standards, "or program regulations" is added to reflect that there may be program regulations that need to be considered in understanding property management requirements.

In § 600.132 Real property (introductory paragraph), the entire text is deleted and replaced with the language shown to reflect that the provisions of this section address real property use and disposition.

In § 600.133(b) Exempt property, the text has been deleted and replaced with the language shown to reflect that, with regard to exempt property, DOE shall retain the right to issue disposition instructions within 120 days of receipt of a request for disposition of unneeded equipment or receipt of final inventory. If DOE fails to issue such instructions within that time period, title to equipment vests in the recipient without further obligation to the Federal Government.

In § 600.136(c) pertaining to intangible property, "Unless waived by the Federal awarding agency, the Federal Government" has been deleted and replaced with "DOE" to reflect the DOE policy that DOE retains the indicated rights in data.

In § 600.137 Property trust relationship, "Agencies may require" has been deleted and replaced with "shall" to reflect that liens will be recorded on personal or real property acquired or improved with Federal funds.

In § 600.152(a)(2)(ii) regarding Financial reports, "Federal awarding agencies may require" has been deleted and replaced with "Recipients shall" to reflect that recipients will forecast cash requirements on the SF-272.

In § 600.153 regarding record retention and access, "unless such requirements are established in program regulations" has been added to reflect that there may be program regulations that need to be considered in understanding record retention and access requirements.

C. Cross-References

Those portions of this rulemaking that have added cross-references to the text of A-110 are as follows:

In §§ 600.101 Definitions (under the definition of "Suspension"), 600.113 Debarment and Suspension, 600.144(d) Procurement Procedures, and 600.162(d) Enforcement, a reference to

10 CFR Part 1036, DOE's implementation of the non-procurement debarment and suspension executive orders, has been added.

The text of § 600.103 Deviations has been deleted and a cross-reference to DOE's deviation provisions in § 600.4 has been added. The deleted text entails directions to Federal agencies about the degree to which OMB will permit deviations from the provisions of the Circular. These provisions are binding upon Federal agencies by virtue of their inclusion in Circular A-110 and do not need to be provided for in agency implementing regulations. DOE deviation provisions in § 600.4 make reference to the fact that OMB approval may be needed for certain types of deviations. Additional cross-references to the deviation provisions of § 600.4 are in §§ 600.125(d) and (i) on Budget and project reviews, and § 600.140 Procurement standards.

In § 600.121(b) on Financial Management Standards, references to § 600.121(f) and § 600.181 are added to identify exceptions to the financial management provisions of this subparagraph.

Section 600.149 has been added to cross-reference the Resource Conservation and Recovery Act provisions in § 600.116.

D. Provisions From the Current Financial Assistance Rules

In this rulemaking implementing OMB Circular A-110, the basic approach is to replace the current text of Subpart B of 10 CFR part 600 with the appropriately modified text of Circular A-110. However, certain portions of Subpart B have been retained and integrated into the A-110 language. They are as follows:

In § 600.112 on application forms, subparagraphs (a), (b) and (c) are deleted and replaced with the provisions which are carried over from 10 CFR 600.102. These sections are being added to provide detailed application and budgetary forms information to recipients. Subparagraph (d) has been slightly reworded and included under § 600.112(a) of this rulemaking.

Section 600.114(b) regarding special restrictive conditions is carried over from 10 CFR 600.105(c) and concerns the issue of a recipient placing special restrictive conditions on subawards, which is not addressed in Circular A-110.

Section 600.121(f) on financial management system requirements is carried over from § 600.109 and concerns the issue of the financial management system required for

individual recipients of awards, which is not addressed in Circular A-110.

The language at the end of § 600.122(h)(2) on Payments beginning with "Before withholding any payment" is carried over from § 600.112(g)(3) and provides 30 days notice, and an opportunity to cure the noncompliance or indebtedness within that time period, before withholding of payment occurs. Such a provision is not addressed in Circular A-110.

Sections 600.123(j), (k), and (l) cost-sharing provisions are carried over from §§ 600.107(a), (b), and (c). The provisions of §§ 600.123(j) and (k) are continued because of the concern that the requirements for cost sharing be specifically stated (so that all applicants clearly understand the provisions they are operating under) and justified (so that any required cost sharing is really a program need). Section 600.123(l) is continued to address program income, patent rights, rights in data and foregone fees in the context of cost sharing, provisions which are not included in Circular A-110.

The language at the end of § 600.125(e)(4) on pre-award costs, beginning with "For continuation awards," is carried over from § 600.103(g)(2)(ii). This language permits costs incurred more than 90 days before the beginning of a continuation award to be charged to that continuation year, without the need to receive prior approval from DOE, should the award be made. As always, pre-award costs are incurred at the recipient's risk that the award may not be made. This is, in effect, a waiver of Section _____.25(e)(1) of OMB Circular A-110, and is a permitted agency option under Section _____.25(e) of the Circular.

Sections 600.125(n) and (o) pertaining to budget and project changes are carried over from §§ 600.114(e)(3), (4), and (5). These provisions provide more procedural detail for DOE recipients in dealing with budget and project revisions than is included in Circular A-110.

Sections 600.127(b) and (c) allowable cost provisions are carried over from §§ 600.103(f) and (h). Section 600.127(b) provides more detail about DOE evaluation of indirect cost requests than is provided in Circular A-110. Section 600.127(h) states the DOE policy of opposition to paying fees or profits on financial assistance awards with the exception of Small Business Innovation Research Awards. This subject is not addressed directly in Circular A-110, although the second Response under the Comments and Responses in the preamble to the Circular states:

"Generally fees and profits are not paid to recipients unless authorized by legislation."

Section 600.144(f) under Procurement procedures is carried over from § 600.119(e) and addresses payments of interest penalties on dealings between recipients and subrecipients, a subject not addressed in OMB Circular A-110.

The final paragraph of Section 151(d) on program reporting is a combination of provisions carried over from §§ 600.115(b)(3) and (f). This language lists specific performance reporting forms that DOE has developed, has received OMB clearance to use and may use as the Contracting Officer sees fit.

Section 600.151(i) on program reporting is carried over from § 600.115(i) and states provisions regarding performance reporting requirements on subawards not addressed in OMB Circular A-110.

Section 600.153(h) on record retention requirements is carried over from § 600.124(c) and states provisions regarding record retention for program income which was not addressed in OMB Circular A-110.

The segment of the subpart titled "Additional Provisions" was added as a location for rules for types of recipients not otherwise covered in this subpart. The provisions of § 600.181 are carried over from § 600.125.

E. Miscellaneous Changes

Further miscellaneous changes of this regulatory implementation of A-110 from the text of Circular A-110 as published that have not been included above are as follows:

In § 600.104 Subawards, the sentence beginning "Thus, this subpart is" was added to clarify the applicability of these provisions to subrecipients. It does not change the policy of the Circular.

In § 600.111(b) pertaining to public notice requirements, "shall" is changed to "will, whenever practical," because of the possibility that awards may need to be made without sufficient lead time to provide the notification.

The last sentence of § 600.121(a) regarding financial requirements for research awards has been added for emphasis.

The last sentence of § 600.121(b)(4) reiterates § 600.121(a).

In § 600.122(f) on payment, "awardee's" was changed to "recipient's" to be consistent with DOE usage.

The phrase "as defined in OMB Circular A-129, "Managing Federal Credit Programs"" in § 600.122(h)(2) is deleted as an unnecessary cross-reference that may also restrict the

applicability of this provision unnecessarily.

Section 600.123(a) under Cost sharing or matching has been rewritten to improve the syntax.

In § 600.123(f) under Cost sharing or matching, "expendable equipment" has been deleted because it is an example that does not fit the subject of the paragraph.

Section 600.124(a) under Program income has been rewritten to improve the syntax.

In § 600.124(b)(1), (2) and (3), "program" has been deleted to reflect that DOE is limiting the use of program income to the project on which it is earned, not more generally to undefined programs.

Section 600.124(d) has been rewritten to improve the syntax and to add the applicability to commercial organizations.

Section 600.125(a) on budget plans has been rewritten to improve the syntax.

Section 600.125(e)(2) on budget period extensions has been rewritten to improve the syntax.

In §§ 600.128, 600.151(b), and 600.161(a)(3), "grant" was changed to "award" to be consistent with DOE usage.

In § 600.134(c) under Equipment, "Federal awarding agency which funded the original project" has been deleted and replaced with "DOE." The word "awarding" between "Federal" and "agencies" has been deleted as unnecessary.

In § 600.134(g) under Equipment, the following has been added: "Equipment with a current per-unit fair market value of less than \$5000 may be retained, sold or otherwise disposed of with no further obligation to the awarding agency." This makes explicit what is intended but not directly stated in Circular A-110. This policy, it should be noted, is consistent with Section 32(e)(1) of the A-102 Common Rule.

Section 600.134(h) under Equipment and its subparagraphs have been renumbered from Circular A-110, in which it was listed as Section 34(g)(4). Subparagraph (g)(4) was a different subject from the rest of the paragraph (g). Also, the language "the recipient shall apply the standards of this section, as appropriate" was deleted and replaced by "the provisions of 600.134(g)(1) apply" to give a more precise cross-reference to the applicable standards.

In § 600.144(a)(2) under Procurement procedures, "for the Federal Government" is deleted as an inappropriate standard for financial assistance.

In § 600.151(h) pertaining to performance reports, "applicable" was added to emphasize that not all provisions of 5 CFR Part 1320 apply in requesting performance data.

Section 600.152(a)(1)(i) under Financial reporting has been rewritten to improve syntax.

In § 600.153(b)(4) pertaining to record retention requirements, "etc. as" is deleted and replaced by "and related records, for which retention requirements are" to provide more specific examples.

In § 600.153(g) pertaining to record retention requirements, the first sentence in the A-110 text was deleted because it had the appearance of a subparagraph title, which the rest of the subparagraphs did not have.

In § 600.153(g) (1) and (2), "awarding" was deleted and replaced by "responsible for negotiating the recipient's indirect cost rate" in (g)(1) and "cognizant" in (g)(2) to emphasize the role of cognizant agencies in indirect cost rate negotiation.

Appendix A, No. 8 has been rewritten to more accurately state the circumstances under which Executive Orders 12549 and 12689 apply.

III. Explanation for "Interim Final" Rulemaking

As the foregoing preamble discussion indicates, the vast majority of the provisions of the interim final rule issued today follow the provisions of revised OMB Circular A-110.

For the reasons that follow, DOE has determined that none of the provisions of the interim final rule need to be proposed for public comment. The final version of revised OMB Circular A-110 resulted from a lengthy public comment process involving all of the Executive agencies including DOE. In 1987, an interagency task force recommended that OMB Circular A-110, "Uniform Administrative Requirements for Grants and Agreements With Institutions of Higher Education, Hospitals and Other Non-Profit Organizations" be combined with OMB Circular A-102, "Uniform Requirements for Grants and Agreements with State and Local Governments," as a consolidated "common rule." In November, 1988, a proposed consolidated "common rule" was published by OMB in the *Federal Register*, 53 FR 44716. That proposal elicited a substantial number of adverse comments. Subsequently, in August 1992, a revised proposal, developed by another interagency task force which also included DOE, was published for public comment. 57 FR 39018. The revised proposal drew over 200

comments from a wide variety of sources.

All relevant comments were considered in the final revision of OMB Circular A-110 when it was issued for government-wide use on November 29, 1993, 58 FR 62992. The revised circular states that Federal agencies responsible for awarding and administering grants and other agreements to recipients described therein shall adopt the language in the circular unless other provisions are required by Federal statute or exceptions or deviations are approved by OMB.

As noted above, OMB Circular A-110 identifies certain areas where agencies have options, but the available options are explicitly limited. These areas are discussed in section I.B. of this Preamble under Supplementary Information. For the most part, the provisions of the interim final rule discussed in that preamble section represent a continuation or a technical clarification of existing policy under 10 CFR part 600. To the extent that there are changes in existing policy, they are either the choice of the most permissive available option under OMB Circular A-110 (e.g., § 600.123(b) permitting unrecovered indirect costs to be included in cost sharing) or a purely procedural change (e.g., § 600.125 limiting prior approval requirements for revisions of budget and program plans.)

Given the extensive public comment process on the OMB circular, DOE's participation in the resolution of comments, and the lack of discretion to change the policies in the circular, DOE concluded that a notice of proposed rulemaking for its implementing rules would be unnecessary, impracticable, and contrary to public policy.

There is no obligation to issue a proposed rule with respect to those provisions of today's regulations that are procedural, interpretative, or non-substantive clarifications.

With respect to the provisions of today's rule that exercise the options that are allowable under OMB Circular A-110, DOE has reached a similar conclusion because those substantive policies represent the most permissive option permitted under the circular.

Finally, to the extent that existing policies are being continued, DOE also relies on its discretion to reissue existing regulations, with minor technical editing, without proposing them for public comment.

IV. Review Under Executive Order 12612

Executive Order 12612 requires that regulations, rules, legislation, and any other policy actions be reviewed for any

substantial direct effects on States, on the relationship between the Federal Government and the States, or in the distribution of power and responsibilities among various levels of Government. If there are sufficient substantial direct effects, then the Executive Order requires preparation of a federalism assessment to be used in all decisions involved in promulgating and implementing a policy action. Today's interim final rule will revise certain policy and procedural requirements. However, DOE has determined that this rulemaking will not have a substantial direct effect on the institutional interests or traditional functions of States.

V. Regulatory Review

Today's regulatory action has been determined not to be a "significant regulatory action" under Executive Order 12866, "Regulatory Planning and Review," (58 FR 51735, October 4, 1993). Accordingly, today's action was not subject to review under the Executive Order by the Office of Information and Regulatory Affairs.

VI. Review Under the Regulatory Flexibility Act

This interim final rule was reviewed under the Regulatory Flexibility Act of 1980, Pub. L. 96-354, 94 Stat. 1164, which requires preparation of a regulatory flexibility analysis for any regulation that will have a significant economic impact on a substantial number of small entities; i.e., small businesses, small organizations, and small governmental jurisdictions. DOE has concluded that the interim final rule would only affect small entities as they apply for and receive financial assistance, and does not create additional economic impact on small entities as a whole. DOE certifies that this interim final rule will not have a significant economic impact on a substantial number of small entities and, therefore, no regulatory flexibility analysis has been prepared.

VII. Review Under the Paperwork Reduction Act

No information collection or recordkeeping requirements are imposed upon the public by this interim final rulemaking. Accordingly, no OMB clearance is required under the Paperwork Reduction Act of 1980, 44 USC 3501, et seq., or OMB implementing regulations at 5 CFR Part 1320.

VIII. Review Under the National Environmental Policy Act

DOE has concluded that this rule falls into a class of actions (categorical exclusion A5) that are categorically excluded from NEPA review because they would not individually or cumulatively have significant impact on the human environment, as determined by the Department's regulations (10 CFR Part 1021, Subpart D) implementing the National Environmental Policy Act of 1969 (42 U.S.C. 4321, 4331-4335, 4341-4347 (1976)). Therefore, this rule does not require an environmental impact statement or an environmental assessment pursuant to NEPA.

IX. Review Under Executive Order 12778

Section 2 of Executive Order 12778 instructs each agency to adhere to certain requirements in promulgating new regulations and reviewing existing regulations. These requirements, set forth in sections 2(a) and (b)(2), include eliminating drafting errors and needless ambiguity, drafting the regulations to minimize litigation, providing clear and certain legal standards for affected conduct, and promoting simplification and burden reduction. Agencies are also instructed to make every reasonable effort to ensure that the regulation specifies clearly any preemptive effect, effect on existing Federal law or regulation, and retroactive effect; describes any administrative proceedings to be available prior to judicial review and any provisions for the exhaustion of such administrative proceedings; and defines key terms. DOE certifies that today's interim final rule meets the requirements of sections 2 (a) and (b) of Executive Order 12778.

X. Public Comments

Interested persons are invited to participate in this rulemaking by submitting data, views, or arguments with respect to the changes set forth in this notice. Three copies of written comments should be submitted to the address indicated in the ADDRESSES section of this notice. All comments received will be available for public inspection in the DOE Reading Room, Room 1E-190, Forrestal Building, 1000 Independence Avenue, SW., Washington, D.C. 20585, between the hours of 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays. All written comments received by the date given in the DATES section will be fully considered. Any information considered to be confidential must be so identified and submitted in writing, one copy only. The DOE reserves the right

to determine the confidential status of the information and to treat it according to our determination.

The Department has concluded that this interim final rule does not involve a substantial issue of fact or law and that the interim final rule should not have substantial impact on the nation's economy or a large number of individuals or businesses. Therefore, pursuant to Pub. L. 95-91; the DOE Organization Act, and the Administrative Procedure Act (5 U.S.C. 553), the Department does not plan to hold a public hearing on this interim final rule.

List of Subjects in 10 CFR Part 600

Accounting; Administrative practice and procedure; Government contracts; Grant programs; Indians; Intergovernmental relations; Loan programs; Lobbying; Penalties; Reporting and recordkeeping requirements.

Issued in Washington, DC., October 13, 1994.

Richard H. Hopf,

Deputy Assistant Secretary for Procurement and Assistance Management.

For the reasons set out in the preamble, Part 600 of Chapter II, Title 10 of the Code of Federal Regulations is amended as follows:

PART 600—FINANCIAL ASSISTANCE RULES

1. The authority citation for Part 600 continues to read as follows:

Authority: Secs. 644 and 646, Pub. L. 95-91, 91 Stat. 599 (42 U.S.C. 7254 and 7256); Pub. L. 97-258, 96 Stat. 1003-1005 (31 U.S.C. 6301-6308), unless otherwise noted.

Subparts C, D, and E [Redesignated as Subparts D, E, and C]

2. Subparts C, D, and E are redesignated as Subparts D, E, and C respectively, the sections are redesignated, and the section headings are revised as follows:

Subpart C—Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments

New Section (Subpart C) and Old Section (Subpart E)

General

600.200	[600.400]	Purpose and scope of this subpart.
600.201	[600.401]	Scope of Sections 600.200 through 600.205.
600.202	[600.402]	Definitions.
600.203	[600.403]	Applicability.
600.204	[600.404]	Effect on other issuances.

600.205 [600.405] Additions and Exceptions.

Pre-Award Requirements

600.210 [600.410] Forms for applying for grants.
600.211 [600.411] State plans.
600.212 [600.412] Special grant or subgrant conditions for "high risk" recipients.

Post-Award Requirements

Financial Administration

600.220 [600.420] Standards for financial management systems.
600.221 [600.421] Payment.
600.222 [600.422] Allowable costs.
600.223 [600.423] Period of availability of funds.
600.224 [600.424] Matching or Cost sharing.
600.225 [600.425] Program income.
600.226 [600.426] Non-Federal audit.

Changes, Property, and Subawards

600.230 [600.430] Changes.
600.231 [600.431] Real property.
600.232 [600.432] Equipment.
600.233 [600.433] Supplies.
600.234 [600.434] Copyrights.
600.235 [600.435] Subawards to debarred and suspended parties.
600.236 [600.436] Procurement.
600.237 [600.437] Subgrants.

Reports, Records Retention, and Enforcement

600.240 [600.440] Monitoring and reporting program performance.
600.241 [600.441] Financial reporting.
600.242 [600.442] Retention and access requirements for records.
600.243 [600.443] Enforcement.
600.244 [600.444] Termination for convenience.

After-the-Grant Requirements

600.250 [600.450] Closeout.
600.251 [600.451] Later disallowances and adjustments.
600.252 [600.452] Collection of amounts due.

Entitlements [Reserved]

Subpart D—Cooperative Agreements

New Section (Subpart D) and Old Section (Subpart C)

600.300 [600.200] Scope and applicability.
600.301 [600.201] Definitions.
600.302 [600.202] Selection of cooperative agreement as financial assistance instrument.
600.303 [600.203] Application budgetary information.
600.304 [600.204] Instrument conversion.
600.305 [600.205] Application, funding, and administrative requirements.
600.306 [600.206] Cost sharing.
600.307 [600.207] Patents, data, and copyrights.

Subpart E—Audits of State and Local Governments

New Section (Subpart E) and Old Section (Subpart D)

600.400 [600.300] Scope and applicability.
600.401 [600.301] Definitions.
600.402 [600.302] Policy.
600.403 [600.303] Scope of audit.
600.404 [600.304] Frequency of audit.
600.405 [600.305] Internal control and compliance reviews.
600.406 [600.306] Subrecipients.
600.407 [600.307] Relation to other audit requirements.
600.408 [600.308] Cognizant agency responsibilities.
600.409 [600.309] Illegal acts or irregularities.
600.410 [600.310] Audit reports.
600.411 [600.311] Audit resolution.
600.412 [600.312] Audit workpapers and reports.
600.413 [600.313] Audit costs.
600.414 [600.314] Sanctions.
600.415 [600.315] Auditor selection.
600.416 [600.316] Small and minority audit firms.
600.417 [600.317] Reporting.

Part 600 is further amended as set forth below:

§ 600.2 [Amended]

5. Section 600.2(g)(1)(i) is amended by adding to the Federal Register citation in parentheses "as amended by 58 FR 62992, Nov. 29, 1993" before the closing parenthesis and § 600.2(g)(1)(ii) is amended by adding to the Federal Register citation in parentheses "and 58 FR 58393, July 26, 1993" before the closing parenthesis.

§ 600.4 [Amended]

6. Section 600.4 is amended as follows:

A. In paragraph (a)(1)(second sentence) revise "§§ 600.105 and 600.412" to read "§§ 600.114 and 600.212"; and

B. In paragraphs (c)(2)(i)(second sentence) and (c)(3)(second sentence) revise "§ 600.207" to read "§ 600.307".

§ 600.5 [Amended]

7. Section 600.5(first sentence) is amended by adding "(as codified at 31 U.S.C. 6301-6306)" after "Public Law 95-224".

§ 600.7 [Amended]

8. Section 600.7(b)(2)(first sentence, parenthetical phrase) is amended by revising "§ 600.106(b)" to read "§ 600.31(b)".

§ 600.9 [Amended]

9. Section 600.9(c)(19)(second sentence, parenthetical phrase) is amended by revising "§ 600.1093" to read "§ 600.127".

§ 600.10 [Amended]

10. Section 600.10(e)(3)(parenthetical phrase) is amended by revising "§§ 600.31, 600.102, and 600.203" to read "§§ 600.31, 600.112, and 600.303".

§ 600.14 [Amended]

11. Section 600.14(c) is amended by removing "(PR-132)" and revising "Procurement, Assistance and Program Management" to read "Procurement and Assistance Management".

§ 600.15 [Amended]

12. Section 600.15(b)(4) is amended by removing "(MA-942)" and revising "Procurement and Assistance Management Directorate" to read "Office of Procurement and Assistance Management".

§ 600.20 [Amended]

13. Section 600.20(c)(first sentence) is amended by revising "§ 600.103(g), § 600.32 or § 600.442(b)" to read "§ 600.32, § 600.125(e) or § 600.230."

§ 600.25 [Amended]

14. Section 600.25(d)(second sentence) is amended by revising "§ 600.124 and § 600.442" to read "§§ 600.153 and 600.242".

§ 600.26 [Amended]

15. Section 600.26 is amended as follows:

A. In paragraph (d)(1)(i), revise "§ 600.105 or § 600.412" to read "§ 600.114 or § 600.212".

B. In paragraph (d)(1)(ii), revise "§ 600.406" to read "§ 600.206".

C. In paragraph (d)(1)(iii), revise "§§ 600.103, 600.114, 600.422, or 600.430" to read "§§ 600.125, 600.127, 600.222, or 600.230".

D. In paragraph (d)(1)(iv), revise "§§ 600.121(b) (1), (2), (3) or (5); or § 600.443 (a)(1), (a)(3) for suspensions only; or § 600.443(a)(4)" to read "§§ 600.122(n); § 600.162(a) (1), (3) for suspensions only, (4); or § 600.243 (a)(1), (a)(3) for suspensions only; or § 600.243 (a)(4)".

E. In paragraph (d)(1)(v), revise "§ 600.112(g), § 600.119, or § 600.436" to read "§ 600.122(h), § 600.140 through 600.149, § 600.221(g) or § 600.236".

§ 600.28 [Amended]

16. Section 600.28 is amended as follows:

A. In paragraph (a)(3), revise "§ 600.121(b) or § 600.443(a)" to read "§ 600.122(n), § 600.162(a), or § 600.243(a)".

B. In paragraph (b) (introductory paragraph), revise "§ 600.121(b) or § 600.443(a)" to read "§ 600.122(n), § 600.162(a), or § 600.243(a)".

§ 600.29 [Amended]

17. Section 600.29 is amended as follows:

A. In paragraph (a)(1), revise "\$ 600.121 or § 600.28" to read "\$ 600.28, § 600.122(n), § 600.162(a) or § 600.243(a)".

B. In paragraph (b) (introductory paragraph), revise "\$ 600.121(c) or § 600.28" to read "\$ 600.28, § 600.162(a) or § 600.243(a)" and revise "\$ 600.121(a) or § 600.28(a)" to read "\$ 600.28(a), § 600.162(a) or § 600.243(a)".

C. In paragraph (b)(5), revise "\$ 600.123" to read "\$§ 600.170 through 600.173 and §§ 600.250 through 600.252".

D. In paragraph (d), revise "\$ 600.121 or § 600.28" to read "\$ 600.28, §§ 600.160 through 600.162 or §§ 600.243 through 600.244".

E. In paragraph (f), revise "\$ 600.121 or § 600.28" to read "\$ 600.28, §§ 600.160 through 600.162 or §§ 600.243 through 600.244".

§ 600.31 [Amended]

18. Section 600.31 is amended as follows:

A. In paragraph (b) (introductory text, parenthetical phrase), revise "\$ 600.102(c)" to read "\$ 600.112(c) and § 600.210(b)".

B. In paragraph (b)(1), remove the parenthetical phrase "(see § 600.115(d)(1))".

C. In paragraph (d)(1), revise "\$ 600.125(d)" to read "\$ 600.181(d)".

D. In paragraph (f)(4), revise "SBIR award (see § 600.125(c))" to read "SBIR awards (see § 600.181(c))".

§ 600.32 [Amended]

19. Section 600.32(c)(1) (parenthetical phrase) is amended by revising "(See § 600.116)" to read "(See § 600.152 and § 600.241)".

§ 600.33 [Amended]

20. Section 600.33(b)(2) is amended, in clause paragraph (e)(2) of PATENT RIGHTS (SHORT FORM), by revising "\$ 600.118(b)(1)" to read "\$ 600.33(b)(1)".

§ 600.200 [Amended]

21. Section 600.200(c) is amended in the first sentence by revising "\$ 600.121" to read "\$ 600.162 and § 600.243," revising in the second sentence "\$ 600.123" to read "\$§ 600.170 through 600.173 and §§ 600.250 through 600.252," and revising in the first and second sentences "\$ 600.205" to read "\$ 600.305".

§ 600.202 [Amended]

22. Section 600.202(b)(1)(iii) is amended by revising "\$ 600.122 does"

to read "\$§ 600.160 through 600.162 and §§ 600.243 and 600.244 do".

§ 600.203 [Amended]

23. Section 600.203 is amended by revising "\$ 600.102" to read "\$ 600.112" in all occurrences.

§ 600.205 [Amended]

24. In the first sentence, "Subpart E" is revised to read "Subpart C".

§ 600.206 [Amended]

25. Section 600.206 is amended as follows:

A. In the introductory text, revise "\$ 600.107 or § 600.424" to read "\$ 600.123 or § 600.224".

B. In paragraph (c), revise "\$ 600.107(c) or § 600.424" to read "\$ 600.123 or § 600.224".

§ 600.207 [Amended]

26. § 600.207(b)(1) is amended by revising "\$ 600.118(b)(1)" to read "\$ 600.33(b)(1)" in the first and second sentences and revising "\$ 600.118" to read "\$ 600.33" in the third sentence.

§ 600.302 [Amended]

27. Section 600.302(d) is amended by revising "\$§ 600.25, 600.124, and 600.271" to read "\$§ 600.25, 600.153, 600.242, and 600.305".

§ 600.303 [Amended]

28. Section 600.303(c)(second sentence) is amended by revising "\$§ 600.120(c) and 600.271" to read "\$§ 600.126, 600.226, and 600.305".

§ 600.306 [Amended]

29. Sections 600.306(a) and (b) are amended by revising "\$ 600.120(c)" to read "\$ 600.126(a)".

§ 600.314 [Amended]

30. Section 600.314(b)(introductory paragraph) is amended by revising "\$ 600.121" to read "\$§ 600.162 and 600.243".

§ 600.441 [Amended]

31. Section 600.441(e)(2)(i)(second sentence) is amended by revising "\$ 600.41(b)(3) and (4)" to read "\$ 600.241(b)(3) and (4)".

32. Subpart B of Part 600 is revised to read as set forth below:

Subpart B—Uniform Administrative Requirements for Grants and Cooperative Agreements With Institutions of Higher Education, Hospitals, Other Non-Profit Organizations and Commercial Organizations

General**Secs.**

600.100 Purpose.

600.101 Definitions.

600.102 Effect on other issuances.

600.103 Deviations.

600.104 Subawards.

Pre-Award Requirements

600.110 Purpose.

600.111 Pre-award policies.

600.112 Forms for applying for Federal assistance.

600.113 Debarment and suspension.

600.114 Special award conditions.

600.115 Metric system of measurement.

600.116 Resource Conservation and

Recovery Act.

600.117 Certifications and representations.

Post-Award Requirements**Financial and Program Management**

600.120 Purpose of financial and program management.

600.121 Standards for financial management systems.

600.122 Payment.

600.123 Cost sharing or matching.

600.124 Program income.

600.125 Revision of budget and program plans.

600.126 Non-Federal audits.

600.127 Allowable costs.

600.128 Period of availability of funds.

Property Standards

600.130 Purpose of property standards.

600.131 Insurance coverage.

600.132 Real property.

600.133 Federally-owned and exempt property.

600.134 Equipment.

600.135 Supplies and other expendable property.

600.136 Intangible property.

600.137 Property trust relationship.

Procurement Standards

600.140 Purpose of procurement standards.

600.141 Recipient responsibilities.

600.142 Codes of conduct.

600.143 Competition.

600.144 Procurement procedures.

600.145 Cost and price analysis.

600.146 Procurement records.

600.147 Contract administration.

600.148 Contract provisions.

600.149 Resource Conservation and Recovery Act (RCRA)

Reports and Records

600.150 Purpose of reports and records.

600.151 Monitoring and reporting program performance.

600.152 Financial reporting.

600.153 Retention and access requirements for records.

Termination and Enforcement

600.160 Purpose of termination and enforcement.

600.161 Termination.

600.162 Enforcement.

After-the-Award Requirements

600.170 Purpose.

600.171 Closeout procedures.

600.172 Subsequent adjustments and continuing responsibilities.

600.173 Collection of amounts due.

Additional Provisions

600.180 Purpose.

600.181 Special provisions for Small Business Innovation Research Grants.

Appendix A to Subpart B of Part 600—Contract Provisions**Subpart B—Uniform Administrative Requirements for Grants and Cooperative Agreements With Institutions of Higher Education, Hospitals, Other Non-Profit Organizations and Commercial Organizations.****General****§ 600.100 Purpose.**

This Subpart implements OMB Circular A-110 and establishes uniform administrative requirements for grants and agreements awarded to institutions of higher education, hospitals, and other non-profit and commercial organizations. It also establishes rules governing subawards to institutions of higher education, hospitals, and non-profit and commercial organizations (including grants and cooperative agreements administered by State, local and Indian Tribal governments).

600.101 Definitions.

Accrued expenditures means the charges incurred by the recipient during a given period requiring the provision of funds for:

(1) Goods and other tangible property received;

(2) Services performed by employees, contractors, subrecipients, and other payees; and,

(3) Other amounts becoming owed under programs for which no current services or performance is required.

Accrued income means the sum of:

(1) Earnings during a given period from services performed by the recipient, and goods and other tangible property delivered to purchasers, and

(2) Amounts becoming owed to the recipient for which no current services or performance is required by the recipient.

Acquisition cost of equipment means the net invoice price of the equipment, including the cost of modifications, attachments, accessories, or auxiliary apparatus necessary to make the property usable for the purpose for which it was acquired. Other charges, such as the cost of installation, transportation, taxes, duty or protective in-transit insurance, shall be included or excluded from the unit acquisition cost in accordance with the recipient's regular accounting practices.

Advance means a payment made by Treasury check or other appropriate payment mechanism to a recipient upon

its request either before outlays are made by the recipient or through the use of predetermined payment schedules.

Award means financial assistance that provides support or stimulation to accomplish a public purpose. Awards include grants and other agreements in the form of money or property in lieu of money, by DOE to an eligible recipient. The term does not include: technical assistance, which provides services instead of money; other assistance in the form of loans, loan guarantees, interest subsidies, or insurance; direct payments of any kind to individuals; and, contracts which are required to be entered into and administered under procurement laws and regulations.

Cash contributions means the recipient's cash outlay, including the outlay of money contributed to the recipient by third parties.

Closeout means the process by which DOE determines that all applicable administrative actions and all required work of the award have been completed by the recipient and DOE.

Contract means a procurement contract under an award or subaward, and a procurement subcontract under a recipient's or subrecipient's contract.

Cost sharing or matching means that portion of project or program costs not borne by DOE.

Date of completion means the date on which all work under an award is completed or the date on the award document, or any supplement or amendment thereto, on which DOE sponsorship ends.

Disallowed costs means those charges to an award that the DOE determines to be unallowable, in accordance with the applicable Federal cost principles or other terms and conditions contained in the award.

Equipment means tangible nonexpendable personal property including exempt property charged directly to the award having a useful life of more than one year and an acquisition cost of \$5000 or more per unit. However, consistent with recipient policy, lower limits may be established.

Excess property means property under the control of any Federal awarding agency that, as determined by the head thereof, is no longer required for its needs or the discharge of its responsibilities.

Exempt property means tangible personal property acquired in whole or in part with Federal funds, where the Federal awarding agency has statutory authority to vest title in the recipient without further obligation to the Federal Government. An example of exempt property authority is contained in the

Federal Grant and Cooperative Agreement Act (31 U.S.C. 6306), for property acquired under an award to conduct basic or applied research by a non-profit institution of higher education or non-profit organization whose principal purpose is conducting scientific research.

Federal awarding agency means the Federal agency that provides an award to the recipient.

Federal funds authorized means the total amount of Federal funds obligated by the Federal Government for use by the recipient. This amount may include any authorized carryover of unobligated funds from prior funding periods when permitted by agency regulations or agency implementing instructions.

Federal share of real property, equipment, or supplies means that percentage of the property's acquisition costs and any improvement expenditures paid with Federal funds.

Funding period or budget period means the period of time when DOE funding is available for obligation by the recipient.

Intangible property and debt instruments means, but is not limited to, trademarks, copyrights, patents and patent applications and such property as loans, notes and other debt instruments, lease agreements, stock and other instruments of property ownership, whether considered tangible or intangible.

Obligations means the amounts of orders placed, contracts and grants awarded, services received and similar transactions during a given period that require payment by the recipient during the same or a future period.

Outlays or expenditures means charges made to the project or program. They may be reported on a cash or accrual basis. For reports prepared on a cash basis, outlays are the sum of cash disbursements for direct charges for goods and services, the amount of indirect expense charged, the value of third party in-kind contributions applied and the amount of cash advances and payments made to subrecipients. For reports prepared on an accrual basis, outlays are the sum of cash disbursements for direct charges for goods and services, the amount of indirect expense incurred, the value of in-kind contributions applied, and the net increase (or decrease) in the amounts owed by the recipient for goods and other property received, for services performed by employees, contractors, subrecipients and other payees and other amounts becoming owed under programs for which no current services or performance are required.

Personal property means property of any kind except real property. It may be tangible, having physical existence, or intangible, having no physical existence, such as copyrights, patents, or securities.

Prior approval means written approval by a contracting officer evidencing prior consent.

Program income means gross income earned by the recipient that is directly generated by a supported activity or earned as a result of the award (see exclusions in §§ 600.124 (e) and (h)). Program income includes, but is not limited to, income from fees for services performed, the use or rental of real or personal property acquired under federally-funded projects, the sale of commodities or items fabricated under an award, license fees and royalties on patents and copyrights, and interest on loans made with award funds. Interest earned on advances of DOE funds is not program income. Except as otherwise provided in this Subpart, program regulations, or the terms and conditions of the award, program income does not include the receipt of principal on loans, rebates, credits, discounts, etc., or interest earned on any of them.

Project costs means all allowable costs, as set forth in the applicable Federal cost principles, incurred by a recipient and the value of the contributions made by third parties in accomplishing the objectives of the award during the project period.

Project period means the period established in the award document during which DOE sponsorship begins and ends.

Property means, unless otherwise stated, real property, equipment, intangible property and debt instruments.

Real property means land, including land improvements, structures and appurtenances thereto, but excludes movable machinery and equipment.

Recipient means an organization receiving financial assistance directly from DOE to carry out a project or program. The term includes public and private institutions of higher education, public and private hospitals, and other quasi-public and private non-profit organizations such as, but not limited to, community action agencies, research institutes, educational associations, and health centers. The term shall include commercial organizations which are recipients, subrecipients, or contractors or subcontractors of recipients or subrecipients. The term does not include government-owned contractor-operated facilities or research centers providing continued support for mission-oriented, large-scale programs

that are government-owned or controlled, or are designated as federally-funded research and development centers.

Research and development means all research activities, both basic and applied, and all development activities that are supported at universities, colleges, and other non-profit institutions. "Research" is defined as a systematic study directed toward fuller scientific knowledge or understanding of the subject studied. "Development" is the systematic use of knowledge and understanding gained from research directed toward the production of useful materials, devices, systems, or methods, including design and development of prototypes and processes. The term research also includes activities involving the training of individuals in research techniques where such activities utilize the same facilities as other research and development activities and where such activities are not included in the instruction function.

Small award means a grant or cooperative agreement not exceeding the small purchase threshold fixed at 41 U.S.C. 403(11) (currently \$25,000).

Subaward means an award of financial assistance in the form of money, or property in lieu of money, made under an award by a recipient to an eligible subrecipient or by a subrecipient to a lower tier subrecipient. The term includes financial assistance when provided by any legal agreement, even if the agreement is called a contract, but does not include procurement of goods and services nor does it include any form of assistance which is excluded from the definition of "award" above.

Subrecipient means the legal entity to which a subaward is made and which is accountable to the recipient for the use of the funds provided. The term may include foreign or international organizations (such as agencies of the United Nations).

Supplies means all personal property excluding equipment, intangible property, and debt instruments as defined in this section, and inventions of a contractor conceived or first actually reduced to practice in the performance of work under a funding agreement ("subject inventions"), as defined in 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements."

Suspension means an action by DOE that temporarily withdraws DOE sponsorship under an award, pending corrective action by the recipient or pending a decision to terminate the

award by the DOE. Suspension of an award is a separate action from suspension under DOE regulations implementing E.O.'s 12549 and 12689, "Debarment and Suspension" (see 10 CFR Part 1036).

Termination means the cancellation of DOE sponsorship, in whole or in part, under an agreement at any time prior to the date of completion.

Third party in-kind contributions means the value of non-cash contributions provided by non-Federal third parties. Third party in-kind contributions may be in the form of real property, equipment, supplies and other expendable property, and the value of goods and services directly benefiting and specifically identifiable to the project or program.

Unliquidated obligations, for financial reports prepared on a cash basis, means the amount of obligations incurred by the recipient that have not been paid. For reports prepared on an accrued expenditure basis, they represent the amount of obligations incurred by the recipient for which an outlay has not been recorded.

Unobligated balance means the portion of the funds authorized by DOE that has not been obligated by the recipient and is determined by deducting the cumulative obligations from the cumulative funds authorized.

Unrecovered indirect cost means the difference between the amount awarded and the amount which could have been awarded under the recipient's approved negotiated indirect cost rate.

Working capital advance means a procedure whereby funds are advanced to the recipient to cover its estimated disbursement needs for a given initial period.

§ 600.102 Effect on other issuances.

For awards subject to this Subpart, all administrative requirements of codified program regulations, program manuals, handbooks and other nonregulatory materials which are inconsistent with the requirements of this Subpart shall be superseded, except to the extent they are required by statute, or authorized in accordance with the deviations provision in § 600.4.

§ 600.103 Deviations.

The deviation provisions of § 600.4 apply to this Subpart.

§ 600.104 Subawards.

Unless sections of this Subpart specifically exclude subrecipients from coverage, all DOE recipients, including State, local and Indian tribal governments, shall apply the provisions of this Subpart to subrecipients

performing work under awards if such subrecipients are institutions of higher education, hospitals, other non-profit organizations or commercial organizations. Thus, this Subpart is applicable to those types of organizations regardless of the type of recipient receiving the primary award. State and local government subrecipients are subject to the provisions of 10 CFR part 600, Subpart C, "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments."

Pre-Award Requirements

§ 600.110 Purpose.

Sections 600.111 through 600.117 prescribe forms and instructions and other pre-award matters to be used in applying for DOE awards.

§ 600.111 Pre-award policies.

(a) Use of Grants and Cooperative Agreements, and Contracts. In each instance, the DOE shall decide on the appropriate award instrument (i.e., grant, cooperative agreement, or contract). The Federal Grant and Cooperative Agreement Act (31 U.S.C. 6301-08) governs the use of grants, cooperative agreements and contracts. A grant or cooperative agreement shall be used only when the principal purpose of a transaction is to accomplish a public purpose of support or stimulation authorized by Federal statute. The statutory criterion for choosing between grants and cooperative agreements is that for the latter, "substantial involvement is expected between the executive agency and the State, local government, or other recipient when carrying out the activity contemplated in the agreement." Contracts shall be used when the principal purpose is acquisition of property or services for the direct benefit or use of the Federal Government.

(b) Public Notice and Priority Setting. DOE will, whenever practical, notify the public of its intended funding priorities for discretionary grant programs, unless funding priorities are established by Federal statute.

§ 600.112 Forms for applying for Federal assistance.

(a) General. An application for an award shall be on the form or in the format specified in a program rule, in the solicitation, or in these regulations (see Section 600.10). When the SF-424 form is not used, DOE shall indicate whether the application is subject to review by the State under E.O. 12372.

DOE may also require applicants to complete—

(1) The Notice of Energy RD&D Project (DOE Form 538) if the application is for a research, development, or demonstration project; or

(2) The Federal Assistance Management Summary Report (DOE F 4600.5) or the Federal Assistance Milestone Plan (DOE F 4600.3) as a baseline plan in accordance with the terms and conditions of award if required by program rule or the solicitation. If a solicitation other than a program rule requires the use of one or both of these forms, the solicitation shall contain an explanation of how the information to be provided relates to the objectives of the program.

(b) Budgetary information. DOE may request and the applicant shall submit the minimum budgetary information necessary to evaluate the costs of the proposed project.

(1) Applicants for research awards, other than State, local, or Indian tribal governments, will use DOE budget forms ERF 4620.1 and ERF 4620.1A. All other applicants shall use the budget formats established in the solicitation or program regulations.

(2) DOE may, subsequent to receipt of an application, request additional information from an applicant when necessary for clarification or to make informed preaward determinations.

(c) Continuation and renewal applications. DOE may require that an application for a continuation or renewal award (see § 600.31 (b) and (c)) be made in the format or on the forms authorized by paragraphs (a) and (b) of this section.

§ 600.113 Debarment and suspension.

Recipients shall comply with the nonprocurement debarment and suspension common rule implementing E.O.'s 12549 and 12689, "Debarment and Suspension," 10 CFR Part 1036. This common rule restricts subawards and contracts with certain parties that are debarred, suspended or otherwise excluded from or ineligible for participation in Federal assistance programs or activities.

§ 600.114 Special award conditions.

(a) If an applicant or recipient has a history of poor performance, is not financially stable, has a management system that does not meet the standards prescribed in this Subpart; has not conformed to the terms and conditions of a previous award, or is not otherwise responsible, DOE may impose additional requirements as needed, without regard to the deviation provisions of § 600.4. Such applicant or

recipient will be notified in writing as to the nature of the additional requirements, the reason why the additional requirements are being imposed, the nature of the corrective action needed, and the time allowed for completing the corrective actions. Reconsideration of the additional requirements may be requested at any time. Any special conditions shall be promptly removed once the conditions that prompted them have been corrected.

(b) A recipient may place a special restrictive condition, as specified in paragraph (a) of this section, in a subaward. In any such case, the recipient must notify DOE in writing within 15 days of the subaward. DOE shall decide whether to notify OMB and other interested parties.

§ 600.115 Metric system of measurement.

The Metric Conversion Act, as amended by the Omnibus Trade and Competitiveness Act (15 U.S.C. 205) declares that the metric system is the preferred measurement system for U.S. trade and commerce. The Act requires each Federal agency to establish a date or dates in consultation with the Secretary of Commerce, when the metric system of measurement will be used in the agency's procurements, grants, and other business-related activities. Metric implementation may take longer where the use of the system is initially impractical or likely to cause significant inefficiencies in the accomplishment of federally-funded activities. DOE will follow the provisions of E.O. 12770, "Metric Usage in Federal Government Programs."

§ 600.116 Resource Conservation and Recovery Act.

Under the Act (Pub. L. 94-580 codified at 42 U.S.C. 6962), any State agency or agency of a political subdivision of a State which is using appropriated Federal funds must comply with Section 6002. Section 6002 requires that preference be given in procurement programs to the purchase of specific products containing recycled materials identified in guidelines developed by the Environmental Protection Agency (EPA) (40 CFR Parts 247-254). Accordingly, State and local institutions of higher education, hospitals, and non-profit organizations that receive direct Federal awards or other Federal funds shall give preference in their procurement programs funded with Federal funds to the purchase of recycled products pursuant to the EPA guidelines.

§ 600.117 Certifications and representations.

Unless prohibited by statute or codified regulation, each Federal awarding agency is authorized and encouraged to allow recipients to submit certifications and representations required by statute, executive order, or regulation on an annual basis, if the recipients have ongoing and continuing relationships with the agency. Annual certifications and representations shall be signed by responsible officials with the authority to ensure recipients' compliance with the pertinent requirements.

Post-Award Requirements**Financial and Program Management****§ 600.120 Purpose of financial and program management.**

Sections 600.121 through 600.128 prescribe standards for financial management systems, methods for making payments and rules for satisfying cost sharing and matching requirements, accounting for program income, budget revision approvals, making audits, determining allowability of cost, and establishing fund availability.

§ 600.121 Standards for financial management systems.

(a) Recipients shall relate financial data to performance data and develop unit cost information whenever practical. For awards that support research, it should be noted that it is generally not appropriate to develop unit cost information.

(b) Except for the provisions of 600.121(f) and 600.181, recipients' financial management systems shall provide for the following:

(1) Accurate, current and complete disclosure of the financial results of each federally-sponsored project or program in accordance with the reporting requirements set forth in § 600.152. If a DOE award requires reporting on an accrual basis from a recipient that maintains its records on other than an accrual basis, the recipient shall not be required to establish an accrual accounting system. These recipients may develop such accrual data for their reports on the basis of an analysis of the documentation on hand.

(2) Records that identify adequately the source and application of funds for federally-sponsored activities. These records shall contain information pertaining to Federal awards, authorizations, obligations, unobligated balances, assets, outlays, income and interest.

(3) Effective control over and accountability for all funds, property and other assets. Recipients shall adequately safeguard all such assets and assure they are used solely for authorized purposes.

(4) Comparison of outlays with budget amounts for each award. Whenever appropriate, financial information should be related to performance and unit cost data. As discussed in paragraph (a) of this section, unit cost data is generally not appropriate for awards that support research.

(5) Written procedures to minimize the time elapsing between the transfer of funds to the recipient from the U.S. Treasury and the issuance or redemption of checks, warrants or payments by other means for program purposes by the recipient. To the extent that the provisions of the Cash Management Improvement Act (CMIA) (Pub. L. 101-453) govern, payment methods of State agencies, instrumentalities, and fiscal agents shall be consistent with CMIA Treasury-State Agreements or the CMIA default procedures codified at 31 CFR Part 205, "Withdrawal of Cash from the Treasury for Advances under Federal Grant and Other Programs."

(6) Written procedures for determining the reasonableness, allocability and allowability of costs in accordance with the provisions of the applicable Federal cost principles and the terms and conditions of the award.

(7) Accounting records including cost accounting records that are supported by source documentation.

(c) Where the Federal Government guarantees or insures the repayment of money borrowed by the recipient, the Contracting Officer, at his or her discretion, may require adequate bonding and insurance if the bonding and insurance requirements of the recipient are not deemed adequate to protect the interest of the Federal Government.

(d) The Contracting Officer may require adequate fidelity bond coverage where the recipient lacks sufficient coverage to protect the Federal Government's interest.

(e) Where bonds are required in the situations described in §§ 600.121 (c) and (d), the bonds shall be obtained from companies holding certificates of authority as acceptable sureties, as prescribed in 31 CFR Part 223, "Surety Companies Doing Business with the United States."

(f) Individuals whose financial management systems do not meet the minimum standards of § 600.121 (b) shall maintain a separate bank account for deposit of award or subaward funds.

Disbursements by the recipient or subrecipient from this account shall be supported by source documentation such as canceled checks, paid bills, receipts, payrolls, etc.

600.122 Payment.

(a) Payment methods shall minimize the time elapsing between the transfer of funds from the United States Treasury and the issuance or redemption of checks, warrants, or payment by other means by the recipients. Payment methods of State agencies or instrumentalities shall be consistent with Treasury-State CMIA agreements or default procedures codified at 31 CFR Part 205.

(b) Recipients will be paid in advance, provided they maintain or demonstrate the willingness to maintain:

(1) Written procedures that minimize the time elapsing between the transfer of funds and disbursement by the recipient, and

(2) Financial management systems that meet the standards for fund control and accountability as established in § 600.121. Cash advances to a recipient organization shall be limited to the minimum amounts needed and be timed to be in accordance with the actual, immediate cash requirements of the recipient organization in carrying out the purpose of the approved program or project. The timing and amount of cash advances shall be as close as is administratively feasible to the actual disbursements by the recipient organization for direct program or project costs and the proportionate share of any allowable indirect costs.

(c) Whenever possible, advances shall be consolidated to cover anticipated cash needs for all awards made by the DOE to the recipient.

(1) Advance payment mechanisms include, but are not limited to, Treasury check and electronic funds transfer.

(2) Advance payment mechanisms are subject to 31 CFR Part 205.

(3) Recipients may submit requests for advances and reimbursements at least monthly when electronic fund transfers are not used.

(d) Requests for Treasury check advance payment shall be submitted on SF-270, "Request for Advance or Reimbursement," or other forms as may be authorized by OMB. This form is not to be used when Treasury check advance payments are made to the recipient automatically through the use of a predetermined payment schedule or if precluded by special DOE instructions for electronic funds transfer.

(e) Reimbursement is the preferred method when the requirements in paragraph (b) of this section cannot be

met. DOE may also use this method on any construction agreement, or if the major portion of the construction project is accomplished through private market financing or Federal loans, and the Federal assistance constitutes a minor portion of the project.

(1) When the reimbursement method is used, DOE shall make payment within 30 days after receipt of the billing, unless the billing is improper.

(2) Recipients are authorized to submit requests for reimbursement at least monthly when electronic funds transfers are not used.

(f) If a recipient cannot meet the criteria for advance payments and DOE has determined that reimbursement is not feasible because the recipient lacks sufficient working capital, DOE may provide cash on a working capital advance basis. Under this procedure, DOE advances cash to the recipient to cover its estimated disbursement needs for an initial period generally geared to the recipient's disbursing cycle. Thereafter, DOE reimburses the recipient for its actual cash disbursements. The working capital advance method of payment will not be used for recipients unwilling or unable to provide timely advances to their subrecipient to meet the subrecipient's actual cash disbursements.

(g) To the extent available, recipients shall disburse funds available from repayments to and interest earned on a revolving fund, program income, rebates, refunds, contract settlements, audit recoveries and interest earned on such funds before requesting additional cash payments.

(h) Unless otherwise required by statute, DOE will not withhold payments for proper charges made by recipients at any time during the project period unless paragraph (h)(1) or (h)(2) of this section apply.

(1) A recipient has failed to comply with the project objectives, the terms and conditions of the award, or DOE reporting requirements.

(2) The recipient or subrecipient is delinquent in a debt to the United States. Under such conditions, the Federal awarding agency may, upon reasonable notice, inform the recipient that payments shall not be made for obligations incurred after a specified date until the conditions are corrected or the indebtedness to the Federal Government is liquidated. Before withholding any payment, DOE shall notify the recipient that payments shall not be made for obligations incurred after a specified date, which shall ordinarily be no sooner than 30 days from the date of the notice, until the recipient corrects the noncompliance or

pays the indebtedness to the Federal government.

(i) Standards governing the use of banks and other institutions as depositories of funds advanced under awards are as follows.

(1) Except for situations described in paragraph (i)(2) of this section, DOE shall not require separate depository accounts for funds provided to a recipient or establish any eligibility requirements for depositories for funds provided to a recipient. However, recipients must be able to account for the receipt, obligation and expenditure of funds.

(2) Advances of Federal funds shall be deposited and maintained in insured accounts whenever possible.

(j) Consistent with the national goal of expanding the opportunities for women-owned and minority-owned business enterprises, recipients are encouraged to use women-owned and minority-owned banks (a bank which is owned at least 50 percent by women or minority group members).

(k) Recipients shall maintain advances of Federal funds in interest bearing accounts, unless paragraph (k)(1), (2) or (3) of this section apply.

(1) The recipient receives less than \$120,000 in Federal awards per year.

(2) The best reasonably available interest bearing account would not be expected to earn interest in excess of \$250 per year on Federal cash balances.

(3) The depository would require an average or minimum balance so high that it would not be feasible within the expected Federal and non-Federal cash resources.

(l) For those entities where CMIA and its implementing regulations do not apply, interest earned on Federal advances deposited in interest bearing accounts shall be remitted annually to the HHS Payment Management System through an electronic medium such as the FEDWIRE Deposit system.

Recipients which do not have this capability should use a check. The address is the Department of Health and Human Services, Payment Management System, P.O. Box 6021, Rockville, MD 20852. Interest amounts up to \$250 per year may be retained by the recipient for administrative expense. State universities and hospitals shall comply with CMIA, as it pertains to interest. If an entity subject to CMIA uses its own funds to pay pre-award costs for discretionary awards without prior written approval from the Federal awarding agency, it waives its right to recover the interest under CMIA.

(m) Except as noted elsewhere in this Subpart, only the following forms shall be authorized for the recipients in

requesting advances and reimbursements. Federal agencies shall not require more than an original and two copies of these forms.

(1) SF-270, Request for Advance or Reimbursement. Each Federal awarding agency shall adopt the SF-270 as a standard form for all nonconstruction programs when electronic funds transfer or predetermined advance methods are not used. Federal awarding agencies, however, have the option of using this form for construction programs in lieu of the SF-271, "Outlay Report and Request for Reimbursement for Construction Programs."

(2) SF-271, Outlay Report and Request for Reimbursement for Construction Programs. Each Federal awarding agency shall adopt the SF-271 as the standard form to be used for requesting reimbursement for construction programs. However, a Federal awarding agency may substitute the SF-270 when the Federal awarding agency determines that it provides adequate information to meet Federal needs.

(n) The DOE may convert a recipient from advance payment to reimbursement whenever the recipient no longer meets the criteria for advance payment specified in paragraph (b) of this section. Any such conversion may be accomplished only after the DOE has advised the recipient in writing of the reasons for the proposed action and has provided a period of at least 30 days within which the recipient may take corrective action or provide satisfactory assurances of its intention to take such action.

(o) With prior DOE approval and in accordance with written DOE instructions, a recipient may assign to a bank, trust company or other financing institution, including any Federal lending agency, reimbursement by Treasury check due from DOE under the following conditions:

(1) The award provides for reimbursement totaling \$1,000 or more;

(2) The assignment covers all amounts payable under the award that have not already been paid;

(3) Reassignment is prohibited; and

(4) The assignee files a written notice of award payment assignment and a true copy of the instrument of assignment with DOE. Any interest costs resulting from a loan obtained on the basis of an assignment are unallowable charges to DOE award funds or any required cost sharing.

(p) Recipients shall observe the requirements of this section in making or withholding payments to subrecipients except that the forms used by recipients are not required to be used

by subrecipients when requesting advances or reimbursement.

§ 600.123 Cost sharing or matching.

(a) All cost sharing or matching contributions, including cash and third party in-kind, shall meet all of the following criteria.

(1) Are verifiable from the recipient's records.

(2) Are not included as contributions for any other federally-assisted project or program.

(3) Are necessary and reasonable for proper and efficient accomplishment of project or program objectives.

(4) Are allowable under the applicable cost principles.

(5) Are not paid by the Federal Government under another award, except where authorized by Federal statute to be used for cost sharing or matching.

(6) Are provided for in the approved budget.

(7) Conform to other provisions of this Subpart, as applicable.

(b) Unrecovered indirect costs may be included as part of cost sharing or matching.

(c) Values for recipient contributions of services and property shall be established in accordance with the applicable cost principles. If DOE authorizes recipients to donate buildings or land for construction/facilities acquisition projects or long-term use, the value of the donated property for cost sharing or matching shall be the lesser of either paragraph (c)(1) or (2) of this section.

(1) The certified value of the remaining life of the property recorded in the recipient's accounting records at the time of donation.

(2) The current fair market value. However, when there is sufficient justification, DOE may approve the use of the current fair market value of the donated property, even if it exceeds the certified value at the time of donation to the project.

(d) Volunteer services furnished by professional and technical personnel, consultants, and other skilled and unskilled labor may be counted as cost sharing or matching if the service is an integral and necessary part of an approved project or program. Rates for volunteer services shall be consistent with those paid for similar work in the recipient's organization. In those instances in which the required skills are not found in the recipient organization, rates shall be consistent with those paid for similar work in the labor market in which the recipient competes for the kind of services involved. In either case, paid fringe

benefits that are reasonable, allowable, and allocable may be included in the valuation.

(e) When an employer other than the recipient furnishes the services of an employee, these services shall be valued at the employee's regular rate of pay (plus an amount of fringe benefits that are reasonable, allowable, and allocable, but exclusive of overhead costs), provided these services are in the same skill for which the employee is normally paid.

(f) Donated supplies may include such items as office supplies, laboratory supplies or workshop and classroom supplies. Value assessed to donated supplies included in the cost sharing or matching share shall be reasonable and shall not exceed the fair market value of the property at the time of the donation.

(g) The method used for determining cost sharing or matching for donated equipment, buildings and land for which title passes to the recipient may differ according to the purpose of the award, if either paragraph (g)(1) or (2) of this section apply.

(1) If the purpose of the award is to assist the recipient in the acquisition of equipment, buildings or land, the total value of the donated property may be claimed as cost sharing or matching.

(2) If the purpose of the award is to support activities that require the use of equipment, buildings or land, normally only depreciation or use charges for equipment and buildings may be made. However, the full value of equipment or other capital assets and fair rental charges for land may be allowed, provided that DOE has approved the charges.

(h) The value of donated property shall be determined in accordance with the usual accounting policies of the recipient, with the following qualifications.

(1) The value of donated land and buildings shall not exceed its fair market value at the time of donation to the recipient as established by an independent appraiser (e.g., certified real property appraiser or General Services Administration representative) and certified by a responsible official of the recipient.

(2) The value of donated equipment shall not exceed the fair market value of equipment of the same age and condition at the time of donation.

(3) The value of donated space shall not exceed the fair rental value of comparable space as established by an independent appraisal of comparable space and facilities in a privately-owned building in the same locality.

(4) The value of loaned equipment shall not exceed its fair rental value.

(i) The following requirements pertain to the recipient's supporting records for in-kind contributions from third parties.

(1) Volunteer services shall be documented and, to the extent feasible, supported by the same methods used by the recipient for its own employees.

(2) The basis for determining the valuation for personal service, material, equipment, buildings and land shall be documented.

(j) DOE shall specify in the solicitation or in the program rule, if any, any cost sharing requirement. The award document shall be specific as to whether the cost sharing is based on a minimum amount for the recipient or on a percentage of total costs.

(k) If DOE requires that a recipient provide cost sharing which is not required by statute or which exceeds a statutory minimum, DOE shall state in the program rule or solicitation the reasons for requiring such cost sharing, recommended or required levels of cost sharing, and the circumstances under which the requirement for cost sharing may be waived or adjusted during any negotiation.

(l) Whenever DOE negotiates the amount of cost sharing, DOE may take into account such factors as the use of program income (see § 600.124), patent rights, and rights in data. Foregone fee or profit shall not be considered in establishing the extent of cost sharing.

§ 600.124 Program income.

(a) The standards set forth in this section shall be used to account for program income related to projects financed in whole or in part with DOE funds.

(b) Except as provided in paragraph (h) of this section, program income earned during the project period shall be retained by the recipient and, in accordance with program regulations or the terms and conditions of the award, shall be used in one or more of the following ways.

(1) Added to funds committed to the project and used to further eligible project objectives.

(2) Used to finance the non-DOE share of the project.

(3) Deducted from the total project allowable cost in determining the net allowable costs on which the share of costs is based.

(c) When DOE authorizes the disposition of program income as described in paragraphs (b)(1) or (b)(2) of this section, program income in excess of any limits stipulated shall be used in accordance with paragraph (b)(3) of this section.

(d) In the event that the program regulations or the terms and conditions

of the award do not specify how program income is to be used, paragraph (b)(3) of this section shall apply automatically to all projects or programs except research. For awards that support research, paragraph (b)(1) of this section shall apply automatically unless the award indicates another alternative in the terms and conditions, the recipient is subject to special award conditions, as indicated in § 600.114, or the recipient is a commercial organization.

(e) Unless program regulations or the terms and conditions of the award provide otherwise, recipients shall have no obligation to the Federal Government regarding program income earned after the end of the project period.

(f) Unless program regulations or the terms and conditions of the award provide otherwise, costs incident to the generation of program income may be deducted from gross income to determine program income, provided these costs have not been charged to the award.

(g) Proceeds from the sale of property shall be handled in accordance with the requirements of the Property Standards (See §§ 600.130 through 600.137).

(h) Unless program regulations or the terms and condition of the award provide otherwise, recipients shall have no obligation to the Federal Government with respect to program income earned from license fees and royalties for copyrighted material, patents, patent applications, trademarks, and inventions produced under an award. However, Patent and Trademark Amendments (35 U.S.C. Chapter 18) apply to inventions made under an experimental, developmental, or research award.

§ 600.125 Revision of budget and program plans.

(a) The budget plan is the financial expression of the project or program as approved during the award process. It includes the sum of the Federal and non-Federal share when there are cost sharing requirements. It shall be related to performance for program evaluation purposes whenever appropriate.

(b) Recipients are required to report deviations from budget and program plans, and request prior approvals for budget and program plan revisions, in accordance with this section.

(c) For nonconstruction awards, recipients shall request prior approvals from the DOE for one or more of the following program or budget related reasons.

(1) Change in the scope or the objective of the project or program (even if there is no associated budget revision requiring prior written approval).

(2) Change in a key person specified in the application or award document.

(3) The absence for more than three months, or a 25 percent reduction in time devoted to the project, by the approved project director or principal investigator.

(4) The need for additional Federal funding.

(5) If required by program regulations, the transfer of amounts budgeted for indirect costs to absorb increases in direct costs, or vice versa.

(6) The inclusion, unless waived by program regulations or the terms and conditions of award, of costs that require prior approval in accordance with OMB Circular A-21, "Cost Principles for Institutions of Higher Education," OMB Circular A-122, "Cost Principles for Non-Profit Organizations," or 45 CFR Part 74 Appendix E, "Principles for Determining Costs Applicable to Research and Development under Grants and Contracts with Hospitals," or 48 CFR Part 31, "Contract Cost Principles and Procedures," as applicable.

(7) The transfer of funds allotted for training allowances (direct payment to trainees) to other categories of expense.

(8) Unless described in the application and funded in the approved awards, the subaward, transfer or contracting out of any work under an award. This provision does not apply to the purchase of supplies, material, equipment or general support services.

(d) No other prior approval requirements for specific items may be imposed unless a deviation has been approved in accordance with § 600.4.

(e) Except for requirements listed in paragraphs (c)(1) and (c)(4) of this section, program regulations may waive cost-related and administrative prior written approvals required by this Subpart and its Appendices. Such waivers may include authorizing recipients to do any one or more of the following.

(1) Incur pre-award costs 90 calendar days prior to award without prior approval or more than 90 calendar days with the prior approval of DOE. All pre-award costs are incurred at the recipient's risk (i.e., DOE is under no obligation to reimburse such costs if for any reason the recipient does not receive an award or if the award is less than anticipated and inadequate to cover such costs).

(2) Initiate a one-time extension of the expiration date of the final budget period of the project of up to 12 months unless one or more of the following conditions apply.

(i) The terms and conditions of award prohibit the extension.

(ii) The extension requires additional Federal funds.

(iii) The extension involves any change in the approved objectives or scope of the project.

(iv) The extension is being exercised merely for the purpose of using unobligated balances. For one-time extensions, the recipient must notify the DOE in writing with the supporting reasons and revised expiration date at least 10 days before the expiration date specified in the award.

(3) Carry forward unobligated balances to subsequent funding periods.

(4) For awards that support research, unless the terms and conditions of award provide otherwise, the prior approval requirements described in paragraph (e) of this section are automatically waived (i.e., recipients need not obtain such prior approvals) unless one of the conditions included in § 600.125(e)(2) applies.

(5) For continuation awards within a multiple year project in support of research, prior to receipt of continuation funding, preaward expenditures by recipients are not subject to the limitation or approval requirements of § 600.125(e)(1). Nevertheless, incurrence by the recipient does not impose any obligation on DOE if a continuation award is not subsequently made, or if an award is made for a lesser amount than the recipient expected.

(f) Program regulations may restrict the transfer of funds among direct cost categories or programs, functions and activities for awards in which DOE's share of the project exceeds \$100,000 and the cumulative amount of such transfers exceeds or is expected to exceed 10 percent of the total budget as last approved by DOE. However, no program regulation shall permit a transfer that would cause any Federal appropriation or part thereof to be used for purposes other than those consistent with the original intent of the appropriation.

(g) All other changes to nonconstruction budgets, except for the changes described in paragraph (j) of this section, do not require prior approval.

(h) For construction awards, recipients shall request prior written approval promptly from the Contracting Officer for budget revisions whenever paragraph (h) (1), (2) or (3) of this section apply.

(1) The revision results from changes in the scope or the objective of the project or program.

(2) The need arises for additional Federal funds to complete the project.

(3) A revision is desired which involves specific costs for which prior written approval requirements may be imposed consistent with applicable OMB cost principles listed in § 600.127.

(i) Except in accordance with the deviation procedures in 600.4 or as may be provided for in program regulations, no other prior approval requirements for specific items will be imposed by DOE.

(j) When DOE makes an award that provides support for both construction and nonconstruction work, DOE may require the recipient to request prior approval from DOE before making any fund or budget transfers between the two types of work supported.

(k) For both construction and nonconstruction awards, recipients shall notify DOE in writing promptly whenever the amount of Federal authorized funds is expected to exceed the needs of the recipient for the project period by more than \$5000 or five percent of the Federal award, whichever is greater. This notification shall not be required if an application for additional funding is submitted for a continuation award.

(l) Requests for budget revisions may be made by letter.

(m) Within 30 calendar days from the date of receipt of the request for budget revisions, DOE shall review the request and notify the recipient whether the budget revisions have been approved. If the revision is still under consideration at the end of 30 calendar days, DOE shall inform the recipient in writing of the date when the recipient may expect the decision.

(n) DOE approval or disapproval of a request for a budget or project revision shall be in writing and signed by a DOE Contracting Officer.

(o) A request by a subrecipient for prior approval shall be addressed in writing to the recipient. The recipient shall promptly review such request and shall approve or disapprove the request in writing within 30 days from the date of the recipient's request for the revision. A recipient shall not approve any budget or project revision which is inconsistent with the purpose or terms and conditions of the DOE award. If the revision requested by the subrecipient would result in a change to the recipient's approved budget or approved project which requires DOE prior approval, the recipient shall obtain DOE approval before approving such revision.

§ 600.126 Non-Federal audits.

(a) Recipients and subrecipients that are institutions of higher education or other non-profit organizations shall be subject to the audit requirements

contained in OMB Circular A-133, "Audits of Institutions of Higher Education and Other Non-Profit Institutions."

(b) State and local governments shall be subject to the audit requirements contained in the Single Audit Act (31 U.S.C. 7501-7) and Federal awarding agency regulations implementing OMB Circular A-128, "Audits of State and Local Governments."

(c) The Contracting Officer may audit, or cause to be audited, awards to hospitals not covered by the audit provisions of OMB Circular A-133 whenever and in the degree of detail he/she deems necessary. The Contracting Officer shall rely on available audit reports in determining the need for and scope of such audits. The hospital has similar authority in auditing subrecipients.

(d) The Contracting Officer may audit, or cause to be audited, awards to commercial organizations whenever and in the degree of detail he/she deems necessary. The Contracting Officer shall rely on available audit reports in determining the need for and scope of such audits. The commercial organization has similar authority in auditing subrecipients.

(e) The Contracting Officer may audit, or cause to be audited, awards to individuals whenever and in the degree of detail he/she deems necessary. The Contracting Officer shall rely on available audit reports in determining the need for and scope of such audits.

§ 600.127 Allowable costs.

(a) *General.* For each kind of recipient, there is a set of Federal principles for determining allowable costs. Allowability of costs shall be determined in accordance with the cost principles applicable to the entity incurring the costs. Thus, allowability of costs incurred by State, local or federally-recognized Indian tribal governments is determined in accordance with the provisions of OMB Circular A-87, "Cost Principles for State and Local Governments." The allowability of costs incurred by non-profit organizations is determined in accordance with the provisions of OMB Circular A-122, "Cost Principles for Non-Profit Organizations." The allowability of costs incurred by institutions of higher education is determined in accordance with the provisions of OMB Circular A-21, "Cost Principles for Educational Institutions." The allowability of costs incurred by hospitals is determined in accordance with the provisions of Appendix E of 45 CFR Part 74, "Principles for Determining Costs Applicable to

Research and Development Under Grants and Contracts with Hospitals." The allowability of costs incurred by commercial organizations and those non-profit organizations listed in Attachment C to Circular A-122 is determined in accordance with the provisions of the Federal Acquisition Regulation (FAR) at 48 CFR Part 31.

(b) *Indirect costs.* Unless restricted by Federal statute or program rule, DOE shall provide for the reimbursement of appropriate indirect costs.

(1) DOE shall include an amount for indirect costs in an award only if the applicant requests reimbursement of such costs and—

(i) Submits evidence that a cognizant Federal agency has been assigned to establish indirect cost rates for the applicant and indicates or provides evidence that—

(A) A current agreement containing an applicable approved indirect cost rate(s) covering all or part of the budget period for which DOE may provide funding has been established; or

(B) An indirect cost proposal has been submitted to the cognizant agency in order to establish an applicable approved indirect cost rate(s) covering all or part of the budget period for which DOE may provide funding; or

(C) An indirect cost proposal covering all or part of the budget period and applicable to the activities for which DOE may provide funding will be submitted to the cognizant agency for approval no later than three months after the beginning date of the initial budget period of the DOE award or, for subsequent budget periods, in accordance with any schedule established by the cognizant agency; or

(ii) If not assigned to a cognizant agency, the applicant includes, in the application, data that is current, complete, accurate, and sufficient to allow the Contracting Officer to determine a rate(s) for indirect costs. If the total approved budget will not exceed \$100,000 or if the amount requested for indirect costs does not exceed \$5,000, DOE may waive the requirement for negotiation of a rate and, in lieu thereof, provide a reasonable allowance for such costs.

(2) Indirect cost proposals shall be prepared and submitted in accordance with the applicable Federal cost principles and instructions from the cognizant agency or from DOE, as appropriate.

(3) If a subaward under an award or subaward provides for the payment of indirect costs, the recipient or subrecipient shall be responsible for negotiating appropriate indirect costs, using the cost principles applicable to

the subrecipient or contractor, unless the subrecipient or contractor has negotiated an applicable rate directly with DOE or another Federal department or agency. DOE may review and audit the procedures a recipient or subrecipient uses in conducting indirect cost negotiations.

(c) *Fee or profit.* No increment above cost may be paid to a recipient or subrecipient under a DOE award or subaward, except for SBIR recipients as provided in § 600.181(d)(3). A fee or profit may be paid to a contractor providing goods or services under a contract with a recipient or subrecipient.

§ 600.128 Period of availability of funds.

Where a funding period is specified, a recipient may charge to the award only allowable costs resulting from obligations incurred during the funding period and any pre-award costs authorized by DOE.

Property Standards

§ 600.130 Purpose of property standards.

Sections 600.131 through 600.137 set forth uniform standards governing management and disposition of property furnished by the Federal Government or whose cost was charged to a project supported by a Federal award. Recipients shall observe these standards under awards and shall not impose additional requirements, unless specifically required by Federal statute or program regulations. The recipient may use its own property management standards and procedures provided it observes the provisions of §§ 600.131 through 600.137.

§ 600.131 Insurance coverage.

Recipients shall, at a minimum, provide the equivalent insurance coverage for real property and equipment acquired with DOE funds as provided to property owned by the recipient. Federally-owned property need not be insured unless required by the terms and conditions of the award.

§ 600.132 Real property.

Unless otherwise provided by statute or program regulations, the requirements concerning the use and disposition of real property acquired in whole or in part under awards are as follows.

(a) Title to real property shall vest in the recipient subject to the condition that the recipient shall use the real property for the authorized purpose of the project as long as it is needed and shall not encumber the property without approval of DOE.

(b) The recipient shall obtain written approval by DOE for the use of real property in other federally-sponsored projects when the recipient determines that the property is no longer needed for the purpose of the original project. Use in other projects shall be limited to those under federally-sponsored projects (i.e., awards) or programs that have purposes consistent with those authorized for support by DOE.

(c) When the real property is no longer needed as provided in paragraphs (a) and (b) of this section, the recipient shall request disposition instructions from DOE or its successor Federal awarding agency. DOE will give one or more of the following disposition instructions.

(1) The recipient may be permitted to retain title without further obligation to the Federal Government after it compensates the Federal Government for that percentage of the current fair market value of the property attributable to the Federal participation in the project.

(2) The recipient may be directed to sell the property under guidelines provided by DOE and pay the Federal Government for that percentage of the current fair market value of the property attributable to the Federal participation in the project (after deducting actual and reasonable selling and fix-up expenses, if any, from the sales proceeds). When the recipient is authorized or required to sell the property, proper sales procedures shall be established that provide for competition to the extent practicable and result in the highest possible return.

(3) The recipient may be directed to transfer title to the property to the Federal Government or to an eligible third party provided that, in such cases, the recipient shall be entitled to compensation for its attributable percentage of the current fair market value of the property.

§ 600.133 Federally-owned and exempt property.

(a) Federally-owned property.

(1) Title to federally-owned property remains vested in the Federal Government. Recipients shall submit annually an inventory listing of federally-owned property in their custody to DOE. Upon completion of the award or when the property is no longer needed, the recipient shall report the property to DOE for further Federal agency utilization.

(2) If DOE has no further need for the property, it shall be declared excess and reported to the General Services Administration, unless DOE has statutory authority to dispose of the

property by alternative methods (e.g., the authority provided by the Federal Technology Transfer Act (15 U.S.C. 3710 (i)) to donate research equipment to educational and non-profit organizations in accordance with E.O. 12821, "Improving Mathematics and Science Education in Support of the National Education Goals.") Appropriate instructions shall be issued to the recipient by DOE.

(b) *Exempt property.* When statutory authority exists, DOE may vest title to property acquired with Federal funds in the recipient without further obligation to the Federal Government and under conditions DOE considers appropriate. For example, under 31 U.S.C. 6306, DOE may so vest title to tangible personal property under a grant or cooperative agreement for basic or applied research in a nonprofit institution of higher education or in a nonprofit organization whose primary purpose is conducting scientific research. Such property is "exempt property." Program regulations or the terms and conditions of award may establish provisions for vesting title to exempt property. Should such conditions not be established and the recipient has no need for the equipment, the recipient shall request disposition instructions from DOE. If DOE does not issue disposition instructions within 120 calendar days of receipt of the request, title to the property shall vest in the recipient without further obligation to the Federal Government. If, at the end of the project, DOE fails to issue disposition instructions within 120 calendar days of the receipt of a final inventory, title to the property shall vest in the recipient without further obligation to the Federal Government.

§ 600.134 Equipment.

(a) Title to equipment acquired by a recipient with Federal funds shall vest in the recipient, subject to conditions of this section.

(b) The recipient shall not use equipment acquired with Federal funds to provide services to non-Federal outside organizations for a fee that is less than private companies charge for equivalent services, unless specifically authorized by Federal statute, for as long as the Federal Government retains an interest in the equipment.

(c) The recipient shall use the equipment in the project or program for which it was acquired as long as needed, whether or not the project or program continues to be supported by Federal funds and shall not encumber the property without approval of DOE. When no longer needed for the original

project or program, the recipient shall use the equipment in connection with its other federally-sponsored activities, in the following order of priority:

- (1) Activities sponsored by DOE, then
- (2) Activities sponsored by other Federal agencies.

(d) During the time that equipment is used on the project or program for which it was acquired, the recipient shall make it available for use on other projects or programs if such other use will not interfere with the work on the project or program for which the equipment was originally acquired. First preference for such other use shall be given to other projects or programs sponsored by DOE that financed the equipment; second preference shall be given to projects or programs sponsored by other Federal awarding agencies. If the equipment is owned by the Federal Government, use on other activities not sponsored by the Federal Government shall be permissible if authorized by DOE. User charges shall be treated as program income.

(e) When acquiring replacement equipment, the recipient may use the equipment to be replaced as trade-in or sell the equipment and use the proceeds to offset the costs of the replacement equipment subject to the approval of DOE.

(f) The recipient's property management standards for equipment acquired with Federal funds and federally-owned equipment shall include all of the following.

(1) Equipment records shall be maintained accurately and shall include the following information.

- (i) A description of the equipment.
- (ii) Manufacturer's serial number, model number, Federal stock number, national stock number, or other identification number.
- (iii) Source of the equipment, including the award number.
- (iv) Whether title vests in the recipient or the Federal Government.
- (v) Acquisition date (or date received, if the equipment was furnished by the Federal Government) and cost.
- (vi) Information from which one can calculate the percentage of Federal participation in the cost of the equipment (not applicable to equipment furnished by the Federal Government).
- (vii) Location and condition of the equipment and the date the information was reported.
- (viii) Unit acquisition cost.
- (ix) Ultimate disposition data, including date of disposal and sales price or the method used to determine current fair market value where a recipient compensates DOE for its share.

(2) Equipment owned by the Federal Government shall be identified to indicate Federal ownership.

(3) A physical inventory of equipment shall be taken and the results reconciled with the equipment records at least once every two years. Any differences between quantities determined by the physical inspection and those shown in the accounting records shall be investigated to determine the causes of the difference. The recipient shall, in connection with the inventory, verify the existence, current utilization, and continued need for the equipment.

(4) A control system shall be in effect to insure adequate safeguards to prevent loss, damage, or theft of the equipment. Any loss, damage, or theft of equipment shall be investigated and fully documented; if the equipment was owned by the Federal Government, the recipient shall promptly notify DOE.

(5) Adequate maintenance procedures shall be implemented to keep the equipment in good condition.

(6) Where the recipient is authorized or required to sell the equipment, proper sales procedures shall be established which provide for competition to the extent practicable and result in the highest possible return.

(g) When the recipient no longer needs the equipment, the equipment may be used for other activities in accordance with the following standards. Equipment with a current per-unit fair market value of less than \$5000 may be retained, sold or otherwise disposed of with no further obligation to the awarding agency. For equipment with a current per unit fair market value of \$5000 or more, the recipient may retain the equipment for other uses provided that compensation is made to the original Federal awarding agency or its successor. The amount of compensation shall be computed by applying the percentage of Federal participation in the cost of the original project or program to the current fair market value of the equipment. If the recipient has no need for the equipment, the recipient shall request disposition instructions from DOE. DOE shall determine whether the equipment can be used to meet DOE's requirements. If no requirement exists within DOE, the availability of the equipment shall be reported to the General Services Administration by DOE to determine whether a requirement for the equipment exists in other Federal agencies. DOE will issue instructions to the recipient no later than 120 calendar days after the recipient's request and the following procedures shall govern.

(1) If so instructed or if disposition instructions are not issued within 120

calendar days after the recipient's request, the recipient shall sell the equipment and reimburse DOE an amount computed by applying to the sales proceeds the percentage of Federal participation in the cost of the original project or program. However, the recipient shall be permitted to deduct and retain from the Federal share \$500 or ten percent of the proceeds, whichever is less, for the recipient's selling and handling expenses.

(2) If the recipient is instructed to ship the equipment elsewhere, the recipient shall be reimbursed by the Federal Government by an amount which is computed by applying the percentage of the recipient's participation in the cost of the original project or program to the current fair market value of the equipment, plus any reasonable shipping or interim storage costs incurred.

(3) If the recipient is instructed to otherwise dispose of the equipment, the recipient shall be reimbursed by DOE for such costs incurred in its disposition.

(h) DOE reserves the right, at the end of a project, to transfer the title to the Federal Government or to a third party named by DOE when such third party is otherwise eligible under existing statutes. Such transfer shall be subject to the following standards.

(1) The equipment shall be appropriately identified in the award or otherwise made known to the recipient in writing.

(2) DOE shall issue disposition instructions within 120 calendar days after receipt of a final inventory. The final inventory shall list all equipment acquired with award funds and federally-owned equipment. If DOE fails to issue disposition instructions within the 120 calendar day period, the provisions of § 600.134(g)(1) apply.

(3) When DOE exercises its right to take title, the equipment shall be subject to the provisions for federally-owned equipment.

§ 600.135 Supplies and other expendable property.

(a) Title to supplies and other expendable property shall vest in the recipient upon acquisition. If there is a residual inventory of unused supplies exceeding \$5000 in total aggregate value upon termination or completion of the project or program and the supplies are not needed for any other federally-sponsored project or program, the recipient shall retain the supplies for use on non-Federal sponsored activities or sell them, but shall, in either case, compensate the Federal Government for its share. The amount of compensation

shall be computed in the same manner as for equipment.

(b) The recipient shall not use supplies acquired with Federal funds to provide services to non-Federal outside organizations for a fee that is less than private companies charge for equivalent services, unless specifically authorized by Federal statute as long as the Federal Government retains an interest in the supplies.

§ 600.136 Intangible property.

(a) The recipient may copyright any work that is subject to copyright and was developed, or for which ownership was purchased, under an award. DOE reserves a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the work for Federal purposes, and to authorize others to do so.

(b) Recipients are subject to applicable regulations governing patents and inventions, including government-wide regulations issued by the Department of Commerce at 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements."

(c) DOE has the right to:

(1) Obtain, reproduce, publish or otherwise use the data first produced under an award.

(2) Authorize others to receive, reproduce, publish, or otherwise use such data for Federal purposes.

(d) Title to intangible property and debt instruments acquired under an award or subaward vests upon acquisition in the recipient. The recipient shall use that property for the originally-authorized purpose, and the recipient shall not encumber the property without approval of DOE. When no longer needed for the originally authorized purpose, disposition of the intangible property shall occur in accordance with the provisions of § 600.134(g).

§ 600.137 Property trust relationship.

Real property, equipment, intangible property and debt instruments that are acquired or improved with Federal funds shall be held in trust by the recipient as trustee for the beneficiaries of the project or program under which the property was acquired or improved. Recipients shall record liens or other appropriate notices of record to indicate that personal or real property has been acquired or improved with Federal funds and that use and disposition conditions apply to the property.

Procurement Standards

§ 600.140 Purpose of procurement standards.

Sections 600.141 through 600.148 set forth standards for use by recipients in establishing procedures for the procurement of supplies and other expendable property, equipment, real property and other services with Federal funds. These standards are furnished to ensure that such materials and services are obtained in an effective manner and in compliance with the provisions of applicable Federal statutes and executive orders. No additional procurement standards or requirements shall be imposed by DOE upon recipients, unless specifically required by Federal statute or executive order or in accordance with the deviation procedures of § 600.4.

§ 600.141 Recipient responsibilities.

The standards contained in this section do not relieve the recipient of the contractual responsibilities arising under its contract(s). The recipient is the responsible authority, without recourse to DOE regarding the settlement and satisfaction of all contractual and administrative issues arising out of procurements entered into in support of an award or other agreement. This includes disputes, claims, protests of award, source evaluation or other matters of a contractual nature. Matters concerning violation of statute are to be referred to such Federal, State or local authority as may have proper jurisdiction.

§ 600.142 Codes of conduct.

The recipient shall maintain written standards of conduct governing the performance of its employees engaged in the award and administration of contracts. No employee, officer, or agent shall participate in the selection, award, or administration of a contract supported by Federal funds if a real or apparent conflict of interest would be involved. Such a conflict would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of the parties indicated herein, has a financial or other interest in the firm selected for an award. The officers, employees, and agents of the recipient shall neither solicit nor accept gratuities, favors, or anything of monetary value from contractors, or parties to subagreements. However, recipients may set standards for situations in which the financial interest is not substantial or the gift is an unsolicited item of nominal value. The

standards of conduct shall provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the recipient.

§ 600.143 Competition.

All procurement transactions shall be conducted in a manner to provide, to the maximum extent practical, open and free competition. The recipient shall be alert to organizational conflicts of interest as well as noncompetitive practices among contractors that may restrict or eliminate competition or otherwise restrain trade. In order to ensure objective contractor performance and eliminate unfair competitive advantage, contractors that develop or draft specifications, requirements, statements of work, invitations for bids and/or requests for proposals shall be excluded from competing for such procurements. Awards shall be made to the bidder or offeror whose bid or offer is responsive to the solicitation and is most advantageous to the recipient, price, quality and other factors considered. Solicitations shall clearly set forth all requirements that the bidder or offeror shall fulfill in order for the bid or offer to be evaluated by the recipient. Any and all bids or offers may be rejected when it is in the recipient's interest to do so.

§ 600.144 Procurement procedures.

(a) All recipients shall establish written procurement procedures. These procedures shall provide for, at a minimum, that paragraphs (a)(1), (2) and (3) of this section apply.

(1) Recipients avoid purchasing unnecessary items.

(2) Where appropriate, an analysis is made of lease and purchase alternatives to determine which would be the most economical and practical procurement.

(3) Solicitations for goods and services provide for all of the following:

(i) A clear and accurate description of the technical requirements for the material, product or service to be procured. In competitive procurements, such a description shall not contain features which unduly restrict competition.

(ii) Requirements which the bidder/offeror must fulfill and all other factors to be used in evaluating bids or proposals.

(iii) A description, whenever practicable, of technical requirements in terms of functions to be performed or performance required, including the range of acceptable characteristics or minimum acceptable standards.

(iv) The specific features of "brand name or equal" descriptions that

bidders are required to meet when such items are included in the solicitation.

(v) The acceptance, to the extent practicable and economically feasible, of products and services dimensioned in the metric system of measurement.

(vi) Preference, to the extent practicable and economically feasible, for products and services that conserve natural resources and protect the environment and are energy efficient.

(b) Positive efforts shall be made by recipients to utilize small businesses, minority-owned firms, and women's business enterprises, whenever possible. Recipients of DOE awards shall take all of the following steps to further this goal.

(1) Ensure that small businesses, minority-owned firms, and women's business enterprises are used to the fullest extent practicable.

(2) Make information on forthcoming opportunities available and arrange time frames for purchases and contracts to encourage and facilitate participation by small businesses, minority-owned firms, and women's business enterprises.

(3) Consider in the contract process whether firms competing for larger contracts intend to subcontract with small businesses, minority-owned firms, and women's business enterprises.

(4) Encourage contracting with consortiums of small businesses, minority-owned firms and women's business enterprises when a contract is too large for one of these firms to handle individually.

(5) Use the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Department of Commerce's Minority Business Development Agency in the solicitation and utilization of small businesses, minority-owned firms and women's business enterprises.

(c) The type of procuring instruments used (e.g., fixed price contracts, cost reimbursable contracts, purchase orders, and incentive contracts) shall be determined by the recipient but shall be appropriate for the particular procurement and for promoting the best interest of the program or project involved. The "cost-plus-a-percentage-of-cost" or "percentage of construction cost" methods of contracting shall not be used.

(d) Contracts shall be made only with responsible contractors who possess the potential ability to perform successfully under the terms and conditions of the proposed procurement. Consideration shall be given to such matters as contractor integrity, record of past performance, financial and technical resources or accessibility to other necessary resources. In certain

circumstances, contracts with certain parties are restricted by DOE's implementation, in 10 CFR Part 1036, of E.O.'s 12549 and 12689, "Debarment and Suspension."

(e) Recipients shall, on request, make available for DOE, pre-award review and procurement documents, such as request for proposals or invitations for bids, independent cost estimates, etc., when any of the following conditions apply.

(1) A recipient's procurement procedures or operation fails to comply with the procurement standards in this Subpart.

(2) The procurement is expected to exceed the small purchase threshold fixed at 41 U.S.C. 403 (11) (currently \$25,000) and is to be awarded without competition or only one bid or offer is received in response to a solicitation.

(3) The procurement, which is expected to exceed the small purchase threshold, specifies a "brand name" product.

(4) The proposed award over the small purchase threshold is to be awarded to other than the apparent low bidder under a sealed bid procurement.

(5) A proposed contract modification changes the scope of a contract or increases the contract amount by more than the amount of the small purchase threshold.

(f) By agreement of the recipient or subrecipient and the contractor, if consistent with the recipient's or subrecipient's usual business practices and applicable state and local law, any contract to which this section applies may provide for the payment of interest penalties on amounts overdue under such contract except that—

(1) In no case shall any obligation to pay such interest penalties be construed to be an obligation of the Federal government, and

(2) Any payment of such interest penalties may not be made from DOE funds nor be counted toward meeting a cost sharing requirement of a DOE award.

§ 600.145 Cost and price analysis.

Some form of cost or price analysis shall be made and documented in the procurement files in connection with every procurement action. Price analysis may be accomplished in various ways, including the comparison of price quotations submitted, market prices and similar indicia, together with discounts. Cost analysis is the review and evaluation of each element of cost to determine reasonableness, allocability and allowability.

§ 600.146 Procurement records.

Procurement records and files for purchases in excess of the small purchase threshold shall include the following at a minimum:

(a) Basis for contractor selection,

(b) Justification for lack of competition when competitive bids or offers are not obtained, and

(c) Basis for award cost or price.

§ 600.147 Contract administration.

A system for contract administration shall be maintained to ensure contractor conformance with the terms, conditions and specifications of the contract and to ensure adequate and timely follow up of all purchases. Recipients shall evaluate contractor performance and document, as appropriate, whether contractors have met the terms, conditions and specifications of the contract.

§ 600.148 Contract provisions.

The recipient shall include, in addition to provisions to define a sound and complete agreement, the following provisions in all contracts. The following provisions shall also be applied to subcontracts.

(a) Contracts in excess of the small purchase threshold shall contain contractual provisions or conditions that allow for administrative, contractual, or legal remedies in instances in which a contractor violates or breaches the contract terms, and provide for such remedial actions as may be appropriate.

(b) All contracts in excess of the small purchase threshold shall contain suitable provisions for termination by the recipient, including the manner by which termination shall be effected and the basis for settlement. In addition, such contracts shall describe conditions under which the contract may be terminated for default as well as conditions where the contract may be terminated because of circumstances beyond the control of the contractor.

(c) Except as otherwise required by statute, an award that requires the contracting (or subcontracting) for construction or facility improvements shall provide for the recipient to follow its own requirements relating to bid guarantees, performance bonds, and payment bonds unless the construction contract or subcontract exceeds \$100,000. For those contracts or subcontracts exceeding \$100,000, DOE may accept the bonding policy and requirements of the recipient, provided the DOE has made a determination that the Federal Government's interest is adequately protected. If such a determination has not been made, the

minimum requirements shall be as follows.

(1) A bid guarantee from each bidder equivalent to five percent of the bid price. The "bid guarantee" shall consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder shall, upon acceptance of his bid, execute such contractual documents as may be required within the time specified.

(2) A performance bond on the part of the contractor for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract.

(3) A payment bond on the part of the contractor for 100 percent of the contract price. A "payment bond" is one executed in connection with a contract to assure payment as required by statute of all persons supplying labor and material in the execution of the work provided for in the contract.

(4) Where bonds are required in the situations described herein, the bonds shall be obtained from companies holding certificates of authority as acceptable sureties pursuant to 31 CFR part 223, "Surety Companies Doing Business with the United States."

(d) All negotiated contracts (except those for less than the small purchase threshold) awarded by recipients shall include a provision to the effect that the recipient, DOE, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to any books, documents, papers and records of the contractor which are directly pertinent to a specific program for the purpose of making audits, examinations, excerpts and transcriptions.

(e) All contracts, including small purchases, awarded by recipients and their contractors shall contain the procurement provisions of Appendix A to this Subpart, as applicable.

§ 600.149 Resource Conservation and Recovery Act (RCRA).

Recipients' procurements shall comply with applicable requirements of RCRA, as described at Section 600.116 of this Subpart.

Reports and Records

§ 600.150 Purpose of reports and records.

Sections 600.151 through 600.153 set forth the procedures for monitoring and reporting on the recipient's financial and program performance and the necessary standard reporting forms. They also set forth record retention requirements.

§ 600.151 Monitoring and reporting program performance.

(a) Recipients are responsible for managing and monitoring each project, program, subaward, function or activity supported by the award. Recipients shall monitor subawards to ensure subrecipients have met the audit requirements as delineated in § 600.126.

(b) The terms and conditions of the award will prescribe the frequency with which the performance reports shall be submitted. Except as provided in paragraph (f) of this section, performance reports shall not be required more frequently than quarterly or less frequently than annually. Annual reports shall be due 90 calendar days after the award year; quarterly or semi-annual reports shall be due 30 days after the reporting period. DOE may require annual reports before the anniversary dates of multiple year awards in lieu of these requirements. The final performance reports are due 90 calendar days after the expiration or termination of the award.

(c) If inappropriate, a final technical or performance report shall not be required after completion of the project.

(d) When required, performance reports shall generally contain, for each award, brief information on each of the following.

(1) A comparison of actual accomplishments with the goals and objectives established for the period, the findings of the investigator, or both. Whenever appropriate and the output of programs or projects can be readily quantified, such quantitative data should be related to cost data for computation of unit costs.

(2) Reasons why established goals were not met, if appropriate.

(3) Other pertinent information including, when appropriate, analysis and explanation of cost overruns or high unit costs.

DOE may specify in the award that the recipient provide this information on the Federal Assistance Program/Project Status Report (DOE F 4600.6), the technical reporting formats, or the Federal Assistance Management Summary Report. DOE may require that the Federal Assistance Management Summary Report be used as a performance report only when such use is authorized by program rule or the need for this form is explained in the solicitation. The requirements of this section concerning reporting frequency and deadlines shall apply to the Federal Assistance Management Summary Report. (See also Section 600.112 with regard to use of this form as part of the award application.)

(e) Recipients shall not be required to submit more than the original and two copies of performance reports.

(f) Recipients shall immediately notify DOE of developments that have a significant impact on the award-supported activities. Also, notification shall be given in the case of problems, delays, or adverse conditions which materially impair the ability to meet the objectives of the award. This notification shall include a statement of the action taken or contemplated, and any assistance needed to resolve the situation.

(g) DOE may make site visits, as needed.

(h) DOE shall comply with applicable clearance requirements of 5 CFR Part 1320 when requesting performance data from recipients.

(i) Recipients may place performance reporting requirements on subawards consistent with the provisions of this section and shall require interim reporting in accordance with § 600.151(f).

§ 600.152 Financial reporting.

(a) The following forms or such other forms as may be approved by OMB are authorized for obtaining financial information from recipients.

(1) SF-269 or SF-269A, Financial Status Report.

(i) Recipients shall use the SF-269 or SF-269A to report the status of funds for all nonconstruction projects or programs, except that DOE has the option of not requiring the SF-269 or SF-269A when the SF-270, Request for Advance or Reimbursement, or SF-272, Report of Federal Cash Transactions, is determined to provide adequate information to meet DOE needs. However, a final SF-269 or SF-269A shall be required at the completion of the project when the SF-270 is used only for advances.

(ii) The terms and conditions of award shall prescribe whether the report shall be on a cash or accrual basis. DOE may require accrual reporting only if such reporting is required by program statute or rule. If the award requires accrual information and the recipient's accounting records are not normally kept on the accrual basis, the recipient shall not be required to convert its accounting system, but shall develop such accrual information through best estimates based on an analysis of the documentation on hand.

(iii) DOE shall determine the frequency of the Financial Status Report for each project or program, considering the size and complexity of the particular project or program. However, the report shall not be required more frequently

than quarterly or less frequently than annually. A final report shall be required at the completion of the agreement.

(iv) DOE shall require recipients to submit the SF-269 or SF-269A (an original and no more than two copies) no later than 30 days after the end of each specified reporting period for quarterly and semi-annual reports, and 90 calendar days for annual and final reports. Extensions of reporting due dates may be approved by the DOE upon request of the recipient.

(2) SF-272, Report of Federal Cash Transactions.

(i) When funds are advanced, each recipient shall submit the SF-272 and, when necessary, its continuation sheet, SF-272a. DOE will use this report to monitor cash advanced to recipients and to obtain disbursement information for each agreement with the recipients.

(ii) Recipients shall forecast Federal cash requirements in the "Remarks" section of the report.

(iii) When practical and deemed necessary, DOE may require recipients to report in the "Remarks" section the amount of cash advances received in excess of three days. Recipients shall provide short narrative explanations of actions taken to reduce the excess balances.

(iv) Recipients shall be required to submit not more than the original and two copies of the SF-272 15 calendar days following the end of each quarter. DOE may require a monthly report from those recipients receiving advances totaling \$1 million or more per year.

(v) DOE may waive the requirement for submission of the SF-272 for any one of the following reasons:

(A) When monthly advances do not exceed \$25,000 per recipient, provided that such advances are monitored through other forms contained in this section;

(B) If, in the contracting officer's opinion, the recipient's accounting controls are adequate to minimize excessive Federal advances; or,

(C) When electronic payment mechanisms provide adequate data.

(b) When DOE needs additional information or more frequent reports, the following shall be observed:

(1) When additional information is needed to comply with legislative requirements, DOE shall issue instructions to require recipients to submit such information under the "Remarks" section of the reports.

(2) When DOE determines that a recipient's accounting system does not meet the standards in Section 600.121, additional pertinent information to further monitor awards may be obtained

upon written notice to the recipient until such time as the system is brought up to standard. DOE, in obtaining this information, shall comply with report clearance requirements of 5 CFR Part 1320.

(3) Contracting officers are encouraged to shade out any line item on any report if not necessary.

(4) DOE may accept the identical information from the recipients in machine readable format or computer printouts or electronic outputs in lieu of prescribed formats.

(5) Computer or electronic outputs may be provided to recipients when that expedites or contributes to the accuracy of reporting.

§ 600.153 Retention and access requirements for records.

(a) This section sets forth requirements for record retention and access to records for awards to recipients. DOE shall not impose any other record retention or access requirements upon recipients, unless such requirements are established in program regulations.

(b) Financial records, supporting documents, statistical records, and all other records pertinent to an award shall be retained for a period of three years from the date of submission of the final expenditure report or, for awards that are renewed quarterly or annually, from the date of the submission of the quarterly or annual financial report, as authorized by DOE. The only exceptions are the following:

(1) If any litigation, claim, or audit is started before the expiration of the 3-year period, the records shall be retained until all litigation, claims or audit findings involving the records have been resolved and final action taken.

(2) Records for real property and equipment acquired with Federal funds shall be retained for 3 years after final disposition.

(3) When records are transferred to or maintained by DOE, the 3-year retention requirement is not applicable to the recipient.

(4) Indirect cost rate proposals, cost allocations plans, and related records, for which retention requirements are specified in § 600.153(g).

(c) Copies of original records may be substituted for the original records if authorized by DOE.

(d) DOE shall request transfer of certain records to its custody from recipients when it determines that the records possess long term retention value. However, in order to avoid duplicate recordkeeping, DOE may make arrangements for recipients to

retain any records that are continuously needed for joint use.

(e) DOE, the Inspector General, Comptroller General of the United States, or any of their duly authorized representatives, have the right of timely and unrestricted access to any books, documents, papers, or other records of recipients that are pertinent to the awards, in order to make audits, examinations, excerpts, transcripts and copies of such documents. This right also includes timely and reasonable access to a recipient's personnel for the purpose of interview and discussion related to such documents. The rights of access in this paragraph are not limited to the required retention period, but shall last as long as records are retained.

(f) Unless required by statute, DOE shall place no restrictions on recipients that limit public access to the records of recipients that are pertinent to an award, except when DOE can demonstrate that such records shall be kept confidential and would have been exempted from disclosure pursuant to the Freedom of Information Act (5 U.S.C. 552) if the records had belonged to DOE.

(g) Paragraphs (g)(1) and (g)(2) of this section apply to the following types of documents, and their supporting records: indirect cost rate computations or proposals, cost allocation plans, and any similar accounting computations of the rate at which a particular group of costs is chargeable (such as computer usage chargeback rates or composite fringe benefit rates).

(1) *If submitted for negotiation.* If the recipient submits to the Federal agency responsible for negotiating the recipient's indirect cost rate or the subrecipient submits to the recipient the proposal, plan, or other computation to form the basis for negotiation of the rate, then the 3-year retention period for its supporting records starts on the date of such submission.

(2) *If not submitted for negotiation.* If the recipient is not required to submit to the cognizant Federal agency or the subrecipient is not required to submit to the recipient the proposal, plan, or other computation for negotiation purposes, then the 3-year retention period for the proposal, plan, or other computation and its supporting records starts at the end of the fiscal year (or other accounting period) covered by the proposal, plan, or other computation.

(h) If, by the terms and conditions of the award, the recipient or subrecipient—

(1) Is accountable for program income earned or received after the end of the project period or after the termination of an award or subaward, or

(2) If program income earned during the project period is required to be applied to costs incurred after the end of the project period or after termination of an award or subaward, the record retention period shall start on the last day of the recipient's or subrecipient's fiscal year in which such income was earned or received or such costs were incurred. All other program income records shall be retained in accordance with § 600.153(b).

Termination and Enforcement

§ 600.160 Purpose of termination and enforcement.

Sections 600.161 and 600.162 set forth uniform suspension, termination and enforcement procedures.

§ 600.161 Termination.

(a) Awards may be terminated in whole or in part only if paragraph (a) (1), (2) or (3) of this section apply.

(1) By DOE, if a recipient materially fails to comply with the terms and conditions of an award.

(2) By DOE with the consent of the recipient, in which case the two parties shall agree upon the termination conditions, including the effective date and, in the case of partial termination, the portion to be terminated.

(3) By the recipient upon sending to DOE written notification setting forth the reasons for such termination, the effective date, and, in the case of partial termination, the portion to be terminated. However, if DOE determines in the case of partial termination that the reduced or modified portion of the award will not accomplish the purposes for which the award was made, it may terminate the award in its entirety under either paragraph (a) (1) or (2) of this section.

(b) If costs are allowed under an award, the responsibilities of the recipient referred to in Section 600.171(a), including those for property management as applicable, shall be considered in the termination of the award, and provision shall be made for continuing responsibilities of the recipient after termination, as appropriate.

§ 600.162 Enforcement.

(a) Remedies for noncompliance. If a recipient materially fails to comply with the terms and conditions of an award, whether stated in a Federal statute, regulation, assurance, application, or notice of award, DOE may, in addition to imposing any of the special conditions outlined in § 600.114, take one or more of the following actions, as appropriate in the circumstances.

(1) Temporarily withhold cash payments pending correction of the deficiency by the recipient or more severe enforcement action by DOE.

(2) Disallow (that is, deny both use of funds and any applicable matching credit for) all or part of the cost of the activity or action not in compliance.

(3) Wholly or partly suspend or terminate the current award.

(4) Withhold further awards for the project or program.

(5) Take other remedies that may be legally available.

(b) Hearings and appeals. In taking an enforcement action, DOE shall provide the recipient an opportunity for hearing, appeal, or other administrative proceeding to which the recipient is entitled under any statute or regulation applicable to the action involved.

(c) Effects of suspension and termination. Costs of a recipient resulting from obligations incurred by the recipient during a suspension or after termination of an award are not allowable unless the awarding agency expressly authorizes them in the notice of suspension or termination or subsequently. Other recipient costs during suspension or after termination which are necessary and not reasonably avoidable are allowable if paragraph (c) (1) and (2) of this section apply.

(1) The costs result from obligations which were properly incurred by the recipient before the effective date of suspension or termination, are not in anticipation of it, and in the case of a termination, are noncancellable.

(2) The costs would be allowable if the award were not suspended or expired normally at the end of the funding period in which the termination takes effect.

(d) Relationship to debarment and suspension. The enforcement remedies identified in this section, including suspension and termination, do not preclude a recipient from being subject to debarment and suspension under 10 CFR part 1036.

After-the-Award Requirements

§ 600.170 Purpose.

Sections 600.171 through 600.173 contain closeout procedures and other procedures for subsequent disallowances and adjustments.

§ 600.171 Closeout procedures.

(a) Recipients shall submit, within 90 calendar days after the date of completion of the award, all financial, performance, and other reports as required by the terms and conditions of the award. DOE may approve extensions when requested by the recipient.

(b) Unless DOE authorizes an extension, a recipient shall liquidate all obligations incurred under the award not later than 90 calendar days after the funding period or the date of completion as specified in the terms and conditions of the award or in agency implementing instructions.

(c) DOE shall make prompt payments to a recipient for allowable reimbursable costs under the award being closed out.

(d) The recipient shall promptly refund any balances of unobligated cash that DOE has advanced or paid and that is not authorized to be retained by the recipient for use in other projects. OMB Circular A-129 governs unreturned amounts that become delinquent debts.

(e) When authorized by the terms and conditions of the award, DOE shall make a settlement for any upward or downward adjustments to the Federal share of costs after closeout reports are received.

(f) The recipient shall account for any real and personal property acquired with Federal funds or received from the Federal Government in accordance with §§ 600.131 through 600.137.

(g) In the event a final audit has not been performed prior to the closeout of an award, DOE shall retain the right to recover an appropriate amount after fully considering the recommendations on disallowed costs resulting from the final audit.

§ 600.172 Subsequent adjustments and continuing responsibilities.

(a) The closeout of an award does not affect any of the following.

(1) The right of DOE to disallow costs and recover funds on the basis of a later audit or other review.

(2) The obligation of the recipient to return any funds due as a result of later refunds, corrections, or other transactions.

(3) Audit requirements in § 600.126.

(4) Property management requirements in §§ 600.131 through 600.137.

(5) Records retention as required in § 600.153.

(b) After closeout of an award, a relationship created under an award may be modified or ended in whole or in part with the consent of DOE and the recipient, provided the responsibilities of the recipient referred to in paragraph 600.173(a), including those for property management as applicable, are considered and provisions made for continuing responsibilities of the recipient, as appropriate.

§ 600.173 Collection of amounts due.

(a) Any funds paid to a recipient in excess of the amount to which the

recipient is finally determined to be entitled under the terms and conditions of the award constitute a debt to the Federal Government. If not paid within a reasonable period after the demand for payment, DOE may reduce the debt by paragraph (a) (1), (2) or (3) of this section.

(1) Making an administrative offset against other requests for reimbursements.

(2) Withholding advance payments otherwise due to the recipient.

(3) Taking other action permitted by statute.

(b) Except as otherwise provided by law, DOE shall charge interest on an overdue debt in accordance with 4 CFR Chapter II, "Federal Claims Collection Standards."

Additional Provisions

§ 600.180 Purpose.

The purpose of "Additional Provisions" is to provide additional rules for certain types of recipients which are otherwise covered by 10 CFR Part 600, Subpart B when they are performing under Small Business Innovation Research grants.

§ 600.181 Special provisions for small business innovation research grants.

(a) *General.* This section contains provisions applicable to the Small Business Innovation Research (SBIR) Program. This codifies six class deviations pertaining to the SBIR program.

(b) *Provisions Applicable to Phase I SBIR Awards.* Phase I SBIR awards may be made on a fixed obligation basis, subject to the following requirements:

(1) While proposed costs must be analyzed in detail to ensure consistency with applicable cost principles, incurred costs are not subject to regulation by the standards of cost allowability;

(2) Although detailed budgets are submitted by a recipient and reviewed by DOE for purposes of establishing the amount to be awarded, budget categories are not stipulated in making an award;

(3) Prior approval from the DOE for rebudgeting among categories by the recipient is not required. Prior approval from DOE is required for situations involving sole source or single bid procurements as provided in § 600.181(d)(2). Prior approval from DOE is also required for any variation from the requirement under the SBIR program that no more than one-third of Phase I work can be done by sub-contractors or consortium partners;

(4) Pre-award expenditure approval is not required;

(5) Payments are to be made in the same manner as other financial assistance (see § 600.122), except that, when determined appropriate by the cognizant program official and contracting officer, a lump sum payment may be made. If a lump sum payment is made, the award must be conditioned to require the recipient to return to DOE amounts remaining unexpended at the end of the project if those amounts exceed \$500;

(6) Recipients will certify in writing to the Contracting Officer at the end of the project that the activity was completed or the level of effort was expended. Should the activity or effort not be carried out, the recipient would be expected to make appropriate reimbursements;

(7) Requirements for periodic reports may be established for each award so long as they are consistent with § 600.151;

(8) Changes in principal investigator or project leader, scope of effort, or institution, require the prior approval of DOE.

(c) *Provision Applicable to Phase II SBIR Awards.* Phase II SBIR awards may be made for a single budget period of 24 months.

(d) *Provisions Applicable to Phase I and Phase II SBIR Awards.*

(1) The prior approval of the cognizant DOE Contracting Officer is required before the final budget period of the project period may be extended without additional funds.

(2) A recipient or subrecipient must receive the prior written approval of the awarding party before entering into any sole source contract or a contract where only one bid or proposal is received when the value of the contract is expected to exceed \$25,000 in the aggregate.

(3) A fee or profit may be paid to SBIR recipients.

Appendix A to Subpart B to Part 600—Contract Provisions

All contracts, awarded by a recipient including small purchases, shall contain the following provisions as applicable:

1. *Equal Employment Opportunity*—All contracts shall contain a provision requiring compliance with E.O. 11246, "Equal Employment Opportunity," as amended by E.O. 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and as supplemented by regulations at 41 CFR Part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

2. *Copeland "Anti-Kickback" Act* (18 U.S.C. 874 and 40 U.S.C. 276c)—All contracts and subgrants in excess of \$2000 for construction or repair awarded by recipients and subrecipients shall include a

provision for compliance with the Copeland "Anti-Kickback" Act (18 U.S.C. 874), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The recipient shall report all suspected or reported violations to the Federal awarding agency.

3. *Davis-Bacon Act, as amended* (40 U.S.C. 276a to a-7)—When required by Federal program legislation, all construction contracts awarded by the recipients and subrecipients of more than \$2000 shall include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 276a to a-7) and as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Governing Federally Financed and Assisted Construction"). Under this Act, contractors shall be required to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages not less than once a week. The recipient shall place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation and the award of a contract shall be conditioned upon the acceptance of the wage determination. The recipient shall report all suspected or reported violations to the Federal awarding agency.

4. *Contract Work Hours and Safety Standards Act* (40 U.S.C. 327-333)—Where applicable, all contracts awarded by recipients in excess of \$2000 for construction contracts and in excess of \$2500 for other contracts that involve the employment of mechanics or laborers shall include a provision for compliance with Sections 102 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-333), as supplemented by Department of Labor regulations (29 CFR Part 5). Under Section 102 of the Act, each contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1½ times the basic rate of pay for all hours worked in excess of 40 hours in the work week. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

5. *Rights to Inventions Made Under a Contract or Agreement*—Contracts or agreements for the performance of

experimental, developmental, or research work shall provide for the rights of the Federal Government and the recipient in any resulting invention in accordance with 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

6. *Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.), as amended*—Contracts and subgrants of amounts in excess of \$100,000 shall contain a provision that requires the recipient to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401 et seq.) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251 et seq.). Violations shall be reported to the Federal awarding agency and the

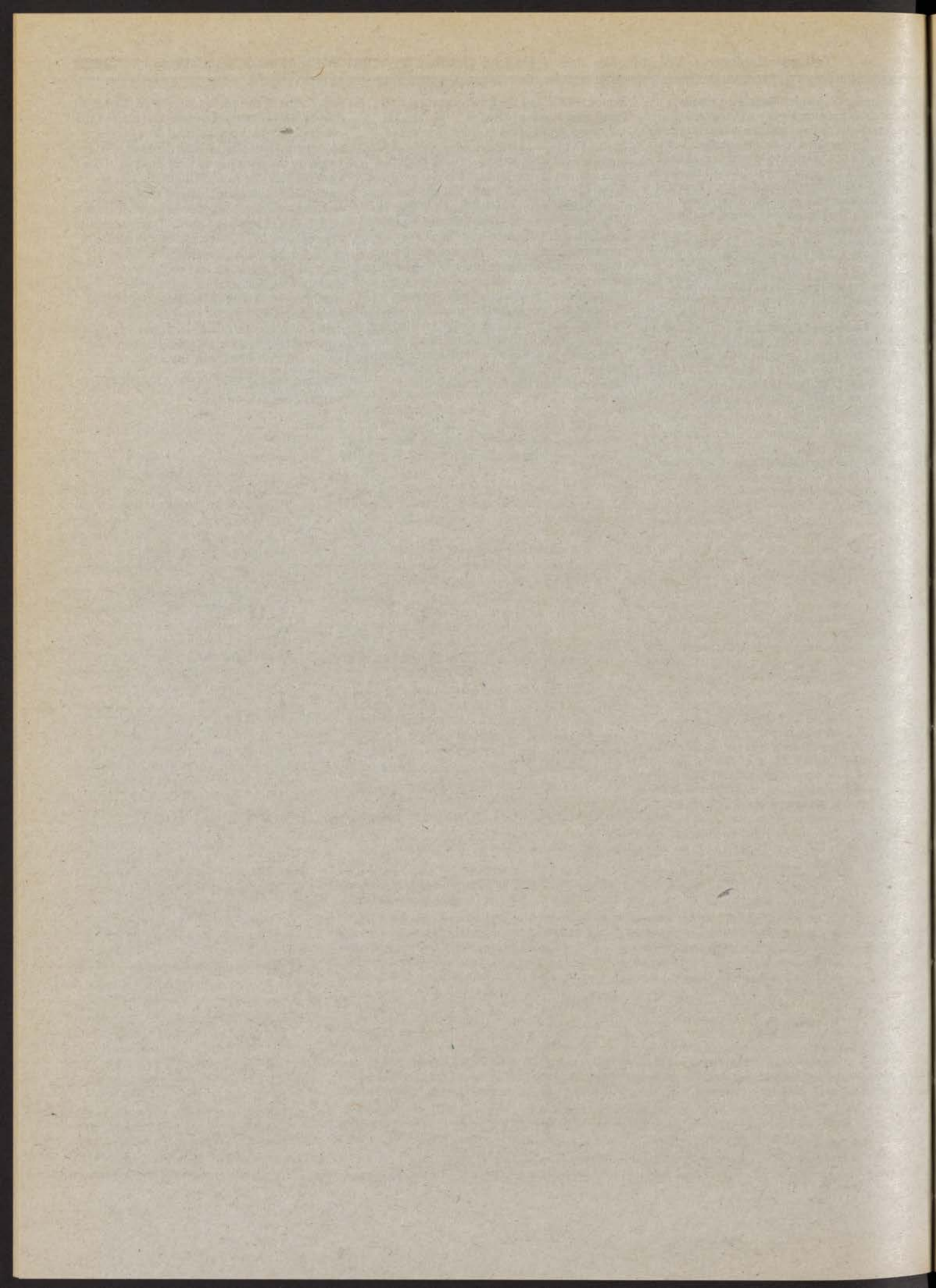
Regional Office of the Environmental Protection Agency (EPA).

7. *Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)*—Contractors who apply or bid for an award of \$100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient.

8. *Debarment and Suspension (E.O.s 12549 and 12689)*—Contract awards that exceed the small purchase threshold and certain other contract awards shall not be made to parties listed on the nonprocurement portion of the General Services Administration's List of Parties Excluded from Federal Procurement or Nonprocurement Programs in accordance with E.O.s 12549 and 12689, "Debarment and Suspension." This list contains the names of parties debarred, suspended, or otherwise excluded by agencies, and contractors declared ineligible under statutory or regulatory authority other than E.O. 12549. Contractors with awards that exceed the small purchase threshold shall provide the required certification regarding its exclusion status and that of its principals.

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Federal Register

Friday
October 21, 1994

Part IV

Department of Transportation

Coast Guard

33 CFR Part 155 et al.
Overfill Devices; Interim Final Rule

DEPARTMENT OF TRANSPORTATION

Coast Guard

33 CFR Parts 155 and 156

[CGD 90-071a]

RIN 2115-AD87

Overfill Devices

AGENCY: Coast Guard, DOT.

ACTION: Interim final rule.

SUMMARY: The Coast Guard is issuing an interim final rule (IFR) that establishes minimum standards for overfill devices and requires the phased-in installation and use of devices on the cargo tanks of certain tank vessels that carry oil or oil residue as primary cargo. Regulations addressing minimum standards for and concerning the use of overfill devices are required by the Oil Pollution Act of 1990 (OPA 90). The purpose of the interim regulations is to reduce the likelihood of spills when oil is loaded as cargo.

DATES: The interim final rule is effective on January 19, 1995. Comments must be received by January 19, 1995.

ADDRESSES: Comments may be mailed to the Executive Secretary, Marine Safety Council (G-LRA/3406) (CGD 90-071a), U.S. Coast Guard Headquarters, 2100 Second Street SW., Washington, DC 20593-0001 or may be delivered to room 3406 at the same address between 8 a.m. and 3 p.m., Monday through Friday, except Federal holidays. The telephone number is (202) 267-1477. Comments on collection-of-information requirements must be mailed also to the Office of Information and Regulatory Affairs, Office of Management and Budget, 725 17th Street NW., Washington, DC 20503, ATTN: Desk Officer, U.S. Coast Guard.

The Executive Secretary maintains the public docket for the rulemaking. Comments will become part of this docket and will be available for inspection or copying at room 3406, U.S. Coast Guard Headquarters, between 8:00 a.m. and 3:00 p.m., Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: LCDR Jeff Brager, Office of Marine Safety, Security and Environmental Protection (G-MVI-1), (202) 267-1046.

SUPPLEMENTARY INFORMATION:

Request for Comments

The Coast Guard encourages interested persons to participate in the rulemaking by submitting written data, views, or arguments. Persons submitting comments should include their names

and addresses, identify the rulemaking (CGD 90-071a) and the specific section of this rule to which each comment applies, and give the reason for each comment. Please submit two copies of all comments and attachments in an unbound format, no larger than 8 by 11 inches, suitable for copying and electronic filing. 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 rule in view of the comments.

Drafting Information

The principal persons involved in drafting this document are Randall Crenwelge, Project Manager, and Pamela Pelcovits, Project Counsel, OPA 90 Staff.

Regulatory History

Section 4110 of the Oil Pollution Act of 1990 (OPA 90) (Pub. L. 101-380) adds a statutory note following 46 U.S.C. 3703 requiring, in part, the establishment of minimum standards for overfill warning devices and requirements concerning the use of overfill devices on certain tank vessels.

To meet the statutory requirements, the Coast Guard published a notice of proposed rulemaking (NPRM) entitled, "Overfill Devices," in the *Federal Register* (58 FR 4040; January 12, 1993). The Coast Guard received 32 letters commenting on the proposal.

In response to some comments, the Coast Guard published a notice (58 FR 54315; October 21, 1993) and held a public meeting at U.S. Coast Guard Headquarters on November 17, 1993. Twenty-eight people attended the meeting, and a list of the attendees and audio tapes of the meeting are available in the public docket for the rulemaking (CGD 90-071a) at the address listed under ADDRESSES. Statements made at the meeting have been treated like written comments in the preamble.

Background and Purpose

Detailed information on overfill spills and devices is found in the preamble to the NPRM.

An overfill spill occurs when too much oil is pumped or gravitated into a cargo tank during a transfer operation (e.g., from a facility to a tank vessel or from one tank vessel to another). Human error is the most often reported cause of this type of spill. Many overfill spills are small; however, some reported overfill spills have involved large quantities of oil.

Coast Guard regulations require vessel owners and operators to follow

pollution prevention procedures during oil transfer operations (33 CFR parts 155 and 156). Existing regulations do not require devices on cargo tanks to detect and warn of impending overfills.

Discussion of Comments and Changes
Location of Regulations

One comment objected to the proposed placement of the regulations in 33 CFR subchapter O as too cumbersome and confusing due to cross references, applicability sections, exceptions, and definitions. The comment recommended a comprehensive reorganization of the regulations based on statutory authorities. A reorganization of 33 CFR subchapter O is outside the scope of the rulemaking; however, the interim regulations amending 33 CFR subchapter O have been drafted to be as clear and concise as possible.

Applicability

In the NPRM, the Coast Guard proposed requiring overfill devices on tank vessels with a cargo capacity of more than 40 cubic meters (M³) (approximately 250 barrels, 1 barrel = 42 U.S. gallons). One comment suggested that the threshold was inappropriate and that additional "small vessels" should be excluded from the regulations. The comment stated that current oil transfer procedure requirements found in 33 CFR parts 155 and 156 are adequate to prevent overflow spills from smaller tank vessels because these vessels have simple oil transfer systems. The comment also stated that the cost of installing and maintaining overfill devices would be a significant financial burden to the company submitting the comment.

The Coast Guard reviewed spill data from tank vessels for the years 1989, 1990, and 1991 and found that tank overflow spills occurred infrequently aboard vessels with cargo carrying capacities of less than 1,000 M³ (approximately 6,290 barrels). Specifically, a total of 279 cargo tank overflow spills were recorded during the 3-year period. Of those overfill spills, 215 cargo tank overflow incidents occurred from tank barges. Only four of the 215 overflows were from barges with a cargo capacity of less than 1,000 M³, resulting in 0.6 M³ (159 gallons) oil spilled. During the same period, 64 similar incidents occurred aboard tankships. Of these incidents, only two occurred from tankships with a cargo capacity of less than 1,000 M³, resulting in 0.4 M³ (106 gals) oil spilled.

In response to this comment and its review of available data, the Coast Guard has raised the applicability threshold in § 155.480(a) to a cargo capacity of 1,000 M³. The Coast Guard requests comments concerning this change. The data on which the Coast Guard made its decision is available in the docket for review.

One comment specified that the phase-in requirements proposed in 33 CFR 155.480(c) did not cover Canadian tank barges because they are not subject to the requirements of the Safety of Life at Sea (SOLAS) and the International Load Line Conventions. The Coast Guard did not intend for Canadian barges which operate in U.S. waters to be treated differently from U.S. flag barges under the regulations. The Coast Guard expects that overfill devices will be installed on such Canadian tank barges at their next scheduled drydocking or internal tank examination.

One comment recommended that tank vessels required to be equipped with double hulls within the next 5 years under the double hull requirements of OPA 90 should be excluded from the overfill device requirements. The comment contends that many of these vessels will be phased out of service in 5 years and that the costs of upgrading overfill devices on these vessels would not be recovered within 5 years. The Coast Guard agrees and has added § 155.480(e) to reflect the exemption of vessels that under 46 U.S.C. 3703a(c) can not operate on the navigable waters or Exclusive Economic Zone of the United States after the year 2000, unless equipped with a double hull.

One comment requested that the regulations not apply to open-hopper barges which are limited to carrying non-hazardous oil-field waste material. Because such cargo operations are not covered by 33 CFR parts 155 and 156, the requirements for overfill devices do not apply to these barges.

One comment at the public meeting requested that the regulations not apply to tank vessels which carry only asphalt. Participants at the public meeting noted that because of the density of asphalt, vessels carrying this product are usually not fully loaded. Also, the participants reported no overfill spills from asphalt carriers. Currently, technology is not available to provide a cost-effective means of overfill detection for asphalt carriers. Therefore, the Coast Guard has decided to exempt tank vessels that are dedicated to carrying asphalt as cargo from the overfill device requirements. This change is reflected in § 155.480(f). The Coast Guard requests comments concerning the exemption of tank

vessels carrying asphalt from this interim rulemaking.

One comment asked the Coast Guard to require overfill devices to be activated during all types of cargo transfers, including internal transfers from tank to tank and cargo discharges. Although overfill incidents do occur during internal cargo transfers and discharges, these incidents are infrequent and do not result in large spills into the water. Tank vessel owners and operators are encouraged to use overfill devices for all transfer operations, but the regulations continue to apply only during loading.

Two comments asked that the regulations not apply to deck tanks used to store barge generator and pump fuel, or oil slops. The regulations only require installation of overfill devices on cargo tanks. Deck tanks used for slops and barge generator and pump fuel are not covered by the regulations.

Seven comments stated that high viscosity oils prevent overfill devices from functioning properly. The Coast Guard finds that heavy oils are just as likely to overflow from cargo tanks as lower viscosity oils. Vessel owners and operators must choose overfill devices best suited for the oil they carry and, in accordance with 33 CFR 155.750(e)(2), 46 CFR 39.20-7(b)(3), and 46 CFR 39.20-9(b)(3), they must test their equipment prior to each cargo loading. If a method of overfill detection is not technologically available for a particular type of high temperature service oil, such as Number 6 oil, the owner or operator of a vessel, on a case by case basis, may request an alternative means of compliance in accordance with 33 CFR 155.120(c) of this regulation. The Coast Guard requests comments concerning the application of alternative means of compliance with the interim regulations for vessels carrying high temperature service oils.

One State agency requested that the Coast Guard require overfill devices on vessels which carry non-petroleum oils as cargo. A barge company submitted a comment recommending the continued exclusion of vessels carrying non-petroleum oil cargoes. In the NPRM, the Coast Guard explained that it is interested in addressing overfill spills of MARPOL Annex I oils because these products represent the most significant risk. They are the most frequently transported cargoes with the greatest volume transported and spilled. Non-petroleum oils are not MARPOL Annex I oils. The Coast Guard may extend the regulations to additional oils in the future, but for now will not impose overfill device regulations on tank

vessels which exclusively carry non-petroleum oils.

In accordance with 33 CFR 155.1015, this rule does not apply to foreign tank vessels engaged in innocent passage in the territorial sea. These vessels do not engage in cargo loading operations in U.S. waters and, therefore, the Coast Guard is not exercising jurisdiction over these vessels for this interim rulemaking.

Minimum Standards for Overfill Devices: Tankers

One comment from an industry association recommended that only one overfill alarm instead of two, as proposed in the NPRM, should be required in each tank. The comment argued that the standards for vapor recovery equipment should not be applied automatically to overfill devices because of the particular nature of vapor recovery. For vapor recovery systems, the potential for cargo tank overpressure and rupturing of vapor recovery piping dictated a two-alarm system. The Coast Guard agrees that one overfill alarm per cargo tank is sufficient and § 155.480 has been revised to reflect this. This change also applies to cargo tanks with closed loading systems.

Minimum Standards For Overfill Devices: Barges

Much of the discussion in the NPRM concerning standards for overfill devices dealt with barges. Twelve comments responded to the question posed in the NPRM on whether a high level indicating device, such as a stick gauge, would be an adequate overfill warning device on a barge. Six comments, all from the barge industry, favored the use of stick gauges.

At the public meeting, representatives from the barge industry stated that most barges currently have no overfill devices. In most cases, the level of liquid in a barge is determined by the use of sounding tapes, ullage measuring devices, or inspection ports. Several participants at the meeting expressed the view that adding an overfill alarm system for each tank would be extremely expensive for barge owners and operators. Barge owners and operators currently using stick gauges as well as the vapor recovery systems would incur significant costs if an additional alarm system were required.

Barge industry representatives contended that the visual signal provided by high level indicating devices is, in some ways, superior to the audible signal provided by overfill alarms, which only sound when an overfill is about to occur. High level indicating devices, when properly

installed and utilized, provide the person-in-charge (PIC) of the loading operation with a continuous reading of how the later stages of the loading operation are progressing.

The Coast Guard will allow the owners and operators of tank barges to select one of three alternatives: (1) an overfill alarm on each tank which includes circuitry to sufficiently identify which individual tanks overfill system is alarming, (2) an automatic shutdown system for the entire barge and transfer facility, or (3) a high level indicating device installed on each tank, such as a stick gauge.

Two of the comments also recommended that the Coast Guard allow portable stick gauges, which would be moved from tank to tank, as the tanks were sequentially topped off. This recommendation assumes that tanks will always be sequentially topped off, which may not be the case. Accordingly, the Coast Guard will require that when stick gauges are used, they must be permanently installed on each tank.

Six comments stated that a stick gauge was inadequate to warn of an imminent spill when the PIC was off the barge or performing other duties. These comments favored alarms and automatic shutdown systems. However, the Coast Guard finds that audible alarms are just as ineffective as stick gauges if the PIC is not in the immediate vicinity of the transfer operation.

The Coast Guard encourages the use of systems which automatically shut down the transfer pumps before an overfill spill occurs; however, the Coast Guard does not require these systems to be used, for several reasons. The requirement would be cost-prohibitive for some owners and operators; it would require additional maintenance; and extra people would be needed to perform this maintenance. Additionally, industry standards for the necessary shoreside and barge interface would need to be developed. Developing these standards would be time-consuming.

Over the next 5 years, the Coast Guard will monitor the effectiveness of high level indicating devices. If at the end of this period, the Coast Guard determines that the overfill spill record of tank barges equipped with these devices is not essentially as good or better than the overfill spill record of other tank vessels covered by the regulations, the Coast Guard may remove the provision in the regulation allowing use of high level indicating devices as substitutes for overfill alarms.

Two comments recommended requiring only one overfill alarm on a tank instead of two as required by the

NPRM, because only one alarm is needed to alert the PIC to act to prevent an overfill. The Coast Guard has decided to allow as an option, the use of one high level indicating alarm or one alarm with an independent visual or audible device installed on each tank, which must function as an overfill device for each tank on a tank barge. Its purpose is to warn the PIC that immediate action must be taken to prevent a tank overfill and oil spill during loading operations. Section 155.480 has been revised to reflect this.

Some comments recommended technical specifications for the overfill devices. Presently, the Coast Guard does not find a need to develop technical specifications for overfill devices. Many of the devices that meet the requirements of the regulations are already in service as high level indicating devices aboard tank vessels. The Coast Guard finds that cross referencing its performance criteria to those provided in the vapor control regulations is the most efficient manner of setting these regulatory requirements. Vessel owners and operators should utilize devices which conform to the flag state or classification society inspection criteria and are most suitable for their vessels' operating environments.

Training

Four comments stated that trained, professional tankermen are essential on board tank barges to prevent oil spills, and that the Coast Guard should establish requirements to improve PIC performance rather than require new equipment. One comment stated that only qualified people who have received proper training should be allowed to use the required overfill warning devices. The Coast Guard strongly encourages owners, operators, and tankermen's services to provide complete and adequate training in the proper use of high level indicating devices, but the setting of training requirements exceeds the scope of this rulemaking.

Another comment stated that tankermen on unmanned barges may not be as familiar with the barge as tankermen on manned barges. Tankermen on a manned barge are often assigned to that barge on a long-term basis. They become intimately familiar with their barges; whereas, tankermen on unmanned barges are temporarily assigned to a barge only for a loading or unloading operation. Regardless of whether a barge is manned or unmanned, it is the duty of the tankerman to conduct safe and pollution-free transfer operations.

At this time, the Coast Guard regulations in 33 CFR 156.120 do not require specific training for the PIC to perform an oil transfer operation; however, each individual is required to meet the qualifications for a PIC found in 33 CFR 155.710, and each vessel owner and operator must keep a list with names of each person currently designated as PIC for transfer operations.

While the Coast Guard agrees that the competency and training of tankermen is crucial to spill prevention, it finds that additional specific training requirements are not appropriate for this rulemaking; however, changes to these requirements have been proposed in a separate rulemaking (54 FR 42624; October 17, 1989).

Inspection

One comment recommended that all equipment should be subject to an annual inspection. Overfill devices will be subject to examination during the annual tank vessel examination for foreign flag vessels or the inspection for certification and reinspections of U.S. flag vessels and Canadian tank barges. In addition, 33 CFR 156.120 requires the PIC of an oil transfer operation to test each overfill device for proper operation prior to each transfer of cargo.

Phase-In

Two comments from tank barge operators expressed support for the timetable for phasing in the installation of each overfill device at regularly scheduled cargo tank internal examinations.

One comment recommended a 2-year time limit for installations on barges. The Coast Guard considered accelerating the phase-in period but decided that the costs associated with gas-freeing a vessel and taking the vessel out of service would be prohibitive.

Another comment asked if a grace period for overfill device inspection would be granted for vessels undergoing a cargo tank internal examination immediately after the effective date of the regulations. The effective date of the regulations is 90 days after publication in the Federal Register. The Coast Guard expects that vessel repairs or cargo tank internal examinations can be completed within 90 days. Therefore, vessels which are being repaired or examined would not be subject to these regulations until, as in the case of a U.S. flag vessel, the vessel's next cargo tank internal examination.

Tank Level and Pressure Monitoring Devices

One comment suggested that this rulemaking be combined with standards for equipment detecting leaks in cargo tanks also required under section 4110 of OPA 90 (CGD 90-071). The Coast Guard disagrees. Overfill devices are used to detect overfills while transferring, discharging, or loading cargo. They have a completely different function when compared with tank level or pressure monitoring devices which serve to detect leaks in cargo tanks.

Maximum Cargo Level of Oil

Two vessel operators objected to limiting the amount of cargo in a cargo tank to 98.5 percent of the cargo tank volume. The Coast Guard has not changed the requirement in the interim regulations. Both the vapor control system regulations (46 CFR 39.30-1(e)) and these regulations reflect the Coast Guard's position that filling a tank more than 98.5 percent poses too high of a risk that there will be a tank overflow. Therefore, the rule continues to establish a 98.5 percent level as the maximum level of fill. This rule has been revised to be consistent with the rules for vapor control systems, to specify that a tank may not be filled higher than either 98.5 percent or the level at which the overfill alarms are set, for those cases where shutdown must be initiated at a level below 98.5 percent to ensure that an overfill does not occur.

Assessment

This rule is a significant regulatory action under section 3(f) of Executive Order 12866 and has been reviewed by the Office of Management and Budget under that order. It is significant under the "Department of Transportation Regulatory Policies and Procedures" (44 FR 11040; February 26, 1979). Although it does not require an assessment of costs and benefits under section 6(a)(3) of Executive Order 12866, an assessment has been prepared and is available in the docket for inspection or copying where indicated under "ADDRESSES." The Assessment is summarized as follows.

The Coast Guard assumes that tankship and tank barge owners and operators will purchase one high quality, float-type overfill device for each cargo tank. The Coast Guard also assumes that 25 percent of all vessels covered by this rulemaking already have some acceptable form of overfill device installed. Costs for the purchase and installation of the single alarm system required on the remaining tankships are

estimated at \$3,125 per tank, or \$43,750 for a tankship with 14 cargo tanks. Costs for the purchase and installation of the high level indicating system required on the remaining tank barges are estimated at \$1,650 per tank, or \$13,200 for a tank barge with eight cargo tanks.

The total cost of overfill devices to the industry is calculated first by estimating cost by vessel type and use for an average size vessel, and then by aggregating the costs for all vessels engaged in the trade. The analysis includes self-propelled and non-self-propelled tank vessels. Total costs, including present value costs, are estimated separately by vessel type, use, flag, and route.

Assuming a 5-year life for alarm devices and a 15-year life for high level indicating devices, the present value cost of compliance through 2015 to tank vessel owners and operators is projected to range between \$103.1 million and \$113 million, distributed as follows: (1) to U.S. tank barges and tankships (commercial or privately owned), \$51.8 million; (2) to foreign flag tankships, \$49.2 to \$59.1 million; and (3) to U.S. Government tankships, \$2.1 million. The present value of the cost of compliance to the U.S. is \$53.9 million through the scope of this analysis (2015). The regulation will affect approximately 1,615 inland and coastal barges, 147 U.S. flag (commercial or privately owned) tankships, 375-450 foreign flag tankships, and 23 U.S. Navy and U.S. Maritime Administration (MARAD) vessels. Enforcement costs to the Federal Government are estimated at \$785,000 per year.

The analysis indicates that if the entire cost of the implementation of the regulation were passed on to consumers, the retail price of domestically consumed petroleum products would increase approximately .019 dollars per ton or .000007 dollars per gallon; and the retail price of U.S. petroleum products in export markets would rise by approximately .112 dollars per ton or .0004 dollars per gallon. Export markets will be impacted more heavily because 48 million tons of oil are exported every year versus 850 million tons of oil transported per year in domestic markets.

According to Coast Guard records, approximately 73,000 gallons of oil and petroleum products were spilled in U.S. waters from cargo tank overflows in 1989. The Coast Guard hopes that this regulation will prevent 100 percent of these oil spills or save approximately 73,000 gallons of oil from spilling per year. Nevertheless, it is expected that some failures will occur. For comparison, four models are presented:

one in which it is assumed high level indicating devices are 60 percent effective and alarms are 80 percent effective (60%-80%); and one on which stick gauges are 80 percent effective and alarms are 100 percent effective (80%-100%). Each of these models is presented in two cases, Case I and II. Case I assumes that there are 500 applicable foreign vessels, Case II assumes 600.

The present value of the quantified direct benefits from the installation of overfill warning devices on tankships and tank barges is 634,021 gallons of oil not spilled, assuming a 60%-80% model, calculated through 2015 and at a 7 percent discount rate. Assuming an 80%-100% model, benefits increase to 836,489 gallons of oil not spilled.

The RA estimates four cost-benefit ratios for this rulemaking, depending on case (Case I or II) and effectiveness (60%-80% or 80%-100%). The ratios are defined in terms of "net present value," which is the "present value" of costs (\$117.1 to \$127 million) per "present value" of benefits (634,021 to 836,489 gallons of oil not spilled). The cost to benefit ratio for tankships and tank barges is between \$140 and \$200 per gallon of oil not spilled for this rulemaking. In other words, the rulemaking results in a cost of \$140 to \$200 to prevent the spillage of 1 gallon of oil.

One comment stated that the benefits of other rules need to be reassessed according to the benefits claimed from this rule. In particular, the comment stated that because this rule will reduce the number of oil spills, the benefits claimed for the rulemaking entitled, "Discharge Removal Equipment for Vessels Carrying Oil", (58 FR 67988), would be less. The comment indicated that the interrelationships of the OPA 90 rulemakings should be assessed as each rule is proposed. The Coast Guard is preparing a programmatic regulatory impact analysis (RIA) which will consider the interrelationship of all OPA 90 rulemakings, however it is considered to be impractical to re-examine this RIA in its entirety for each rulemaking. Where there are obvious and significant interrelationships, the Coast Guard has taken these factors into account.

Small Entities

Based on the comments received and to lessen the burden on small entities, the Coast Guard has revised the regulations to apply only to tank vessels with a cargo carrying capacity of more than 1,000 M³. This covers 21 tankships and 391 tank barges which are owned and operated by small companies. They

would have been included in the rulemaking as it was originally proposed.

In addition, the Coast Guard has permitted the alternative of high level indicating devices for tank barges. This is a less expensive option and will be much less costly for the smaller entities contained within the tank barge industry. Therefore, the Coast Guard certifies under 605(b) of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*) that this rule will not have a significant economic impact on a substantial number of small entities.

Collection of Information

This rule contains collection-of-information requirements. The Coast Guard has submitted the requirements to the Office of Management and Budget (OMB) for review under section 3504(h) of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*), and OMB has approved them. The section numbers are §§ 155.750 (Contents of transfer procedures) and 156.150 (Declaration of inspection), and the corresponding OMB approval numbers are 2115-0120 and 2115-0506. Section 156.120 is being amended to reflect this new collection of information requirements.

Federalism

The Coast Guard has analyzed this rule under the principles and criteria contained in Executive Order 12612 and has determined that the rule does not have sufficient federalism implications to warrant the preparation of a Federalism Assessment. One comment requested that State and municipalities be allowed to adopt stricter requirements than these Federal regulations. Because tank vessels move between U.S. ports in the national marketplace and between U.S. and foreign ports in the international marketplace, standards for overfill devices should be of national scope to avoid unreasonably burdensome variations.

Environment

The Coast Guard considered the environmental impact of this rule and concluded that preparation of an Environmental Impact Statement is not necessary. An Environmental Assessment (EA) and a Finding of No Significant Impact are available in the docket for inspection or copying where indicated under ADDRESSES. The EA discusses the action, subsequent expected environmental impacts, and overall need for the action. These regulations are not expected to result in a significant impact on the quality of the human environment because overfills

tend to result in relatively small spills. Therefore, the Coast Guard has issued a Finding of No Significant Impact which was placed in the docket for the rulemaking.

List of Subjects

33 CFR Part 155

Hazardous substances, Oil pollution, Reporting and recordkeeping requirements.

33 CFR Part 156

Hazardous substances, Oil pollution, Reporting and recordkeeping requirements, Water pollution control.

For the reasons set out in the preamble, the Coast Guard amends 33 CFR parts 155 and 156 as follows:

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

1. The authority citation for 33 CFR part 155 and the note following the citation are revised to read as follows:

Authority: 33 U.S.C. 1231, 1321(j)(1), 46 U.S.C. 3715; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p.351; 49 CFR 1.46. Sections 155.100 through 155.130, 155.350 through 155.400, 155.430, 155.440, 155.470, and 155.1010 through 155.1070 also issued under 33 U.S.C. 1903(b). Sections 155.480, 155.750(e), and 155.775 are issued under 46 U.S.C. 2103 and section 4110, Pub. L. 101-380, 104 Stat. 515 (46 U.S.C. 3703 note).

Note: Additional requirements for vessels carrying oil or hazardous materials are contained in 46 CFR parts 30 through 36, 150, 151, and 153.

2. Section 155.110 is revised to read as follows:

§ 155.110 Definitions.

Except as specifically stated in a section, the definitions in part 151 of this chapter, except for the word "oil", and in part 154 of this chapter, apply to this part.

3. In § 155.120, paragraph (c) is added to read as follows:

§ 155.120 Equivalents.

(c) For tank vessels required to have overfill devices installed under parts 155 and 156 of this chapter, the Commandant may, upon receipt of a written request, allow any fitting, material, appliance, or apparatus to be fitted in a tank vessel as an alternative to the required overfill device(s) that are specified in these parts if the proposed alternative device is at least as effective as that required in the regulations.

4. Section 155.480 is added to read as follows:

§ 155.480 Overfill devices.

(a) For the purposes of this section, "oil" has the same definition as provided in § 151.05 of this chapter.

(b) Each tank vessel with a cargo capacity of 1,000 or more cubic meters (approximately 6,290 barrels), loading oil or oil residue as cargo in waters subject to the jurisdiction of the U.S. and its Exclusive Economic Zone (EEZ), must have one overfill device that is permanently installed on each cargo tank and meets the requirements of this section. Each newly constructed tank vessel with a cargo capacity of 1,000 or more cubic meters (approximately 6,290 barrels), which is intended to be loaded with oil or oil residue as cargo, in order to receive a Certificate of Inspection (COI), must have an overfill device installed on each cargo tank that meets the requirements of this section.

(1) On a tankship, each cargo tank must be equipped with an overfill device (including an independent audible alarm or visible indicator for that tank) that meets the requirements for tank overfill alarms under 46 CFR 39.20-7(b)(2) and (3), and (d)(1) through (d)(4).

(2) On a tank barge, each cargo tank must be equipped with an overfill device that—

(i) Meets the requirements of 46 CFR 39.20-7(b)(2) and (b)(3) and (d)(1) through (d)(4), and 46 CFR 39.20-9(a)(1) through (a)(3);

(ii) Is an installed automatic shutdown system that meets the requirements of 46 CFR 39.20-9(b); or

(iii) Is an installed high level indicating device that meets the requirements of 46 CFR 39.20-3(b)(1), (b)(2), and (b)(3).

(c) Each cargo tank of a U.S. flag tank vessel must have installed on it an overfill device meeting the requirements of this section at the next scheduled cargo tank internal examination performed on the vessel under 46 CFR 31.10-21.

(d) Each cargo tank of a foreign flag tank vessel must have installed on it an overfill device—

(1) At the first survey that includes dry docking, as required by the vessel's flag administration, to meet the International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended, or the International Load Line Convention of 1966; or

(2) At the first cargo tank internal examination performed on the tank vessel under 46 CFR 31.10-21.

(e) This section does not apply to a tank vessel that does not meet the double hull requirements of § 157.10d of this chapter and, under 46 U.S.C. 3703a(c), may not operate in the

navigable waters or Exclusive Economic Zone of the United States after January 1, 2000.

(f) This section does not apply to tank vessels that carry asphalt as their only cargo.

5. In § 155.750, paragraph (e) is added to read as follows:

§ 155.750 Contents of transfer procedures.

* * * * *

(e) If a cargo tank of a tank vessel is fitted with an overfill device, the transfer procedures must contain a description of the overfill device, including:

(1) The tank overfill device system and specific procedures for the person in charge to—

(i) Monitor the level of cargo in the tank; and

(ii) Shut down transfer operations in time to ensure that the cargo level in each tank does not exceed the maximum amount permitted by § 155.775(b).

(2) Pre-transfer overfill device equipment inspection and test requirements.

6. Section 155.775 is added to read as follows:

§ 155.775 Maximum cargo level of oil.

(a) For the purposes of this section, "oil" has the same meaning as provided in § 151.05 of this chapter.

(b) A cargo tank on a tank vessel may not be filled with oil higher than—

(1) 98.5 percent of the cargo tank volume; or

(2) The level at which the overfill alarm required by § 155.480 is set.

PART 156—OIL AND HAZARDOUS MATERIAL TRANSFER OPERATIONS

7. The authority citation for 33 CFR part 156 is revised to read as follows:

Authority: 33 U.S.C. 1231 and 1321(j)(1)(C) and (D); 46 U.S.C. 3715; E.O. 12777, 56 FR 54757, 3 CFR, 1991 Comp., p. 351; 49 CFR 1.46. Section 156.120(bb) is issued under the authority of section 4110, Pub. L. 101-380, 104 Stat. 515.

8. Section 156.105 is revised to read as follows:

§ 156.105 Definitions.

Except as specifically stated in a section, the definitions in § 154.105 of this chapter apply to this subpart.

9. In § 156.120, paragraph (bb) is added to read as follows:

§ 156.120 Requirements for transfer.

* * * * *

(bb) If the transfer operation involves loading oil, as defined in § 151.05 of this chapter, into a cargo tank, the overfill device required by § 155.480 of this chapter is installed and operating properly.

Dated: October 13, 1994.

A.E. Henn,

Acting Commandant, United States Coast Guard.

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Friday
October 21, 1994

Part V

**Federal
Communications
Commission**

47 CFR Parts 25 and 94
Licensing Policies and Procedures,
Satellite Communications; Final Rule

FEDERAL COMMUNICATIONS
COMMISSION

47 CFR Parts 25 and 94

[CC Docket No. 92-166; FCC No. 94-261]

Licensing Policies and Procedures,
Satellite CommunicationsAGENCY: Federal Communications
Commission.

ACTION: Final Rule.

SUMMARY: In this final rule, the Commission publishes rules to govern the licensing and regulation of low-Earth orbit (LEO) mobile-satellite systems operating in the 1610-1626.5/2483.5-2500 MHz frequency bands. This rule follows a notice of proposed rulemaking published in the *Federal Register* on March 14, 1994 [59 FR 11746]. The qualification requirements and technical rules are intended to permit licensing of these systems and the provision of new domestic and international satellite services.

EFFECTIVE DATE: November 21, 1994.**ADDRESSES:** Federal Communications Commission, 1919 M Street, NW., Washington, DC 20554.**FOR FURTHER INFORMATION CONTACT:** Fern Jarmulnek, International Bureau, (202) 634-1682; Kathleen Campbell, International Bureau, (202) 634-1952.**SUPPLEMENTARY INFORMATION:****I. Introduction**

1. By this Report and Order, the Commission takes the next step in the process of licensing the world's first commercial low-Earth orbit (LEO) satellites capable of providing both voice and data mobile satellite services (MSS) on a global basis. The satellites are to operate in the 1610-1626.5/2483.5-2500 MHz bands that were recently allocated both internationally and domestically to MSS.¹ This new mobile satellite service—the "MSS Above 1 GHz" or "Big LEO" satellite service—has the potential to provide not only a variety of new services to users in the United States, but to provide integrated communication services to all parts of the world, including those that are now grossly underserved. In a *Notice of Proposed Rulemaking* (*Notice*), adopted in January 1994,² the

Commission proposed rules and policies to govern the service. Thirty-three parties filed comments in response to the *Notice* and 18 parties filed reply comments.³ Since the pleading cycle closed, four of the applicants filed a Joint Proposal and Supplemental Comments (Joint Proposal).⁴ A fifth applicant sent a letter to the Chairman (FCC) on September 14, 1994 regarding the Joint Proposal.⁵ In this *Report and Order*, we adopt many of the proposals in the *Notice*, adopt others with modification, and defer action on several issues where a decision is premature. We also adopt many, but not all, of the terms of the Joint Proposal. We believe our decision will promote participation by the greatest number of applicants in an expeditious time frame.⁶ It will create a new industry providing enormous economic benefit to the United States, and any other country that chooses to participate in the service.

2. All six applicants who filed applications by the cut-off date, as detailed below, will be provided with an opportunity to file amended applications that conform with the rules adopted today. Given the importance of proceeding quickly with licensing systems in this revolutionary service, amended applications must be filed by November 16, 1994 in order to receive continued consideration. As is our usual practice in the satellite area, each applicant must request construction, launch and operating authority to retain its status in this processing group. All amendments must be accompanied by the appropriate fee for applications for launch and operating authority for LEO satellite systems, if that fee has not yet been submitted. Applicants will be provided until January 31, 1996, at their option, in which to make a complete financial showing.⁷

3. As described in the *Notice*, the Big LEO service can offer an almost limitless number of services, including ubiquitous voice and data mobile services position location services, search and rescue communications, disaster management communications, environmental monitoring, paging services, facsimile transmission services, cargo tracking, and industrial monitoring and control.⁸ Domestically, this service will help meet the demand for a seamless, nationwide and

eventually global communications system that is available to all and that can offer a wide range of voice and data telecommunication services. In addition to enhancing the competitive market for mobile telecommunication services in areas served by terrestrial mobile services, this new mobile satellite service will offer Americans in rural areas that are not otherwise linked to the communications infrastructure immediate access to a feature-rich communications network. Moreover, Big LEO systems can extend these benefits throughout the world, and can provide those countries that have not been able to develop a nationwide communication service an "instant" global and national telecommunication infrastructure.⁹ This network can be used to provide both basic and emergency communications to their entire populations. Big LEO systems may prove to be critical component in the development of the global information highway.

4. The Big LEO service also has the potential to stimulate significant economic growth both in the United States and abroad. A potential multi-billion dollar industry will be created, generating opportunities for economic growth in a variety of markets. First, the estimated costs to construct the applicants' space segments range from \$97 million to over \$2 billion each. The manufacturing costs for the ground segment, which include both user units and gateway stations, are expected to be hundreds of millions of dollars more. Thus, manufacturing these systems may lead to a substantial investment in the United States economy and create a significant number of high paying jobs in the areas of research and development, production, marketing and service administration. As the services become available, additional growth opportunities will be created. One of the applicants, for example, expects that by 2001 the demand for user transceivers will be 1.3 million in the United States and 4.7 million worldwide.¹⁰ If so, this will create a major global industry whose function will be to provide users with mobile units and services. As demand grows and as markets develop, additional employment opportunities will be created. Customer purchases of transceivers and user service charges will generate additional investment in the economies of the host countries. Finally, the enhanced communications

⁹ It is estimated that some of these services will cost as little as 22 cents per minute.

¹⁰ Application of Motorola Satellite Communications, Inc. at 11.

¹ International Telecommunication Union, Final Acts of the World Administrative Radio Conference (WARC-92), Malaga-Torremolinos (1992); Report and Order, ET Docket No. 92-28, 9 FCC Rcd 536 (1994) (*Allocation Order*).

² Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands, 9 FCC 2d 1094 (1994).

³ A list of commenters is attached as Appendix A.

⁴ See Note 23, *infra*.

⁵ See Note 23, *infra*.

⁶ See S.R. 103-309 (July 14, 1994).

⁷ See para. 40, *infra*.

⁸ See paras. 196-202, *infra*, regarding the use of Big LEO systems of emergency communications.

services offered by this industry will, of themselves, create a broad secondary economic growth. Immediate access to an advanced global communications infrastructure can increase the efficiency of existing businesses and create new ones.

5. The United States has led the world in developing and implementing satellite technology. We expect many of the economic, cultural and other gains we have seen in the fixed-satellite industry to be reflected in the new mobile satellite industry. The Big LEO proposal before us represent an opportunity for the United States to continue its leadership role in promoting global development through enhanced communication infrastructures and services. We intend to license these systems as quickly as possible so that this opportunity is not lost.

II. Background

6. As described in the *Notice*,¹¹ this proceeding was initiated in late 1990, when Ellipsat Corporation (Ellipsat)¹² and Motorola Satellite Communications, Inc. (Motorola) filed applications to construct LEO satellite systems in the 1610–1626.5/2483.5–2500 MHz bands and the 1610–1626.5 MHz band, respectively.¹³ At the time these applications were filed, there was no frequency allocation in these bands for MSS. The bands were allocated to, among other services, the radiodetermination satellite service (RDSS), which encompasses satellite radionavigation and radiolocation services.¹⁴ The Motorola and Ellipsat systems were intended to provide voice and data MSS in addition to RDSS. Both applicants requested waivers of the U.S. Table of Frequency Allocations, 47 CFR § 2.1, to permit non-conforming MSS operations in the bands.¹⁵

¹¹ See *Notice*, note 2, *supra*, at paras. 5–9.

¹² Ellipsat is now doing business as Mobile Communications Holdings, Inc. Because it has participated throughout this proceeding as Ellipsat, we will continue to refer to it as Ellipsat in this Report and Order.

¹³ Ellipsat proposed the 1.6 GHz band for Earth-to-space transmissions and the 2.4 GHz band for space-to-Earth transmissions. Motorola proposed to use the 1.6 GHz band for bidirectional transmissions. Motorola later modified its application to request the 1616–1626.5 MHz band only. See Minor Amendment filed by Motorola (Aug. 14, 1992).

¹⁴ Portions of the bands are also allocated to the aeronautical radionavigation service (ARNS), the radioastronomy service, the terrestrial fixed-service and for use by industrial, scientific, and medical equipment. See paras. 98–162, *infra*, for a complete discussion of sharing between MSS and other allocated services.

¹⁵ These waiver requests have become moot in light of the subsequent domestic and international MSS allocation in these bands. See note 1, *supra*.

7. The Commission placed the Ellipsat and Motorola proposals on public notice and established a June 3, 1991 cut-off date for filing applications to be considered concurrently with them.¹⁶ In response, Constellation Communications, Inc. (Constellation), Loral Cellular Systems Corp., now doing business as Loral Qualcomm Partnership (LQP), TRW, Inc. (TRW), and AMSC Subsidiary Corporation (AMSC) filed applications. Constellation, LQP, and TRW proposed to construct LEO satellite systems. AMSC proposed to add additional frequencies onto its authorized geostationary satelliteorbit (GSO) system.¹⁷ The LEO applicants proposed two basic LEO system architectures. TRW, LQP, Ellipsat, and Constellation proposed a code division multiple access (CDMA) architecture. CDMA systems can share the same frequencies when operating under certain technical constraints.¹⁸ Motorola proposed a time division multiple access/frequency division multiple access (TDMA/FDMA) architecture. TDMA/FDMA systems must operate on separate dedicated frequencies.¹⁹ AMSC's proposed GSO system could use either CDMA or narrowband FDMA techniques.

8. The World Administrative Radio Conference (WARC-92), allocated frequencies for MSS in February 1992.²⁰ Specifically, the 1610–1626.5 MHz band was allocated on a co-primary basis with other radio services for MSS Earth-to-space operations and the 2483.5–2500 MHz band was allocated on a co-primary basis for space-to-Earth operations.²¹ In addition, a secondary

¹⁶ Public Notice, Report No. DS-1068, 6 FCC Rcd 2083 (1991).

¹⁷ AMSC requested authority to modify its authorized upper L-band (1545–1559/1646.5–1600.5 MHz) MSS system to include the 1616.5–1626.5 MHz frequency bands.

¹⁸ Spread spectrum CDMA is a digital transmission technique in which the signal occupies a bandwidth larger than that needed to contain the information being transmitted. Because the signal is spread over a wide bandwidth, the power is dispersed and interference potential is reduced. The spreading is accomplished by modulating the signal by a code that is independent of the information data. A synchronized code in the receiver is used to de-spread the signal and recover the information. The spreading and the variation in the code permit a number of users to operate on the same frequency simultaneously without causing harmful interference.

¹⁹ TDMA is a transmission technique in which the same frequency band is used by both uplink and downlink transmissions in alternating time slots. FDMA provides multiple discrete channels with different center frequencies.

²⁰ See note 1, *supra*.

²¹ "Primary" services have equal rights to operate in particular frequencies. Stations operating in primary services are protected against interference from stations of "secondary" services. Moreover, stations operating in a secondary service cannot

allocation was made for MSS space-to-Earth operations in the 1613.8–1626.5 MHz segment of the 1.6 GHz band. Shortly thereafter, the Commission proposed an identical domestic allocation and subsequently adopted that allocation in December 1993.²²

9. The Commission conducted a negotiated rulemaking from January through April 1993 to assist it in developing technical rules for the MSS Above 1 GHz service. The Negotiated Rulemaking Committee's (the Committee's) work included technical matters relating to compatibility among the proposed MSS systems (inter-system sharing issues), compatibility between MSS and other services in the band or in adjacent bands (inter-service sharing issues), and the operations of MSS feeder links and intersatellite links. The Committee reached consensus on many issues, but did not reach a consensus regarding a technical method by which all proposed systems could be accommodated within the 1610–1626.5/2483.5–2500 MHz bands.²³

10. In January 1994, the FCC adopted the *Notice* proposing, among other things, a LEO design requirement, a requirement that systems be capable of serving all areas of the world (except for the polar regions) for at least 75% of each day, a requirement that systems be capable of serving all areas of the United States at all times, and a requirement that applicants demonstrate sufficient current assets or irrevocably committed financing to meet construction and launch costs for the entire system. We also proposed a spectrum sharing plan that could accommodate up to five systems. We indicated that if mutual exclusivity could not be resolved, we would consider awarding licenses by auction, lottery or comparative hearing.²⁴

claim protection from harmful interference from stations of a primary service. See 47 CFR §§ 2.104(d) and 2.105(c).

²² See note 1, *supra*.

²³ See Report of the MSS Above 1 GHz Negotiated Rulemaking Committee (Apr. 6, 1993). The Committee included two independent attachments discussing this issue in the Report. One was supported by AMSC, Celsat, Inc., Constellation, Ellipsat, LQP and TRW. The other was supported by Motorola. Since the end of the Negotiated Rulemaking, the LEO applicants have submitted several partial settlement proposals. See Joint Filed Comments, submitted by Motorola and LQP (Oct. 7, 1993); Joint Spectrum Sharing Proposal, submitted by Constellation, Ellipsat and TRW (Oct. 8, 1993). Joint Proposal and Supplemental Comments submitted by Constellation, Ellipsat, Motorola, and TRW (Sept. 9, 1994). See also letter from LQP to FCC (Sept. 13, 1994).

²⁴ *Notice*, note 2, *supra*, at paras. 29–47.

III. Discussion

A. Licensing Procedures

1. Qualification Requirements

11. As discussed in the *Notice*, unless otherwise proscribed by rule, statute or treaty, the Commission has traditionally adopted qualification requirements for each satellite service that reflect the nature of and entry opportunities for the particular service being licensed. Where entry opportunities for a particular service are limited, our threshold qualification requirements for that service are designed to ensure that those awarded licenses can expeditiously implement state-of-the-art systems that further the public interest. If applicants are unable to meet the basic qualifying criteria, their applications are dismissed without additional hearing.

a. *Technical qualifications*—i. Orbit considerations. 12. In the *Notice*, we proposed to require MSS Above 1 GHz systems to operate in non-geostationary orbits.²⁵ Because of their lower altitude orbits, LEO systems "can shorten the transmission time between two earth stations, serving to reduce or eliminate the time delay that may now be present in [GSO] satellite-delivered telephone service."²⁶ We also stated that the Communications Act specifically requires us "to encourage the provision of new technologies and services to the public."²⁷ We noted that LEO satellite systems, which cover higher latitudes than GSO satellites, and provide a variety of low power links to and from terrestrial equipment, represent such a new technology. We also noted that the inherently global nature of LEO systems offers a broad range of public interest benefits for the United States, including increased possibilities of U.S. leadership in developing and implementing satellite technology, and enhanced U.S. global competitiveness in telecommunication. We suggested that the unique features of LEO systems would foster social and economic benefits throughout the world.

13. We requested comment on the potential for MSS Above 1 GHz systems to generate social, economic, and technical benefits, both domestically and globally, and the extent to which these benefits are realizable with LEO and GSO satellites. We also asked applicants to specify the extent to which their proposed systems will foster these goals and the manner in which their services are planned to be offered. Prospective customers were asked to specify their anticipated use or uses of

MSS Above 1 GHz systems, including a discussion of whether equivalent services can be provided by LEO and GSO facilities and whether, and the extent to which, alternative terrestrial services are available.

14. AirTouch Communications (AirTouch), Constellation, Ellipsat, LQP, Motorola, Novacom Inc. (Novacom), and TRW support our proposal to require MSS Above 1 GHz systems to operate in LEO orbits. The range of technical benefits to the United States and world communities by LEO systems includes virtually instantaneous voice transmissions, broader geographic coverage, use of low power handheld transceivers and small antennas. AMSC, Comsat, Mobile Communications (Comsat), Mobile Datacom Corporation (Mobile Datacom), and Newcomb Communications, Inc. (Newcomb) do not support our proposal. They argue that there will be no significant qualitative or quantitative difference in the time delay experienced by users of GSO and non-GSO systems and that GSO systems are capable of providing services to most of the Earth. They further argue that LEO technology is subject to shadowing outages,²⁸ is more complex, and is unproven.

15. We adopt our proposed LEO design requirement. First, AMSC has not convinced us that our assumption regarding the time delay in high altitude GSO systems was in error. While system processing times associated with non-GSO satellite handoffs may be marginally longer than the 18 milliseconds noted by LQP, AMSC has not shown that a GSO system's typical voice transmission delay of some 250 milliseconds, or even longer for multiple hops, is not noticeable to users.

16. Further, LEO systems are significantly superior in their coverage capabilities. While GSO systems can provide coverage to most of the world, this coverage is limited in areas of high latitude, including parts of Alaska. AMSC concedes that GSO systems can provide only "near" total coverage of the Earth. Although GSO systems are capable of providing acceptable services across most of the Earth's surface, LEOs are capable of providing truly global coverage. LEO technology, for example, may enable residents of remote parts of Alaska to have individual telephone access for the first time. There is nothing in the record to suggest that provision of such broad geographical service reduces the capacity of LEO

systems to serve more concentrated areas, as AMSC suggests. The public interest would be best served by the technology that offers the broadest potential coverage.

17. The use of handheld transceivers also is facilitated by LEO systems. LEO satellites' lower power levels alleviate the need for large antennas aboard the spacecraft and reduce transceiver weight and volume, enhancing their portability. By contrast, AMSC suggests that handheld transceivers are not contemplated by GSO systems.²⁹ Its immediate plans do not include handheld capability, though its second generation system is expected to support them.³⁰ As we embark on the promise of new mobile technologies, we find it in the public interest to permit the timely deployment of personal communications services that include the broad use of handheld transceivers.

18. One risk cited by AMSC is the increased possibility that the satellites in the LEO constellation will collide with other objects in space. We do not view this as stifling LEO technology. Both the likelihood of collisions and future mitigation methods are being discussed in domestic and international fora. However, the record in this proceeding does not support a finding that space collisions will become a significant problem for LEO systems. We also acknowledge that the reception shadowing associated with LEO satellite movement relative to the Earth's surface (which AMSC suggests would adversely affect signal quality during voice communications) may add to the operational challenges confronting LEO MSS technology. There is no showing, however, that shadowing is more of a problem with LEO technology than it is with GSO technology.

19. Advocates of both GSO and LEO systems argue that their technology will offer economic and social benefits, domestically and globally. The essential advantage of GSO systems is their proven capability to provide telecommunication services. Intelsat and Inmarsat are but two examples. These successes, however, are not sufficient to preclude embracing a new and potentially more efficient technology, notwithstanding its substantial risks and costs. On the contrary, the Commission has a mandate to encourage new technologies and services.³¹ While both LEO and GSO systems portend substantial opportunities for employment growth and export of U.S. technologies

²⁵ *Id.* at paras. 20–22; proposed § 25.143(b)(1).

²⁶ *Id.* at para. 22.

²⁷ 47 U.S.C. 157.

²⁸ Shadowing occurs when transmissions from the satellite or mobile transceivers are blocked by buildings and vegetation. Shadowing also occurs to GSO systems when the user transceiver terminal is located on a vehicle.

²⁹ AMSC Reply Comments at 3, n. 1.

³⁰ *Id.*

³¹ 47 U.S.C. 157.

worldwide, LEO systems have greater potential to serve more uniformly the United States and international locations with smaller, more ubiquitous and lower power equipment. This leads us to conclude that the primary use of the subject spectrum should be by LEO systems. We therefore adopt Section 25.143(b)(2)(i) as proposed in the *Notice*.

20. Most commenters agree that it would be difficult for GSO and LEO systems to operate MSS services together in this band. Indeed, this was a significant factor in our decision to propose limiting the 1610-1626.5/2483.5-2500 MHz band to LEO systems. Notwithstanding our decision to adopt a LEO design requirement, we would consider authorizing a GSO system in these bands upon a showing that its operations would not cause interference to or affect LEO operations. Similarly, the provision of radiodetermination satellite services (RDSS) by either LEO or GSO systems would be permissible if fully compatible with licensed LEO MSS systems.³²

ii. Global vs. regional coverage. 21 In our *Notice*, we discussed the geographic coverage we would require these satellite systems to provide. In view of our interest in furthering the creation of the global information infrastructure, we proposed to require each MSS Above 1 GHz applicant to demonstrate that its proposed system is capable of providing mobile satellite service to all areas of the world, with the exception of the polar regions, for at least 75% of every 24 hour period. Specifically, we proposed that Big LEO satellite systems be designed so that at least one satellite would be visible above the horizon at an elevation angle of at least 5° for at least 18 hours each day at latitudes less than 80°.³³

22. The commenters generally support this requirement. They disagree, however, on the extent to which systems must offer service in or near the polar regions. The majority, including the system applicants, agree that there is little need for a requirement to serve unpopulated areas. They argue that the additional costs associated with such service would not be justified. For example, TRW suggests that service up to 80° northern and southern latitudes may not be necessary, because there are no populated areas that far north or south and the economic costs of requiring such service are high. Ellipsat favors requirements of 55° Southern Latitude and 75° degrees Northern

Latitude, to cover all but the most remote population centers. The parties to the Joint Proposal modify their previous positions by suggesting a coverage requirement of up to 70° North Latitude and 55° South Latitude.

23. As noted, LEO systems are capable of providing service to all points on Earth. We recognize, however, the need to balance system cost against geographical service area. We agree with the commenters that it is sufficient, given projected need and alternative service options, to require service only to populated areas. We therefore require that Big LEO systems be capable of serving locations as far north as 70° latitude and as far south as 55° latitude. This will allow coverage to populated areas that cannot be reached by GSO systems. While ships and airplanes may traverse the polar regions beyond these latitudes, they are not necessarily deprived of service because the LEO satellites may, in fact, be visible.

iii. Continuous coverage of the fifty states. 24. We indicated in the *Notice* that the public interest would be served if LEO systems provided efficient and ubiquitous voice service to users throughout the United States. We therefore proposed to require each LEO system to have at least one satellite at an elevation angle of at least 5° at any given time in all areas of the United States.³⁴

25. Several commenters note that we proposed to require global "mobile satellite services" in proposed Section 25.143(b)(2)(ii) and domestic "voice" service in proposed Section 25.143(b)(2)(iii). Our expectation is that LEO system operators will have market incentives to offer more than merely voice services, but for purposes of consistency we will revise proposed Section 25.143(b)(2)(iii) to read "mobile satellite services." Further, in the Joint Proposal, the parties agree that Big LEO systems should be capable of covering all fifty states, Puerto Rico and the U.S. Virgin Islands. We will amend Section 25.143(b)(2)(iii) to reflect this coverage.

b. *Financial qualifications.* 26. In light of the enormous costs involved in constructing and launching a satellite system, we have always considered financial ability a significant factor in determining whether an applicant is qualified to hold a license. Historically, the Commission has fashioned financial requirements for satellite services on the basis of entry opportunities in the particular service being licensed. This stems from our repeated experience that licensees without sufficient available resources spend a significant amount of

time attempting to raise the necessary financing and that those attempts often end unsuccessfully.³⁵ Consequently, where a grant to an under-financed applicant may preclude a fully capitalized applicant from implementing its plans, and service to the public may be consequently delayed, we have required a stringent financial showing to ensure that the public interest would be served.³⁶ We have required a less stringent financial showing where grant to an under-financed applicant will not prevent another from going forward. For example, we required only a detailed business plan in the radiodetermination satellite service, where all applicants could be accommodated and future entry was possible.³⁷ In contrast, we required evidence of full, irrevocable financing in the domestic-fixed satellite service, where applications to implement space stations regularly exceed the number of available orbital locations for those satellites.³⁸

27. The Negotiated Rulemaking Committee could not agree to a method by which all six proposed systems could be licensed. Further, the sharing plan we proposed in the *Notice*, and which we adopt today,³⁹ does not accommodate all pending applicants and leaves little or no spectrum available for expansion of existing systems or the development of future MSS systems within the United States. Consequently, consistent with our past practice, we seek to ensure that those applicants awarded Big LEO licenses have the financial ability to proceed.

28. The domestic fixed-satellite standard was developed to serve the

³² See, e.g., National Exchange Satellite, Inc., 7 FCC Red 1990 (Com. Car. Bur. 1992); Rainbow Satellite, Inc., Mimeo No. 2584 (Com. Car. Bur., released Feb. 14, 1985); United States Satellite Systems, Inc., Mimeo No. 2583 (Com. Car. Bur., released Feb. 14, 1985) (domestic satellite licenses declared null and void for failure to begin implementation as required by license). In addition, Geostar Corporation, a start-up company licensed in the radiodetermination satellite service, declared bankruptcy nearly five years after its licenses were issued. It had not built any of its satellites.

³³ This approach has not prevented smaller firms from participating in the satellite services market because ownership of a space station is not mandatory. Space station capacity can be leased or bought, and earth stations can be acquired at relatively low costs.

³⁴ Amendment to the Commission's Rules to Allocate Spectrum for, and to Establish Other Rules and Policies Pertaining to, a Radiodetermination Satellite Service, 104 FCC 2d 650 (1986) (RDSS Licensing Order). We note that none of the four entities awarded licenses implemented their proposed systems, with the last remaining licensee, Geostar Corporation, declaring bankruptcy in 1991.

³⁵ Licensing Space Stations in the Domestic-Fixed Satellite Service, 50 Fed. Reg. 36071 (Sept. 5, 1985) (1985 Processing Order).

³⁶ See paras. 44-45, *infra*.

³² See 47 CFR § 25.141(f).

³³ See *Notice*, note 2, *supra*, App. A at 1152; proposed Section 25.143(b)(2)(ii).

³⁴ See *id.*; proposed Section 25.143(b)(2)(iii).

public interest by deterring warehousing and inefficient use of valuable orbit spectrum resources. Given the same public interest concerns here, we proposed in the *Notice* a financial standard for the Big LEO service identical to the one used in the domestic fixed-satellite service, noting that a lesser standard could allow permittees to tie up scarce spectrum resources while preventing other qualified entities from providing service to the public.⁴⁰ Thus, we proposed to require Big LEO applicants to provide evidence of current assets, operating revenues, or irrevocably committed debt or equity financing sufficient to meet the estimated costs of constructing and launching all planned satellites, and operating the system for the first year.⁴¹

29. The four parties to the Joint Proposal suggest using a less stringent financial standard that requires an applicant to show "financial preparedness, including reliance on projected revenues and future public offerings" in order to be granted a construction permit. Within one year from the date of the grant of a license, each permittee would be required to demonstrate that it meets the domestic fixed-satellite service financial standard with respect to 25% of the total constellation construction and launch costs. LQP, in contrast, argues that this proposed relaxation of financial standards must be balanced against the concern that only viable applicants be licensed.⁴²

30. We conclude that although more relaxed approaches may be used for some satellite services, a strict financial requirement is warranted for the Big LEO service. The proposed Big LEO systems will cost between \$97 million and \$2 billion to implement. These are, by far, the most expensive satellite systems to date. As we indicated in the *Notice*, our experience with the satellite industry has proven that arranging financing for any space station system, even one significantly less costly than a Big LEO system, is extremely difficult, even after a construction permit has been granted.⁴³ Consequently, adopting a lesser financial standard than the domestic fixed-satellite standard, such as the one suggested in the Joint Proposal, could tie up spectrum for

years, with contrary to the public interest. While system implementation milestone requirements⁴⁴ will provide a mechanism by which to revoke the licenses of those entities that are not capable of going forward, this process takes considerable time and can delay qualified entities from implementing systems and providing service to the public.⁴⁵ Because all pending Big LEO applicants cannot be accommodated and because there appears to be no room for future entry, granting an under-financed space station applicant a license may preclude an applicant that possesses the necessary financial resources from implementing its plans, and consequently service to the public may be delayed. Accordingly, we conclude that a financial demonstration identical to the one used in the domestic fixed-satellite service, as proposed in the *Notice*, should be adopted for the Big LEO service.

31. Applicants relying on internal financing need not set aside specific funds for their systems. Rather, as in the domestic fixed-satellite service, we require only a demonstration of current assets or operating income sufficient to cover system costs. The availability of internal funds sufficient to cover a system's costs provides adequate assurance at the time the Commission acts on the application that the system can be built and launched. Current assets—which includes cash, inventory, and accounts receivable—provide a general measure of a company's ability to finance the project itself or to raise funds from lenders and equity investors on the basis of its on-going operations. Highly capitalized companies possess more collateral and, thus, are in a better position to borrow money than thinly capitalized companies.

32. Further, "irrevocably" committed external financing is financing that has been approved and does not rest on contingencies which require action by either party to the loan or equity investment. In other words, the instrument of financing must demonstrate that the lender has already

determined that the applicant is creditworthy and, absent a material change in circumstances, is prepared to make the loan immediately upon grant of a Commission authorization.⁴⁶ This is not to preclude applicants from relying on operating revenues from the initial operations of their systems to finance the remainder of their systems.

Nevertheless, to ensure that the system is completed in a timely manner if revenues are not available as soon as anticipated, we require a commitment that a lender is prepared to finance the entire cost of the system.

33. Some of the applicants argued in their comments⁴⁷ that a more relaxed standard is supported by our use of a less stringent financial requirement in the radiodetermination satellite service (RDSS) and the non-voice, non-geostationary (NVNG) service. These parties argue that the unproven nature of the RDSS and NVNG services led to the adoption of a financial standard that permitted applicants to finance the systems as they are built and deployed, and that similar considerations apply in the Big LEO service. Our primary reason for the "relaxed" standard in the RDSS and NVNG services, however, was that all pending applicants could be accommodated and future entry was possible.⁴⁸ Consequently, a grant to an under-financed applicant would not preclude another qualified entity from going forward. The financial qualification standard adopted for RDSS and NVNG services is therefore inappropriate for Big LEOs.

34. Some of the applicants also argue that we should require only a demonstration of partial financing. They contend that applicants that have the financing to meet construction and launch costs for the number of satellites needed to provide limited domestic and global service will be able to finance the remainder of their systems with the operating income from these services. Such a position, however, would not promote the global availability of this

⁴⁰ 1985 Processing Order, note 38, *supra*, at para. 8.

⁴¹ *Notice*, note 2, *supra*, at para. 27. We noted that "first year operational costs" were to be calculated for the year following the launch of the first satellite in the constellation.

⁴² See Letter from Chairman, Loral Corporation to Christopher B. Galvin, Motorola, Inc. (Sept. 13, 1994).

⁴³ See note 35, *supra*.

⁴⁴ See paras. 188–193, *infra*.

⁴⁵ For example, ABCI, Rainbow, and USSSI were granted domestic fixed-satellite licenses in early 1983. Those licenses were not declared null and void until two years later, shortly before action was taken on the next processing group of domsat applications. Applications in that particular processing group had been on file since late 1983 and action on that group was delayed, in part, by the ABCI, Rainbow, and USSSI proceedings. See e.g., United States Satellite Systems, Inc., FCC 83–602 (released Jan. 23, 1984) (granting USSSI an additional six months in which to complete its financing). Mimeo No. 2583 (released Feb. 14, 1985) (revoking USSSI authorizations), FCC 85–394 (released Aug. 29, 1985) (denying USSSI's applications for review).

⁴⁶ For example, a change in general market conditions or in the applicant's creditworthiness is an acceptable limitation on the lender's commitment to make the loan. Further, a lender is not required to lend the applicant the entire sum at once. Rather, funding can be staggered to reflect the system's implementation schedule or the applicant's need to access those funds. See Licensing Space Stations in the Domestic-Satellite Service, 101 FCC 2d 223 (1985) (1985 Processing Order Notice of Proposed Rulemaking), at para. 22.

⁴⁷ We will address all concerns raised in the comments even though they may be inconsistent with the positions taken by the applicants in the Joint Proposal.

⁴⁸ See *Notice*, note 2, *supra*, at 1108; RDSS Licensing Order, note 37, *supra*; Report and Order in CC Docket No. 92–76, 8 FCC Rcd 8450 (1993) (NVNG MSS Order).

service. A system that relies too heavily on operating income from its first satellites for its completion could easily become stalled before it is able to provide domestic or global service that meets our service requirements.⁴⁹ Any applicant that cannot demonstrate the capability to launch more than a limited number of satellites should not be considered for licensing at the expense of potential entrants that could provide global service and continuous domestic service.

35. Ellipsat comments that we should require applicants relying on internal funds to demonstrate a management "commitment" to expend those funds for the Big LEO project. Ellipsat argues that this requirement would put companies with greater capital assets on an even footing with smaller applicants who must rely on "irrevocable" outside loan commitments to establish their financial qualifications. As we stated in adopting the domestic-fixed satellite standard, we will not require management to set aside specific funds for the system. We will, however, require applicants relying on internal assets to provide a balance sheet demonstrating current assets or operating income sufficient to meet the space segment costs together with evidence of a management commitment to the project. This does not require an unalterable commitment that the funds will be expended regardless of market conditions. Rather, consistent with our approach to credit arrangements provided by outside sources, management of the corporation providing the funding must commit that absent a material change in circumstances, it is prepared to expend the necessary funds.⁵⁰ Those applicants relying on financing from parent corporations must make the same showing with respect to the parent corporation's commitment.

36. AMSC urges that, given the short life of LEO satellites, we should require the applicants to demonstrate the financial capability to build an entire constellation and a fleet of replacement satellites. Although some of the proposed systems use satellites with a short life, a requirement to demonstrate full funding for these before the first generation is built would be exceptionally onerous and unnecessary. We are confident that after constructing and operating a full fleet of satellites, a licensee would have ample incentive and resources to implement replacement satellites, unless there is

insufficient demand. In that case, however, the public would not be harmed by discontinuation of the licensee's service.

37. We recognize that applicants may be able to provide the service requirements adopted today with fewer satellites than proposed in the pending applications. In such a case, an applicant has the option of course, to modify its pending application to specify only those satellites necessary to meet our minimum requirements, and its financial and technical showing would need to cover only such a constellation. It could then apply to expand its constellation as originally envisioned, as it attains the financial capability to do so.

38. Consequently, to meet the public interest objective of ensuring prompt initiation of this new satellite service, we adopt our proposed rule that requires each Big LEO applicant to demonstrate the ability to build and launch all satellites for which it has applied, which includes those satellites necessary to fulfill our service requirements, and to operate its system for one year after launch of the first satellite in its constellation. In doing so, however, we shall modify our eligibility requirements somewhat in an effort to achieve greater participation by the applicants in this processing group.

39. First, consistent with our paramount objective of securing early implementation of these satellite services, we shall adopt a rule, consistent with our proposal in the Notice, that will enable applicants who can now demonstrate their financial qualifications to receive priority in obtaining license grants. Thus, any applicant who can submit a complete, amended application on or before November 16, 1994, and demonstrates financial capability under the standards set forth in the rule adopted in this proceeding, will be processed immediately. Assuming sufficient spectrum is available to award licenses to all such financially and otherwise qualified applicants, we will grant licenses to these applicants. Given the national and other public interest benefits of ensuring the United States' global leadership in providing these important new satellite services, we also plan to process these applications on an expedited basis, with action anticipated by January 31, 1995. Making these grants promptly will enable such fully qualified applicants to begin immediately the time-consuming process of satellite construction, thereby significantly assisting in United States' efforts to complete the international coordination process and achieving our

statutory and public interest objective of bringing new and innovative services to the public at the earliest possible time.

40. We also wish, however, to accord some processing priority to other applicants in this group who may need more time to establish their financial qualifications, and who have all devoted significant time, effort and resources towards establishing the Big LEO service both domestically, in the Negotiated Rulemaking, and internationally. For example, until feeder link frequencies can be assigned to a particular system, which will not likely occur until after the next World Radio Conference to be held in November 1995 (WRC-95), it may be difficult for some of these applicants to finalize financial arrangements for their systems. Consequently, in an effort to afford an additional opportunity for entry by such applicants, we will allow applicants who cannot meet our financial qualifications requirement at this time an additional period of time to establish their qualifications. Specifically, we will require these applicants to file amended applications by November 16, 1994 to ensure their continued consideration, but we will allow them until January 31, 1996—two months after the completion of WRC-95—to demonstrate compliance with the financial standard adopted today.

41. Under our two-tiered eligibility rule, applicants who make a decision to defer their financial showing until January, 1996, will not jeopardize their status in the current processing group. Specifically, new applications for Big LEO systems will not be considered until after action on the six pending applications is completed. Nevertheless, such applicants will not be accorded the same processing priority as those applicants who are willing and able to demonstrate their financial qualifications far sooner, by November 16, 1994, and whose expeditious grants will better enable us to achieve early and successful international coordination and implementation of this service. Because the spectrum sharing plan we adopt today accommodates up to five systems,⁵¹ we also recognize that applicants choosing not to make a financial showing until January 1996, may find their applications are mutually exclusive situations. Nevertheless, we believe a very significant likelihood exists that our financial eligibility rule will result in more of these applicants obtaining grants and that, in the intervening time frame until January

⁴⁹ See para. 29, *supra*.

⁵⁰ See 1985 Processing Order, note 38, *supra*, at n. 26.

⁵¹ See paras. 44–45, *infra*.

1996, events may occur that avoid mutual exclusivity altogether.

42. If it turns out that all six applicants are able to establish their financial qualifications by the November 16, 1994 deadline for amended applications, or alternatively, that all six applicants defer their financial showings until January 1996 and all are then deemed financially qualified, we will implement the auction procedure described below, paras. 88-97, to award licenses. If, however, some grants have been made prior to January 1996, and a mutually exclusive situation arises then, the auction procedure outlined below cannot be used. However, given the uncertainty that such a situation will ever arise, we will not at this time decide how to process any such remaining mutually exclusive applications. Presumably, however, such grants would be awarded through an auction mechanism that is appropriate in the circumstances. We have decided, however, to defer any final decision on that issue at this time.

2. Spectrum Sharing Plan

a. *Background.* 43. As we discussed in the *Notice*, the six applicants proposed two system designs (LEO and GSO) and two system architectures (CDMA and TDMA/FDMA). A CDMA architecture would permit multiple systems to share the same frequencies. A TDMA/FDMA architecture would operate bi-directionally in a portion of the 1.6 GHz band only and would require each system to operate on discrete frequency band segments. The Committee's work plan called for the Committee to develop rules that would maximize multiple entry and avoid or resolve mutual exclusivity among the six applications. The applicants, however, could not develop a set of technical parameters and sharing criteria that could accommodate all proposed systems. In the *Notice*, we proposed a sharing plan that could accommodate up to four CDMA systems and one TDMA/FDMA system.⁵² The plan was based, in part, upon partial settlement proposals filed by two groups of LEO applicants after the Negotiated Rulemaking was concluded.⁵³ The plan proposed to assign licensees implementing CDMA systems in the United States to 11.35 MHz of shared bandwidth at 1610-1621.35 MHz. It

proposed to assign a TDMA/FDMA system operating in the United States to 5.15 MHz of dedicated bandwidth at 1621.35-1626.5 MHz. If only one CDMA system is implemented, the plan proposed to adjust the domestic assignment for that system to 8.25 MHz at 1610-1618.25 MHz, leaving the freed 3.15 MHz of spectrum available for possible reassignment to the TDMA/FDMA licensee or for new entry. We also tentatively concluded that CDMA systems would be provided with equal amounts of downlink and uplink spectrum, unless CDMA system proponents could demonstrate an unequal assignment was warranted.

b. *The basic plan.* 44. All five applicants proposing LEO systems agree that our plan provides a basis for accommodating five LEO systems. None takes issue with the framework of the plan: up to four CDMA systems can share 11.35 MHz of bandwidth in the 1.6 GHz band and that one TDMA/FDMA system can operate over 5.15 MHz of dedicated bandwidth. Constellation, for example, states that 11.35 MHz can "support competitive CDMA systems operating in a sharing environment."⁵⁴ Motorola supports awarding a single TDMA/FDMA license in 5.15 MHz of bandwidth.⁵⁵ LQP, TRW, and Ellipsat all agree that both LEO transmission techniques can be accommodated, with CDMA systems operating on shared spectrum. Indeed, the four proponents of the Joint Proposal, supported by LQP, explicitly agree to an 11.35 MHz/5.15 MHz spectrum split.

45. Despite its general agreement that its system could be accommodated in 11.35 MHz of shared spectrum, Constellation contends in its comments that all five LEO applicants should be given equal options to use the spectrum. Specifically, it argues that adoption of rules requiring four LEO applicants share spectrum, while allowing the remaining applicant to have exclusive use of its own band segment or assigning prime spectrum to one applicant and impaired spectrum to another, would violate the doctrine enunciated in *Ashbacker Radio Corp. v. FCC*, 326 U.S. 327 (1945) (*Ashbacker*). We do not agree that a rule requiring sharing by applicants proposing CDMA systems, and that permits other applicants to have exclusive spectrum, implicates *Ashbacker*. Such a rule is merely a reasonable exercise of our rulemaking authority, based upon the technical characteristics of the systems involved. We also note that the CDMA

applicants agreed to a band sharing plan. Indeed, Constellation agrees that its system can be accommodated in a shared band. Consequently, we adopt the plan's basic framework.⁵⁶

46. Despite their general support for the plan, all LEO applicants request some modifications or clarifications. The requests center around three issues: (1) what portion of the 2.4 GHz MSS downlink band will be available to the CDMA licensees; (2) whether MSS operations in the lower 6 MHz of the 1.6 MHz band will be impaired by GLONASS, the Russian Global Navigation Satellite System, and radioastronomy serviced (RAS) operations in that band; and (3) whether the 11.35 MHz CDMA assignment will be automatically reduced to 8.25 MHz should only one CDMA system become operational. We discuss these in turn.

c. *Downlink assignment.* 47. In the *Notice*, we assumed that CDMA systems assigned to share the 1.6 GHz uplink spectrum would require a corresponding amount of 2.4 GHz downlink spectrum. We requested comment on this assumption. All CDMA operators strongly disagree, arguing in their comments and in the Joint Proposal that CDMA applicants should be allowed to share the entire 16.5 MHz of 2.4 GHz downlink spectrum allocated to MSS. They argue that the systems must operate over the entire bandwidth to achieve maximum capacity at minimum cost. According to the CDMA proponents, if the number of satellites transmitting in any segment of the 2.4 GHz band is minimized, the satellites' cost can be substantially reduced. They also argue that the 2.4 GHz band is already constrained by international and domestic power flux density (pfd) limits and other existing services, which limits the number of users that can be served, and that any limitations on bandwidth will further affect system capacity.

48. We are convinced that the entire 16.5 MHz of spectrum allocated domestically and internationally at 2483.5-2500 MHz should be assigned to Big LEO system downlinks in the United States. There is no compelling reason to restrict use of this band. Indeed, assignment of the entire band should provide operators with sufficient flexibility to coordinate their operations with other Big LEO systems in the band and to accommodate other users in the band or in adjacent bands with little or no corresponding loss of capacity.

⁵² Our plan included both system architectures for two reasons: (1) the record did not support a finding that one architecture is superior to the other, and (2) the plan would permit up to five systems to be licensed, furthering our multiple entry policy.

⁵³ See note 23, *supra*.

⁵⁴ Constellation Comments at 19.

⁵⁵ Motorola Comments at 47, n. 35.

⁵⁶ See Final Report of the Majority of the Active Participants of Informal Working Group 1 to Above 1 GHz Negotiated Rulemaking Committee, Annex 1 (Attachment 1 to Committee Report) and Joint Proposal, note 23, *supra*.

Consequently, we will provide CDMA operators with access to the entire allocated 2.4 GHz band. Moreover, only satellite systems using CDMA will be permitted in this band.

d. *Interim plan.* 49. As we discussed in the *Notice*, interference problems between MSS and certain proposed applications on GLONASS, the Russian Global Navigation Satellite System, will not permit co-frequency co-system coverage in the United States and internationally in the 1610–1616 MHz band. Specifically, if GLONASS is used in conjunction with the U.S. Global Positioning System (GPS) to provide aircraft precision approach and terminal communications, as contemplated by the Federal Aviation Administration (FAA), MSS would not be able to operate in the shared band because of the potential for MSS mobile terminal interference into GLONASS mobile receivers.⁵⁷ We indicated in the *Notice* that we had initiated inter-agency and international negotiations regarding the use of GLONASS and were encouraged that even if GLONASS were ultimately used to provide services incompatible with MSS, the GLONASS final frequency plan would be changed to bands below 1606 MHz only, making the 1610–1616 MHz band available for MSS operations.⁵⁸ We recognized, however, that a GLONASS transition to bands below 1606 MHz may not be completed when the first MSS satellites are launched in the late 1990's. In that case, we stated we would need to develop a transitional plan for MSS migration into the vacated 1610–1616 MHz band "with MSS licensees operating on less than the full amount of their assigned spectrum during the initial phases of their operation."⁵⁹

⁵⁷ The FAA and the International Civil Aviation Organization (ICAO) are investigating using the GLONASS and GPS systems in a joint Global Navigation Satellite System (GNSS) that can support the civil aviation community with the integrity that is required to provide for precision approach landings. The Russian Federation is now launching a second generation of GLONASS satellites, GLONASS-M, which is operating over 24 channels in the 1596.7–1620.6 MHz band. GLONASS-M has not been coordinated internationally. Approximately 40 administrations, including the United States, have submitted comments or objections to the ITU Radiocommunication Bureau with respect to GLONASS-M. However, the Russian Federation has been coordinating the GLONASS-M system and has indicated that it has resolved most of the objections by these administrations.

⁵⁸ The Russian Federation has indicated a willingness to use channels 0–12 (1602–1608.75 MHz center frequency) commencing in 1998. A guardband of approximately 4 MHz would be required to protect GLONASS-M narrowband signals from ground-based Mobile Earth Station (MES) out-of-band radio frequency emissions on aviation GNSS receivers using GLONASS signals.

⁵⁹ *Notice*, note 2, *supra*, at n.59.

50. The applicants agree in their Joint Proposal that if GLONASS is not moved in a timely manner, the Big LEO licensees should share the burden of any spectrum loss. They argue, however, that we need not develop a transitional plan now, but, rather, that we should allow the parties to negotiate and reach such an agreement in the event GLONASS compromises MSS operations. Both Motorola and LQP argue in their comments that an interim plan would impede MSS by suggesting to GLONASS equipment manufacturers and other countries that they need not plan for the change in GLONASS frequencies and may lead to the view that revision of the GLONASS frequency plan is optional.

51. Our ongoing discussions with other agencies and with the Russian Federation continue to clarify the GLONASS issue. While we are confident that GLONASS will be moved to bands below 1606 MHz, we do not know when a full transition will occur. At our most recent bilateral discussions, the Russian Federation suggested that a GLONASS migration may not begin until 1998 and may not be completed until 2005.⁶⁰ We do not know whether GLONASS operations, before a migration to the final frequency configuration, will affect MSS CDMA systems operating in the lower frequency portion of the 1.6 GHz band, domestically or internationally. This depends upon two related factors: (1) the extent to which domestic and international civil aeronautical agencies and organizations (such as ICAO) use GLONASS to provide approach and terminal communications that are incompatible with MSS operations and (2) the extent to which out-of-band emission limitations may be needed for MSS transmissions.⁶¹ Nevertheless, a portion of the 1.6 GHz MSS frequency band may not be available for first-

⁶⁰ The Russian Federation has indicated that it can operate on channels -7 to +6 after 2005 (1598 to 1605.375 MHz center frequency). It has also indicated that it would only use channels 5 and 6 as technical channels over the Russian Federation. When this is implemented, GLONASS's highest effective operational channel will be 1604.25 MHz center frequency. Allowing for a 4 MHz guard band, there will then be no restrictions on MSS in the 1.6 GHz band.

⁶¹ RTCA, Inc., an advisory committee to the FAA, is studying out-of-band emissions from mobile earth stations among other potential interference sources to GNSS receivers. RTCA, Inc. has formed an Ad Hoc Interference Subgroup (AHIS) of Special Committee 159 (SC-159) on Global Positioning Systems. A special Joint Task Group on SATCOM/GNSS Interference is also studying the mutual problems of electromagnetic compatibility of AMSS and GPS/GLONASS equipment operating on the same platforms or on platforms located at very close distances, i.e., airport terminals. See para. 137, *infra*.

generation domestic MSS operations. At this time, the most likely worst-case scenario is that the 1610–1612 MHz band segment assigned to CDMA systems in our sharing plan may not be available for initial operations in the United States.⁶² This is based on the launch and operation schedules outlined in the various applications.

52. We agree with the applicants that the burden of the potential 2 MHz shortfall should be shared among all 1.6/2.4 GHz MSS licensees. We believe, however, that a transitional plan is warranted. Such a plan will allow system launch to begin without potential delay and without the uncertainty associated with allowing the licensees to attempt to devise an interim plan on an *ad hoc* basis, as the Joint Proposal suggests.⁶³ In adopting an interim plan, we emphasize that we remain optimistic that the plan will not need to be implemented. Indeed, as provided in the Joint Proposal, all Big LEO operators will be authorized to construct systems capable of operating across the entire band allocated for that system architecture, that is, 1610–1626.5 MHz for CDMA systems and 1616–1626.5 MHz for bi-directional FDMA/TDMA systems. Further, even if the transitional plan is implemented, MSS operators will be permitted to expand into the unused 1.6 GHz MSS frequencies immediately after the GLONASS migration is completed. We believe that any necessary transition among LEO licensees can be completed within six months of that date.

53. Our interim plan is based upon the most recent system designs presented to us in the context of the Negotiated Rulemaking. Four of the CDMA applicants propose to build systems using narrowband 1.25 MHz transmission channels while one—

⁶² We note that to the extent MSS systems are launched before 1998, the 1610–1616 MHz portion of the 1.6 GHz band segment might not be available if GLONASS is being used in the GNSS for aeronautical operations. In that case, licensees can begin to implement channels starting from the highest frequency range downwards in conformance with the interim plan. We believe that this should not present significant problems since it will occur at the earliest stages of operations. We also note that it is possible that the FAA will decide not to use GLONASS until it shifts its frequencies to its final configuration. It may be prohibitively expensive for airlines to develop and install equipment using interim standards capable of protecting equipment using GLONASS. In that event, we believe that it is likely that the Russian Federation will advance the date to shift GLONASS frequencies to channel 6 and below as early as possible. The most recent bilateral discussion with the Russian Federation provides for periodic review of this time table and the deployment of the MSS systems in order to resolve any interference.

⁶³ We will, however, entertain a request for modification of the interim plan if agreed to by all licensees.

TRW—proposes wider 5 MHz channels. If the entire 11.35 MHz assignment designated for CDMA systems were available, the narrowband licensees would be able to operate over 9 transmission channels, while the wider band operator would be able to operate over two. If MSS cannot be provided in the 1610–1612 MHz portion of the CDMA band segment because of GLONASS considerations, two narrowband channels would be lost and one wideband channel would be lost. Allowing CDMA licensees to shift frequencies by 1.25 MHz into the designated TDMA/FDMA band at 1621.35–1626.5 MHz would provide both narrowband and wideband CDMA licensees with access to one additional channel. Consequently, until the entire 1610–1626.5 MHz band is available for MSS operations, we will provide CDMA operators with the option of operating in the 1621.35–1622.60 MHz band segment. In their way, all Big LEO operators will bear some of the necessary operating constraints—the narrow band CDMA operators by the net loss of one channel, the wideband CDMA operators by the loss of one channel or by the need to retune the center frequencies on both of its channels once GLONASS is fully moved,⁶⁴ and the FDMA/TDMA licensee by the loss of operating bandwidth. Nevertheless, we are optimistic that these measures will not be necessary or, if they are, that the effect on the MSS industry will not be significant given their short term nature and the anticipated incremental implementation of Big LEO service.

e. Conditions to the plan—i. Reduction in spectrum for single CDMA system: 54. Another issue raised by the LEO applicants is our proposed modification to the plan in the event only one CDMA licensee goes forward.⁶⁵ In this unlikely scenario, we proposed to reduce the bandwidth assigned to that system automatically from 11.35 MHz to 8.25 MHz. We stated

⁶⁴ The additional interim bandwidth of 1.25 MHz (1621.35–1622.60 MHz) would allow TRW to operate two 5 MHz CDMA channels at 1612.60 MHz to 1617.80 MHz and 1617.60 MHz to 1622.6 MHz. If it chooses to do this, it would be required to move these channels to 1610 to 1615 MHz and 1615 to 1620 MHz once GLONASS is moved. This would require the center frequencies on each channel to be shifted or retuned.

⁶⁵ Under the terms of each authorization, Big LEO licensees will be required to meet specified implementation milestones for the system. Failure to meet these deadlines will render the authorization null and void. See para. 189, *infra*. The bandwidth adjustment discussed here would be triggered only: (1) if no CDMA system is licensed; (2) if only one CDMA system is licensed; or, (3) if more than one CDMA system is licensed and all but one is declared null and void.

that an 8.25 MHz assignment, or one-half of the available 1.6 GHz MSS allocation, should be sufficient to support a viable system. We noted that the remaining 3.1 MHz of spectrum would be made available to an operational FDMA/TDMA system upon a showing of need or, if this demonstration could not be made, to a new entrant. The four parties to the Joint Proposal suggest that if one CDMA and one FDMA/TDMA system become operational, the 3.1 MHz of spectrum should be available to both of these licensees upon a showing of need and should not be made available to new entrants. In their comments, the CDMA operators argued that an automatic spectrum reduction for a CDMA system with no possibility of adjustment would penalize a CDMA licensee for the failure of another operator to launch a system, that it does not consider the efficiency of the system or whether the CDMA system is sharing spectrum with a foreign system, that it does not give CDMA operators a corresponding opportunity to gain access to bands above 1621.35 MHz upon failure or inefficient spectrum use by the FDMA/TDMA licensee, and that it will seriously impair CDMA operations. They further argued that even if GLONASS is moved, the lower frequency portion of the band is subject to more interservice sharing constraints because of protected radio astronomy operations.

55. The CDMA proponents correctly state that uncertainties are present in the lower portion of the band that are not present in the upper portion. As noted, GLONASS is now operating in 1610–1616 MHz band and we do not know exactly when it will be moved or the limitations its operations will impose on MSS operations. Further, the radioastronomy service (RAS) operates on a co-primary basis in the 1610.6–1613.8 MHz band. The agreement reached by the Negotiated Rulemaking Committee regarding sharing between RAS and MSS imposes restrictions on MSS operations provides certain operating constraints on MSS mobile earth terminals in geographic areas near RAS sites.⁶⁶ If RAS sharing proves burdensome or if GLONASS is not fully moved in a timely fashion, an assignment of 8.25 MHz for each of the two LEO system architectures may not prove equivalent. Further, we do not know if, and the extent to which, foreign systems will impact U.S. systems' operations across the entire band. Consequently, we will defer any decision with respect to the 3.1 MHz

between 1618.25 and 1621.35 MHz until, and if, either of those contingencies arises. At that time, we will have a clearer notion of the extent of any inter-service sharing constraints in the lower portion of the 1.6 GHz band. We will not, however, limit our consideration for assignment of this band to the two licensed systems, as the parties to the Joint Proposal urge. We do not think it is advisable at this time to preclude new entrants from access to this band. Rather, we will make the decision with respect to the 3.1 MHz, if necessary, in the context of a rulemaking, based upon the circumstances that have developed at that time.

ii. Other potential scenarios. 56. Although not specifically addressed in the Notice, the four parties to the Joint Proposal have developed a plan in the event that only one system retains a construction permit. In this scenario, the Joint Proposal would provide that that system, whether TDMA/FDMA or CDMA, would be given access to the entire 16.5 MHz of bandwidth.

57. We need not decide now on a course of action to be taken in the event that only one Big LEO system is implemented, whether it is a CDMA or TDMA/FDMA system. If and when that occurs, we will weigh a variety of factors in a rulemaking, including our preference for multiple entry, constraints on the assigned spectrum due to international coordination agreements, system efficiency, and system loading, when considering a spectrum adjustment for that system.

f. *System amendments.* 58. Several of the commenters question whether applicants will be permitted to change their system designs when amendments are filed. TRW, for example, asks us to clarify that a change in transmission techniques from CDMA to TDMA/FDMA following adoption of service rules will not constitute a major amendment under Commission rules. This concern apparently stems from Section 25.116(c) of our rules, which provides, in general, that any pending application is to be considered a newly filed application if it is amended by a major amendment after a "cut-off" date. The rule contains several exceptions, including instances where the amendment resolves frequency conflicts with other pending applications, but does not create new or increased frequency conflicts.⁶⁷

59. We have repeatedly emphasized that MSS Above 1 GHz applicants who filed by the cut-off date will be afforded an opportunity to amend their

⁶⁶ See paras. 101–109, *infra*.

⁶⁷ 47 CFR 25.116(c)(1).

applications, if necessary, to bring them into conformance with any requirements and policies that are adopted for satellite systems in these bands.⁶⁸ Thus, a change from a GSO system configuration to a LEO system configuration to meet our satellite system design requirement or a change in coverage patterns to conform with our satellite visibility requirements would be permitted without affecting a particular application's status in this processing group. However, a change that is not necessary to bring the application into conformance with our rules and which would increase frequency conflicts, such as a change from a CDMA to a TDMA/FDMA architecture, would render the application a newly filed application to be considered in a future processing group.⁶⁹ We recognize that if all six of the pending applicants are found qualified under our Big LEO rules, our five-system sharing plan will not be able to accommodate all of them. We discuss in a succeeding section of this *Report and Order* the procedures that will apply to applicants in these circumstances and that we will follow to decide among the mutually exclusive applications.⁷⁰

g. *Inter-system coordination.* 60. Several commenters also suggest that we institute formal, but not necessarily codified, procedures or guidelines for CDMA inter-system coordination in the context of adopting a domestic sharing plan. Some suggest that we use the initial sharing proposal submitted to the Negotiated Rulemaking Committee by the CDMA applicants as the basis for a domestic framework. Indeed, the three CDMA applicants participating in the Joint Proposal agree to coordinate their systems in accordance with this framework expeditiously and in good faith.

61. We applaud the CDMA applicants for their good faith efforts to develop a framework for coordination. We have decided, however, not to incorporate these procedures in the Commission's rules. Historically, we have left domestic and separate international system inter-system coordination to the satellite licensees themselves, since they are in the best position to weigh the technical and economic trade-offs inherent in any coordination agreement.⁷¹ This approach has proven

successful. Since the CDMA applicants have represented that sharing is feasible, we expect that good faith efforts to resolve any outstanding coordination issues expeditiously in accordance with the Joint Proposal will commence after this *Report and Order* is issued. If the parties believe that any entity is not negotiating in good faith or if an impasse is reached on any issue, we will, upon request, become involved in the process and, if necessary, will devise a solution.

62. Another coordination issue raised by some of the commenters is whether and the extent to which a guardband is necessary between CDMA and TDMA/FDMA systems and, if so, which architecture would bear the burden. The parties to the Joint Proposal have agreed to develop an emissions mask between the CDMA and TDMA/FDMA band segments that spreads the burden between them. LQP, in contrast, suggests that an emissions mask may override the allocations made at WARC-92 because a mask will, in essence, protect Motorola's secondary downlink transmissions in the 1.6 GHz band.

63. We need not resolve this matter now. Rather, while we recognize that secondary services cannot, as a general matter, claim interference protection from harmful interference from stations of a primary service,⁷² we will leave the parties free to negotiate a guardband agreement once the technical parameters of their amended system proposals are finalized. If the parties negotiate an agreement that protects secondary operations, we will accept that solution. If the parties cannot agree, however, we will become involved and will look to the Table of Frequency Allocations to determine where any operational constraints are appropriately placed.

3. Plan If Mutual Exclusivity Is Not Resolved

64. We do not intend to continue our already-prolonged attempt to resolve this proceeding by compromise in the event that mutual exclusivity among the Big LEO applicants is not eliminated by amendments submitted by the November 16, 1994 filing deadline, as there is little reason to suppose that further pursuit of that elusive goal would be useful. In the *Notice*, we discussed three alternative procedures—comparative hearing, lottery, and auction—for resolving this proceeding

in the event that the proposed sharing plan did not resolve mutual exclusivity and called for comment concerning the feasibility and/or legal availability of each of them. If an auction or lottery⁷³ was employed, we proposed to divide the spectrum into paired 2.0625 MHz uplink and downlink segments, with eight paired segments available for licensing. We proposed to limit each successful bidder or lottery winner to an award of up to four 2.0625 MHz paired segments, noting that this should provide ample spectrum to support a Big LEO system while allowing for at least two licensees.⁷⁴ We conclude that we can lawfully resolve this proceeding by means of an auction and that, of the three, an auction would better serve the public interest.

a. *Comparative hearing.* 65. We continue to believe that the prospect of delay in the initiation of service weighs heavily against use of a comparative hearing, particularly in light of the need for prompt participation by U.S. licensees in international coordination.⁷⁵ Whether conflict between Big LEO applications could be resolved through a comparative hearing in less time than is typically consumed in comparative hearings involving applications for broadcast licenses—as TRW, the only commenter advocating use of comparative hearings as a fallback procedure, contends—is largely beside the point. Even under the most optimistic assumptions, selection of Big LEO licensees through a comparative hearing is likely to take considerably longer than the use of a lottery or competitive bidding.

66. We also believe that a comparative hearing would be inadvisable for other reasons. The Commission has previously stated that comparative hearings would be inconsistent with our aim of affording flexibility to satellite licensees.⁷⁶ As a general matter, moreover, we are reluctant to substitute our judgment for the wisdom of the marketplace by dictating outcomes based on assessment of the relative merits of applicants' service proposals. We doubt whether we would be able to resolve all conflicts among LEO applications based on findings that certain of the applications are

⁶⁸ See *Notice*, note 2, *supra*, at para. 18 Public Notice, note 16, *supra*.

⁶⁹ We note that the three CDMA applicants participating in the Joint Proposal have agreed not to change to a TDMA/FDMA architecture.

⁷⁰ See paras. 88–97, *infra*.

⁷¹ See, e.g., Hughes Communications Galaxy, Inc., 7 FCC Rcd 4672 (1992), at para. 8; GE American

Communications, Inc. 3 FCC Rcd 6871 (1988), at para. 2; Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 50 Fed. Reg. 35228 (1985), at para. 19; *RDSS Licensing Order*, note 37, *supra*, at para. 19.

⁷² See note 21, *supra*.

⁷³ Because the LEO applications were filed prior to July 26, 1993, the Commission is not statutorily prohibited from considering random selection as a licensing option. See Section 6002(e) of Pub.L. 103–66.

⁷⁴ *Notice*, note 2, *supra*, at para. 45.

⁷⁵ *Id.* at para. 40.

⁷⁶ See *Rules to Allocate Spectrum for Mobile Satellite Services*, 6 FCC Rcd 4900, 4904 (1991), at paras. 19–20; and *Rules to Allocate Spectrum for a Land Mobile Satellite Service*, 2 FCC Rcd 485, 487 (1987), at para. 15.

demonstrably technically superior to others. As previously noted, satellite design decisions involve complex trade-offs between engineering, marketing, and financial considerations, which are difficult to evaluate without reference to the functioning of the marketplace.⁷⁷ These design decisions are also modified to accommodate regulations, marketplace and financial constraints and uncertainties as these uncertainties become more clearly defined in time.

b. *Lottery*. 67. Constellation is the only applicant that recommends use of a lottery in the event that we cannot accommodate all qualified applicants. It states that it favors this procedure only because it believes that auctions would create unacceptable international ramifications. LQP and TRW, in contrast, maintain that none of the factors listed in the Conference Report on Section 309(j) that would support the use of a lottery procedure is present here.⁷⁸ LQP, Motorola, and TRW also contend that a lottery would be inappropriate because the pending applications involve technically diverse, non-fungible proposals. LQP and TRW argue that it would be unfair to the existing applicants, who have invested large sums of money in research and development for their proposals, to choose winners by the luck of the draw. TRW warns that a random selection process here would discourage planning and innovation by future applicants. Motorola objects that the results of a lottery would bear no relation to the best use of the available spectrum and would bestow insufficient spectrum or unusable combinations of spectrum-segments upon the winning applicants.

68. We will not use a lottery in this case because we have concluded that awarding Big LEO licenses through the use of competitive bidding procedures would better serve the public interest. Most importantly, an auction would be an economically efficient means of allocation. A well-designed auction produces an outcome approximating allocation to highest-valued use, which we believe promotes spectrum efficiency and other public interest considerations.⁷⁹ Use of competitive

bidding procedures would provide participants with the incentive to conceive innovative, cost-effective and spectrum efficient uses for the spectrum-blocks to be assigned and to estimate accurately their potential commercial value. Further, a lottery may produce a haphazard outcome. Although such an outcome might be partially redressed through resale, that would entail further transaction costs. We do not believe that an auction would have significant adverse international ramifications, as discussed below.

c. *Competitive bidding*. 69. *Legality*. Having decided that it would best serve the public interest to use competitive bidding in the event that the sharing plan does not resolve mutual exclusivity, we next respond to arguments concerning our legal authority to do so. Section 309(j) (1) and (2) of the Communications Act, as amended, 47 U.S.C. § 309(j) (1), (2), permits auctions where mutually exclusive applications for initial licenses or construction permits are accepted for filing by the Commission and where the principal use of the spectrum will involve or is reasonably likely to involve the receipt by the licensee of compensation from subscribers in return for enabling those subscribers to receive or transmit communications signals.⁸⁰ TRW, however, asserts that "the entire thrust and substance" of the legislation authorizing the Commission to assign licenses by auction is "geared toward" licensing for the personal communication service (PCS) service and that the underlying legislative purposes "simply do not apply to * * * an inherently global * * * satellite service [for which] there are currently no more than six applications." However, nothing in Section 309(j) precludes the use of auctions for satellite services, and the scope of our Section 309(j) authority to use auctions clearly is not limited to PCS licensing.⁸¹ Indeed, we have decided to use auctions

for many services besides PCS.⁸² Nor does Section 309(j) withhold authority to use auctions for licensing international satellite systems or specify a minimum number of competing applications for a class of licenses that must be on file in order for licenses to be assigned by competitive bidding.

70. Constellation, Motorola and LQP contend that the statute forbids us from conducting an auction until we have used every means to attempt to eliminate mutual exclusivity. Motorola and LQP cite commentary in the House Report and in a letter from Congressman Dingell to then-Chairman Quello as evidence that Congress "clearly had the Big LEO proceeding in mind when it added this language to the bill" and that it believed that mutual exclusivity could be avoided in this proceeding. Further, TRW and COMSAT cite this commentary as proof that Congress enacted Subsection 309(j)(6)(E) to prevent the Commission from using an auction to assign Big LEO licenses.

71. Nothing on the face of Subsection 309(j)(6)(E), or in its legislative history, indicates that we are prohibited from granting Big LEO licenses by auction. The text of the Section merely provides that the Commission should continue to use techniques that avoid mutual exclusivity among applicants. Similarly, the commentary in the House Report states that it generally serves the public interest for the Commission to use engineering solutions and other mechanisms to avoid or eliminate mutual exclusivity and that the Commission should continue to do so in the Big LEO licensing proceeding. The Report does not assert, however, that if the Commission is unsuccessful in resolving mutual exclusivity, the legislation bars the Commission from auctioning Big LEO licenses. Rather, we construe the provision to mean that the Commission is obliged to attempt to eliminate mutual exclusivity. Indeed, if the Commission could avoid mutual exclusivity in every instance in which it arises, no need would exist for the Commission's auction authority. In the course of this proceeding, we have proposed several spectrum sharing plans to that end.⁸³ We do not think that it would serve the public interest to continue this effort in the event that the six applications before us, as amended

⁸² For example, auctions will be used to award licenses in the 900 MHz Specialized Mobile Radio Services and the Multipoint Distribution Services. See 47 CFR 1.2102(a).

⁸³ See, e.g., Committee Report, Addendum 1 (proposal developed by FCC Representative to the Committee that would have permitted all proposed systems to be licensed with some design modifications); Notice, note 2, *supra*, at para. 38.

⁷⁷ 2 FCC Rcd at 487, para. 15.

⁷⁸ See 47 U.S.C. 309(i). See also H.R. Conf. Rep. No. 765, 97th Cong., 2d Sess., at 37 (1982).

⁷⁹ Second Report and Order in the Implementation of Section 309(j)—Competitive Bidding, 9 FCC Rcd 2348, 2361 (1994) (Implementation of Section 309(j)), at para. 73. Moreover, an efficient auction would award licenses more quickly to those that value them most highly and would facilitate the efficient aggregation of interdependent licenses. We also note that the applicants here did not submit their proposals in reliance on an expectation that the Commission would use lotteries.

⁸⁰ No commenter disputes the holding in para. 42 of the Notice that Big LEO service will involve a "use of the electromagnetic spectrum" as defined in 47 U.S.C. 309(j)(2), notwithstanding that most of the applicants propose to provide service to resellers rather than end-users. As we noted previously, the legislative record indicates that it is irrelevant to the applicability of the 309(j)(2) definition whether a licensee's subscribers are end-users or resellers, and we believe that understanding is consistent with the plain meaning of the pertinent statutory text.

⁸¹ The legislative record confirms that proponents of the legislation were well aware that it did not merely pertain to PCS licensing. See H.R. Report No. 103-111, 103d Cong., 1st Sess., at 256 (1993) ("[S]ection 309(j) is a generic statute that will govern the issuance of licenses in many different services"). See also Implementation of Section 309(j), note 79, *supra*.

in response to this *Report and Order*, are mutually exclusive.

72. Regardless of our general authority to conduct an auction in the Big LEO service, TRW contends that we may not auction the allocated 2.4 GHz band downlink frequencies because the pending applications for these frequencies are not mutually exclusive. According to TRW, all four applicants desiring to use the 2.4 GHz band could do so on a shared basis using the CDMA technology that all of them propose.⁶⁴ Similarly, since the same four applicants are the only ones proposing to use the lower six MHz of 1.6 GHz band, TRW argues that we cannot use auctions to assign authorizations for that frequency range either. As TRW sees it, the only portion of the Big LEO spectrum that we can auction consistently with the mutual exclusivity proviso of Subsection 309(j)(1) is the sector of the 1.6 GHz band between 1616–1626.5 MHz, where both Motorola and the CDMA proponents have competing applications on file.

73. We do not agree with TRW that Subsection 309(j)(1) bars us from using an auction to award licenses for the lower portion of the 1.6 GHz band. There is simply not enough spectrum in the band to accommodate all pending applications. While we recognize that there are certain portions of the spectrum in which sharing among CDMA systems is possible (*i.e.*, the 1610–1616 MHz and the 2483.5–2500 MHz bands), these frequencies cannot in themselves accommodate all proposed CDMA systems, including AMSC's. Consequently, these bands cannot be separated from the rest of the MSS frequencies in determining whether mutual exclusivity exists and whether auctions can be employed. Moreover, we are not proposing to conduct an auction until after the applicants have had an opportunity to amend their applications to conform with our rules. If our spectrum sharing plan does not then accommodate the systems of all qualified applicants, the plan will not be implemented. Rather, the 1.6 GHz band spectrum would be segmented and the qualified applicants will be required, in order to preserve their eligibility, to apply for a separate license for each segment that they want to use. Consistent with the mutual exclusivity prerequisite of Subsection 309(j)(1), in the event that only a single eligible

application is filed for a particular segment within the filing window, the segment will be assigned to the applicant requesting it. We would not assign the license for a segment through competitive bidding unless two or more eligible applications for it were on file. Winners would be permitted to employ their choice of CDMA or TDMA/FDMA architectures.

74. We do agree with TRW that there is no need to assign 2.4 GHz band authorizations by competitive bidding. Because CDMA systems must use 1.6 GHz uplink and corresponding 2.4 GHz downlink frequencies to operate, we proposed in the *Notice* to pair 1.6 GHz and 2.4 GHz spectrum blocks for auctioning.⁶⁵ All applicants requesting authority to use the 2.4 GHz band concede that they can share it using CDMA technology, however. We therefore conclude that would be more appropriate to license all winners of auctioned 1.6 GHz spectrum blocks to operate in the space-to-Earth transmission direction in the 2483.5–2500 MHz band on a shared basis using CDMA techniques.

75. TRW contends that dividing sharable spectrum into segments and assigning a license for each segment to the highest bidder, as we proposed in the *Notice*, rather than assigning co-extensive licenses for the entire bandwidth to as many as could share it, would be "spectrum-inefficient" and therefore "manifestly contrary to the auction legislation." Constellation likewise asserts that assigning licenses for discrete segments of the Big LEO spectrum by competitive bidding would probably eliminate any chance of CDMA sharing, as auction winners would probably not consent to share use of their licensed segments with competing service providers. Constellation, accordingly, contends that such a licensing procedure would not promote efficient spectrum use. Similarly, LQP asserts that assigning Big LEO licenses by auction would deter multiple entry and competition.

76. We do not agree that auctioning the 1.6 GHz band in band segments would disserve the statutory objectives of promoting competition and efficient spectrum use. First, it is not clear that using an auction licensing mechanism would discourage spectrum sharing. Applicants who obtain licenses for band segments by competitive bidding could negotiate post-auction sharing agreements among themselves and request license modifications, as TRW acknowledges in its comments.⁶⁶ If, in

fact, the potential economic value of some or all of the available 1.6 GHz band could best be realized through frequency sharing, licensees will have an incentive to enter into such mutually beneficial sharing agreements, no matter how they acquire their licenses. Second, there is no evident reason to conclude that competitive bidding would impede competition. Our auction rules will ensure that there will be at least two providers. Further, by dividing the available bandwidth into relatively small segments and allowing bidders to acquire several segments and aggregate them, the number of initial licensees and the amounts of spectrum held by particular licensees will be determined largely by market forces.

77. We recognize it is possible that an auction might result in fewer licensees than could otherwise have been accommodated using a sharing plan. As discussed above, however, we have been unable to develop a sharing plan that avoids mutual exclusivity, assuming all applicants are deemed qualified. If mutual exclusivity cannot be avoided by sharing, implementing an auction may achieve countervailing public interest benefits. As we have explained, assigning spectrum rights to those who place the highest value on them generally serves the public interest because it ensures an award to the highest-valued use.

78. We do not agree with LQP that using auctions is contrary to our established policy of favoring multiple entry in new satellite services. We have ensured that our competitive bidding framework will result in at least two licensees, thereby ensuring the benefits of a competitive market structure.⁶⁷ Moreover, insofar as our policy permits marketplace incentives to determine the number of service providers, the policy is fully consistent with our "open skies" satellite policy, which was based on similar considerations.⁶⁸

79. TRW also suggests that we may not lawfully use an auction to assign Big LEO licenses because of the statutory mandate concerning promotion of economic opportunity. TRW claims, for instance, that the statute requires the Commission, consistent with the public interest and the characteristics of the proposed service, to "prescribe * * * bandwidth assignments that promote * * * economic opportunity for a wide variety of applicants" (emphasis

⁶⁴ LQP contends, moreover, that segmentation of the 2.4 GHz band pursuant to the tentative auction plan outlined in the NPRM would be impracticable because any CDMA system would require use of all 16.5 MHz of the available 2.4 GHz band, whether it intends to share that spectrum in common with other CDMA systems or to use it exclusively.

⁶⁵ *Notice*, note 2, *supra*, at para. 45.

⁶⁶ TRW Comments at 102–103.

⁶⁷ See para. 89, *infra*.

⁶⁸ Domestic Communications Satellite Facilities, 22 FCC 2d (1970), 35 FCC 2d 844 (1972), *recon. in part*, 38 FCC 2d 665 (1972) (DOMSAT I, II, and III, respectively).

added),⁸⁹ which is impossible here given the number of Big LEO licenses that can be awarded. TRW further asserts we cannot meet the statute's requirements to afford opportunity for small businesses, businesses owned by members of minority groups or women, and rural telephone companies, since there are no representatives of those "designated entity" (DE) classes among the existing applicants, that it is virtually impossible for a company qualifying as a small business to raise enough capital to finance construction and operation of a Big LEO system, and that it would be a daunting task to devise a system of viable set-asides for designated entities without drastically impairing the ability of other applicants to implement service.

80. Subsection 309(j)(3) requires the Commission to seek to promote "economic opportunity and competition," among other goals, "by disseminating licenses among a wide variety of applicants, including [DEs]," and Subsection 309(j)(4)(D) directs us to ensure, when prescribing regulations governing auction procedures or eligibility to apply for licenses to be assigned by auction, that DEs are given an opportunity to participate in the provision of spectrum-based services. The statute, however, directs the Commission, in specifying auction procedures, to pursue other objectives, aside from ensuring opportunity for DEs. Among these are the goals of promoting "the development and rapid deployment of new technologies, products, and services for the benefit of the public, including those residing in rural areas, without administrative or judicial delays" and of promoting "efficient and intensive use of the electromagnetic spectrum." 47 U.S.C. § 309(j)(3). In the *Notice*, we tentatively concluded auctions would further these objectives and we affirm these conclusions on this *Report and Order*.⁹⁰ The statute also implicitly leaves it to the Commission to strike a balance in the public interest among the statutory objectives.⁹¹ Here, only six applications are being considered. No one disputes TRW's assertion that none of the applicants qualifies as small, minority-owned or women-owned.⁹² It therefore would appear that to disseminate Big LEO licenses to DEs we would have to open a new filing window for Big LEO

applications.⁹³ While in some circumstances it might be feasible to take such an approach, we believe that it is not the case here. To ensure that this needed service is made available as quickly as possible, particularly to rural residents not otherwise served by the telecommunications infrastructure, and to preserve the opportunity for the United States to continue its leadership role in promoting global development through an enhanced global information infrastructure, we are committed to awarding licenses by January 31, 1995.⁹⁴ Opening a new filing window would make that goal impossible. Potential new applicants would need a reasonable amount of time, traditionally three months from the date of publication in the *Federal Register*, in which to develop and submit system proposals.⁹⁵ Opening a new filing window also would be inequitable to the pending applicants, who filed their proposals well before Section 309(j) was enacted and who have spent considerable time and expense participating in this proceeding. In light of these considerations, we believe that an auction to award Big LEO licenses is an appropriate exercise of our discretion.

81. *Other considerations.* In the *Notice*, we recognized that although auctions appear advantageous for many reasons, the approach might have unintended consequences internationally. In particular, we noted that other countries may look to our lead in imposing these costs on Big LEO systems.⁹⁶ Given the number of countries that may be served by Big LEO systems, we stated that these costs may be considerable and may preclude a U.S.-owned system from serving other countries. We noted, however, that these costs may not in fact be significant in countries that seek to ensure that voice MSS is available within its borders. We further noted that applicants will pay no more than that which they determine is consistent with their expected revenues from providing service in that country. Nevertheless, we recognize that the international nature of the Big LEO service raises concerns that are not applicable to the domestic-only services for which auctions are

implemented and requested comment on this issue.

82. Motorola, Constellation, LQP, TRW, and COMSTAT all contend that an auction is inadvisable because it would set a bad example for foreign governments. If foreign governments were to use auctions to assign spectrum rights, they maintain, the cost of providing global MSS would be driven up, possibly to such an extent that Big LEO operators would be unable to provide worldwide service. TRW asserts that the consequent cost increases might deter most potential entrants, to the impairment of competition, or might even make it infeasible for anyone to provide Big LEO service. COMSTAT speculates that foreign governments might conduct auctions in a manner that places U.S. companies at a disadvantage.

83. The comments have provided no concrete evidence, however, that an auction would have these harmful effects. We have concluded elsewhere that, as a general matter, the public interest is served by awarding licenses to those who assign the highest value to them.⁹⁷ In light of these substantial public interest benefits, the commenters' mere recitals of the concerns we raised in the *Notice* do not persuade us that auctions are inadvisable.

84. We doubt, first, that our choice of licensing method for the Big LEO service will determine foreign licensing practices as much as the commenters predict. Foreign officials already know that we recently obtained a statutory mandate for assigning spectrum licenses by competitive bidding and have decided to assign licenses of enormous aggregate commercial value for a variety of new services by that means. We assume that those responsible for assigning spectrum rights in other countries will conduct spectrum auctions if that would best serve the interests that they are obligated to promote, regardless of what we choose to do in this proceeding. Further, even if auctions are implemented, applicants will bid no more at an auction than that which they determine is economically feasible.

85. Conversely, TRW contends that if we assign Big LEO licenses at auction and foreign authorities issue such licenses to others free of charge, the U.S. licensees would be at a competitive disadvantage in the global market. Constellation similarly maintains that by assigning the licenses at auction the Commission "would create an incentive

⁸⁹ DEs can, of course, participate in the Big LEO industry by leasing space segment capacity, by manufacturing user handsets, or by offering services to end users.

⁹⁰ See also note 6, *supra*.

⁹¹ See NVNG MSS Order, note 48, *supra*. See also RDSS Licensing Order, note 37, *supra*, where licensee was given six months to amend its applications to conform to rules as adopted.

⁹² *Notice*, note 2, *supra*, at para. 44.

⁹⁷ Implementation of 309(j), note 79, *supra*, at paras. 73-74 and n.65.

⁸⁹ 47 U.S.C. 309(j)(4)(c).

⁹⁰ See *Notice*, note 2, *supra*, at para. 43.

⁹¹ See Implementation of Section 309(j), note 79, *supra*, at para. 74.

⁹² See Docket 93-253 for criteria.

for U.S. companies to develop LEO technology through foreign based systems that did not have to spend significant amounts of capital for operating licenses." TRW also contends that companies who purchase MSS licenses in the United States at auction might encounter unfair competition from INMARSAT because the INMARSAT Convention and the Communications Satellite Act might be construed to require that COMSAT be allowed to access INMARSAT capacity from the U.S. without paying for spectrum use.

86. We do not believe the prospect that auctions will be conducted only in the United States would disadvantage U.S. licensees globally. We have not yet decided whether, and the terms on which, foreign providers, including INMARSAT, will be able to provide domestic service. We envision that reciprocal bilateral arrangements on a country-by-country basis will be negotiated. In reaching and implementing these arrangements, we will consider at that time whether foreign entities not subject to U.S. auctions would have the economic incentive and ability to offer domestic service at significantly lower rates than Big LEO operators who purchased spectrum. Further, under this scenario, both U.S. and foreign operators appear able to receive licenses free of charge in a foreign country. We fail to see how this would put U.S. operators at a "global disadvantage." Finally, contrary to Constellation's argument, we see no reason to suppose that applicants who could compete successfully as providers of Big LEO service in the U.S. market would lose interest in developing systems in the United States merely because it would be necessary to purchase licenses. If it would be undesirable to serve the U.S. market at high spectrum prices, the prices paid at an auction should fall until serving the U.S. market is commercially desirable.

87. Consequently, we conclude that we have the statutory authority to award Big LEO licenses through an auction process. We will implement competitive bidding procedures in the event that all six pending applicants file amendments on November 16, 1994 that meet all requirements, including financial requirements, for the Big LEO service, but their applications are still mutually exclusive.⁹⁸ We place applicants on

notice that if an auction needs to be held it will be scheduled as quickly as possible. Given the importance of proceeding with Big LEO licensing, preparation time for the applicants will necessarily be circumscribed.

d. *Competitive bidding procedure.* 88. *Segmentation.* As proposed in the Notice, we will divide the 1.6 GHz band spectrum into eight 2.0625 MHz segments.⁹⁹ We recognize that Constellation and LQP assert that a 2.0625 MHz block is "unworkable" because it is inconsistent with some of the applicants' channelization plans, which proposed 1.25 MHz channels. Further, LQP asserts that any auction of discrete bandwidth segments within the 1.6 GHz band would inevitably result in some applicants getting unusable, disjointed spectrum blocks. We do not believe these concerns warrant a change in the proposed spectrum blocks. First, two of the six applicants do not propose to use 1.25 MHz channels. Moreover, any anomalies in spectrum awards can be corrected in post-auction transactions, as we intend (as explained *infra*) to allow the licensees to aggregate and disaggregate spectrum through resale.

89. *Bandwidth cap.* To ensure that there are at least two Big LEO providers, we will not permit any applicant to acquire more than four 2.0625 MHz band segments in the 1.6 GHz band, *i.e.*, no more than 8.25 MHz, at auction.¹⁰⁰ We would also deny permission for a post-auction transaction that would result in an accumulation in excess of that limit in the absence of a compelling showing of justification for a waiver.

90. *Competitive Bidding Design.* In determining the procedures to be employed if an auction of Big LEO licenses is necessary, we are guided by the principles developed in PP Docket No. 93-253, the proceeding instituted to implement Section 309(j) of the Communications Act. The *Second Report and Order* in that proceeding¹⁰¹ established the criteria to be used in selecting the auction design method to use for each particular actionable service. The Commission received voluminous comment on auction design issues. Generally, we concluded that awarding licenses to those parties who

mutually exclusive deferred applications. Rather, as noted, we will develop another processing procedure at that time.

⁹⁹ As discussed in the Notice, it appeared that as little as 2.0 MHz of spectrum could provide an individual CDMA system with the same capacity as it would have operating on a shared basis over 11.35 MHz of spectrum. See Notice, note 2, *supra*, at para. 45.

¹⁰⁰ See Notice, note 2, *supra*, at para. 45.

¹⁰¹ Note 79, *supra*.

value them most highly will foster Congress' policy objectives. In this regard, we noted that since a bidder's ability to introduce valuable new services and to deploy them quickly, intensively, and efficiently increases the value of a license to that bidder, an auction design that awards licenses to those bidders with the highest willingness to pay the most tends to promote the development and rapid deployment of new services and the efficient and intensive use of the spectrum. In articulating our auction design principles we agreed with the weight of the comments in that proceeding—many of which were supported by academic auction design experts—that: (1) licenses with strong value interdependencies should be auctioned simultaneously; (2) multiple round auctions generally will yield more efficient allocations of licenses and higher revenues, especially where there is substantial uncertainty as to value because they provide bidders with information regarding other bidders' valuations of licenses; and (3) since they may be relatively expensive to implement and time-consuming, simultaneous and/or multiple round auctions may become less cost-effective as the value of licenses decreases.¹⁰²

91. Based on the foregoing, we concluded that where the licenses to be auctioned are interdependent and their value is expected to be high, simultaneous multiple round auctions would best achieve the Commission's goals for competitive bidding.¹⁰³ We indicated that compared with other bidding mechanisms (such as sequential and sealed bid auctions), simultaneous multiple round bidding will generate the most information about license values during the course of the auction and provide bidders with the most flexibility to pursue back-up strategies. Thus, we concluded that simultaneous multiple round bidding is most likely to award interdependent licenses to the bidders who value them most highly. We also indicated that this method will facilitate efficient aggregation of licenses across spectrum bands, thereby resulting in vigorous competition among several strong service providers who will be able rapidly to introduce a wide variety of services highly valued by end users.¹⁰⁴ In addition, we concluded that because of the superior information and flexibility it provides, this method is likely to yield greater revenues than other auction designs. Thus, we found that the use of simultaneous multiple

¹⁰² *Id.* at para. 69.

¹⁰³ *Id.* at paras. 109-111.

¹⁰⁴ *Id.* at para. 106.

⁹⁸ If some applicants defer their financial showings as described in para. 13, *supra*, all deferred applications may not be able to be granted. If, at that time, we have issued some licenses, we will not implement the auction procedure described below, which assumes that none of the MSS spectrum has been assigned, to choose among the

round auctions would generally be preferred.¹⁰⁵

92. Because, however, simultaneous multiple round bidding is likely to be more administratively complex and costly both for bidders and for the FCC than sequential or single round bidding, we indicated that we would use this auction design only where license values are interdependent and the expected value of the licenses to be auctioned is high relative to the costs of conducting a simultaneous multiple round auction.¹⁰⁶

93. If it becomes necessary to employ competitive bidding procedures to award Big LEO licenses, we will conduct a single simultaneous multiple round auction to award licenses in those 2.065 MHz bands for which two or more applications have been filed.¹⁰⁷ Each of the characteristics that lead to selection of this auction design are present here. We expect that there will be a high degree of interdependence in the values of Big LEO licenses. Licenses may be interdependent either because they are substitutes or because they are worth more as part of a package than individually. We would expect there to be some substitutability among these licenses. There may be important ways in which they might be complements as well. Though all will be nationwide licenses, a single entity will be able to aggregate up to four licenses. It is reasonable to assume that the value that a bidder places on one license will to at least some degree depend upon whether it will be able to acquire other licenses. We also expect that the value of Big LEO licenses will be high relative to the costs of conducting a simultaneous multiple round auction, in part because as the Commission gains experience with simultaneous multiple round auctions, the costs associated with implementing them may fall.

94. *Procedural, Payment and Penalty Issues.* Through our July 1994 auction of nationwide licenses to provide Personal Communications Services in the 900 MHz band (narrowband PCS), we have gained some experience with simultaneous multiple round auctions. It appears that the rules we adopted concerning the procedures to be used in conducting auctions, the schedule for payment for licenses, and the penalties to be paid for bid withdrawal, default or disqualification, have worked well.¹⁰⁸ In the event that it becomes necessary to employ competitive bidding in Big

LEO licensing, we will conduct auctions as specified under those rules. If such an auction is required, we will issue a Public Notice explaining further the administrative details of the auction, but we generally expect the auction will be conducted similarly to the nationwide narrowband PCS auction.

95. In order to reduce the risk of defaults and to ensure that the Commission has a ready source of funds to satisfy any bid withdrawal or default penalties, we will impose a requirement that, to be qualified to participate in the Big LEO auction, applicants must submit an upfront payment to the Commission prior to the auction.¹⁰⁹ Consistent with our auction rules for Personal Communications Services, we have decided to set the upfront payment at approximately two cents per MHz of spectrum per person residing in the proposed service area (\$0.02 per MHz-pop).¹¹⁰ Because Big LEO systems must be able to provide service to all areas of the fifty states, \$0.02 per MHz-pop would amount to approximately \$10 million per 2.0625 MHz segment.¹¹¹ For simplicity, we will round this to the nearest million, and require an upfront payment of \$10 million.

96. *Resale, aggregation and disaggregation.* Aside from imposing the 8.25 MHz cap on aggregation, we will not restrict auction winners from reselling 1.6 GHz band spectrum-rights. They would be free not only to resell 2.065 MHz segments but also to reassign any smaller portion of 1.6 GHz band spectrum. Affording such flexibility enhances beneficial incentives.¹¹² Although we do not think that such post-auction transactions would be likely to entail unjust enrichment,¹¹³ applications for consent to assignment of Big LEO spectrum authorizations obtained by auction will be subject to the disclosure and close-scrutiny policies delineated in the Second Report and Order in the auction rulemaking.¹¹⁴

97. *Assignment of 2.4 GHz band.* As previously noted, all auction winners will be authorized to operate over the entire 2483.5–2500 MHz band, with the stipulation that operation in that band must be in the CDMA mode and must be used for downlink transmissions.

¹⁰⁹ The upfront payment will be fully refunded to unsuccessful bidders who are not subject to bid withdrawal or default penalties.

¹¹⁰ See Implementation of Section 309(f), note 79, *supra*, at para. 169 and 47 CFR 1.2106.

¹¹¹ *I.e.*, .02 × 2.0625 × [U.S. pop.]

¹¹² Of course, parties to such transactions must comply with 47 U.S.C. 310(d) by filing applications for consent to assignment.

¹¹³ See Implementation of Section 309(f), note 79, *supra*, at paras. 211–12.

¹¹⁴ *Id.* at para. 214.

B. Interservice Sharing

98. In the Notice, we recognized that Big LEO systems will be required to share the 1.6/2.4 GHz and adjacent frequency bands with a number of existing services. In the 1.6 GHz range, the 1610–1626.5 MHz band is allocated to the aeronautical radionavigation service (ARNS) on a co-primary basis, and a segment of the band, at 1610.6–1613.8 MHz, is allocated to the radioastronomy service (RAS) on a co-primary basis. In the 2.4 GHz range, the 2483.5–2500 MHz band is allocated for co-primary use by the broadcast auxiliary service, by the terrestrial fixed-service and by industrial, scientific and medical (ISM) operations. Adjacent bands are allocated to the aeronautical radionavigation satellite service, the instructional television fixed service (ITFS) and the multi-channel multi-point distribution service (MMDS).

99. The Negotiated Rulemaking Committee was comprised of Big LEO applicants and representatives of most parties potentially affected by Big LEO services, and analyzed extensively interservice sharing at 1.6/2.4 GHz. We used the Committee's recommendations as the primary basis the proposals in our Notice. We sought comment on those proposals as well as those areas where a representative of an affected interest did not participate in the Committee, or where the Committee could not reach a consensus on an interservice sharing issue.

1. Radio Astronomy Service

100. As noted above, the 1610.6–1613.8 MHz frequency band is allocated to the RAS on a co-primary basis.¹¹⁵ RAS operations involve the reception of radio waves of cosmic origin,¹¹⁶ and are responsible for amassing a substantial portion of information about the universe that has been acquired in the last sixty years. Because the RAS involves only radio reception, it cannot interfere with other services operating in the same frequency band. However, it can receive harmful interference from other services. As a co-primary service, the RAS is entitled to protection from harmful interference. Ensuring this protection is complicated by the nature of cosmic radiation emissions, which are similar to random noise emissions and have extremely low power flux density levels at the Earth. Further,

¹¹⁵ The 4990–5000 MHz band is also allocated to the RAS on a primary basis. Second harmonic spurious emissions from 2.4 GHz MSS operations could cause interference of RAS in that band. See paras. 120–121, *infra*.

¹¹⁶ See International Radio Regulations 55 and 14.

¹⁰⁵ *Id.*

¹⁰⁶ *Id.* at paras. 110–111.

¹⁰⁷ See para. 73, *supra*.

¹⁰⁸ See Sections 1.2104–1.2109 of the Commission's Rules, 47 CFR 1.2104–1.2109.

there is a potential for both in-band and out-of-band interference.¹¹⁷

a. *In-band interference to the RAS.* 101. The Committee was able to agree on procedures that would permit sharing between Big LEOs and the RAS. The Committee's task was made somewhat easier by the fact that radio astronomy observations are usually conducted in remote areas and are not always continuous. The Committee's proposal, developed cooperatively with the Committee on Radio Frequencies (CORF),¹¹⁸ would establish fixed-radius protection zones around the sixteen radio astronomy sites in the United States and technical requirements for MSS downlink transmissions. Based on this recommendation, we proposed to establish protection zones around radio astronomy sites in the United States as a means of preventing MSS transmissions from interfering with RAS observations in the 1610.6–1613.8 MHz band.¹¹⁹ To that end, we also proposed that "all 1.6/2.4 GHz MSS systems shall be capable of determining the position of MSS user transceivers accessing the space segment through either internal radiodetermination calculations or external sources such as LORAN-C or GPS."¹²⁰

102. Big LEO parties generally agree with the fixed-radius protection zone approach. However, both TRW and Constellation question whether it is necessary to require all MSS systems to be capable of determining the position of their user terminals.¹²¹ They contend that a position location requirement need not be imposed on those MSS systems that elect to use beacon-actuated protection systems as a means for avoiding harmful interference to RAS observations.

103. As we stated in the Notice, the Committee decided that a beacon actuated protection system might provide an alternative to fixed radius protection zones. Under such a system, a beacon would transmit a signal when RAS observations were in progress. Upon receipt of this signal, an MSS control center would automatically assign the MSS terminal to a

communications channel outside of the shared MSS–RAS frequency band. The Committee concluded, however, that several theoretical and practical concerns must be addressed before a beacon system can be implemented.¹²² CORF continues to support that position.¹²³

104. Because beacon actuated protection systems are not yet fully developed, we will adopt our original proposal that requires MSS operators to protect RAS observations in the 1610.6–1613.8 MHz band using the fixed-radius protection zone method. Nevertheless, because we expect that more efficient solutions will be developed, we will permit MSS licensees to use smaller geographic protection zones in lieu of the specified areas upon a showing that MSS operations will not cause harmful interference to an RAS observatory during periods of observation.¹²⁴ We will, however, as proposed, allow beacon-actuated protection zones to be used in lieu of fixed protection zones if a coordination agreement is reached between a mobile-satellite system licensee and the Electromagnetic Spectrum Management Unit (ESMU) on the specifics of beacon operations.¹²⁵ Should any of the Big LEO licensees show at a later time, and coordinate with the ESMU, that certain other methods can be used in lieu of the fixed-radius protection zone, we will allow MSS system operators to employ these methods. In the interim, however, position determination of MSS user transceivers is necessary to accomplish fixed-radius zone protection. Therefore, we adopt as part of § 25.213(a)(1), the MSS user transceiver position determination requirement as proposed in the Notice.

105. In the Notice, we also proposed that MSS user transceivers be capable of terminating operations as soon as practicable upon entering an RAS protection zone.¹²⁶ LQP argues that our proposal would require that calls initiated outside of an RAS protection zone be terminated as soon as the MSS user transceiver moves within the protection zone, which, according to LQP, would be inordinately complex and costly.¹²⁷ LQP suggests that our rules should permit the call to be switched successfully to frequencies

outside of the RAS bands (during RAS observations) before operations are terminated to that unit.¹²⁸

106. We believe that LQP's suggestion is reasonable. Allowing calls initiated prior to entering an RAS protection zone to continue until a non-RAS frequency is found will ensure continuity of service to the MSS user. Further, we believe that other requirements that we are adopting, such as the notification requirement that is described below, will ensure that RAS operations are not affected adversely. Therefore, we modify proposed § 25.213(a)(1)(v) as suggested by LQP.

107. We also proposed in the Notice to require that the ESMU notify MSS licensees in the 1610.6–1613.8 MHz band of radio astronomy observations.¹²⁹ This requirement was proposed to ensure that MSS operations terminate as soon as possible after an MSS user transceiver enters a RAS protection zone where observations are being made. CORF suggests that it could meet this requirement by providing MSS operators with schedules of RAS observations.¹³⁰ TRW disagrees, stating that CORF should be required to provide notification "of periods of actual radio astronomy observations rather than a general schedule."¹³¹ We agree with TRW that it would not be overly burdensome for the ESMU to notify the small number of licensed in-band Big LEO operators of periods of actual RAS observations. This will help ensure that no interference is caused to RAS observations in the event that a schedule is changed.

108. In a related matter, Motorola notes that the Committee suggested that RAS observations not be scheduled during peak MSS/RDSS traffic periods to the extent possible.¹³² CORF does not object to this proposal.¹³³ RAS observations are usually carried out in remote areas and are not continuous. Even during peak MSS traffic periods, the majority of MSS traffic should not occur in RAS observation areas. We do not therefore believe that adherence to this provision will be burdensome to RAS. Consequently, we include this provision in our rules in § 25.213(a)(4).

109. Finally, TRW requests that we agree to solicit public comment before we require MSS systems to protect

¹¹⁷ An out-of-band emission is radio frequency energy, located on a frequency or frequencies immediately outside the necessary bandwidth, that result from the modulation process. This does not include spurious emissions, which may be reduced without affecting the corresponding transmission of information. See 47 CFR 2.1.

¹¹⁸ CORF operates under the auspices of the National Academy of Sciences and is responsible for advancing the interest of radio astronomy in the United States.

¹¹⁹ See proposed § 25.213(a)(1)(i)–(iii).

¹²⁰ See proposed § 25.213(a)(1).

¹²¹ TRW Comments at 120, Constellation Reply at 43.

¹²² Notice, note 2, *supra*, at n.90.

¹²³ CORF Reply Comments at 4.

¹²⁴ See § 25.213(a)(1)(v).

¹²⁵ See § 25.213(a)(1)(vii). The ESMU falls under the auspices of the National Science Foundation and is responsible for coordinating RAS frequencies.

¹²⁶ See proposed § 25.213(a)(1)(v). Notice, note 2, *supra*, at para. 50.

¹²⁷ LQP Reply at 58.

¹²⁸ LQP Comments at 64.

¹²⁹ See proposed § 25.213(a)(1)(v).

¹³⁰ CORF Comments at 4–5.

¹³¹ TRW Reply Comments at 72.

¹³² Motorola Comments at 55, n. 41.

¹³³ Specifically, CORF supports insertion of the following text in the rules: "The RAS shall avoid scheduling radio astronomy observations during peak MSS/RDSS traffic periods to the greatest extent practicable." See CORF Reply at 2.

additional RAS sites beyond the sixteen sites specified in the rules.¹³⁴ In bands shared by two or more services on a co-primary basis, new facilities in either service must be coordinated among affected operators. As provided for in proposed rule § 25.213(1)(a)(viii), which we adopt, we will solicit comment with respect to protection from additional RAS sites.

b. Out-of-band interference to RAS from primary MSS uplinks at 1.6 GHz.

110. In the Notice, we also recognized that MSS uplink operations in the 1613.8–1626.5 MHz portion of the band could cause unacceptable out-of-band interference into RAS operations at 1610.6–1613.8 MHz. We also noted the Committee's suggestion to establish fixed protection zones similar to, but smaller than, those recommended for in-band emissions, although we did not propose a rule in this regard.¹³⁵

111. CORF suggested several alternatives to our proposals:¹³⁶

(1) To require that the power flux density (pfd) level reaching RAS sites from a mobile user terminal operating anywhere in the 1610–1626.5 MHz band not exceed the pfd from a mobile user terminal operating within the RAS 1610.6–1613.8 MHz band segment at the edge of the protection zone applicable for that site, or

(2) To prohibit mobile terminal operations within the 1613.8–1615.8 MHz band during RAS observations within protection zones of 100 km or 30 km around RAS sites depending upon the type of observatory involved.¹³⁷

112. The MSS parties generally oppose restrictions on out-of-band emissions for the purpose of protecting RAS. For example, Constellation argues that MSS out-of-band levels should not be unilaterally defined by the radio astronomy community without any regard to the impact those levels would have on other services.¹³⁸ TRW states that it could agree to CORF's suggestions if a compliant mobile user terminal were not required to undertake further coordination with the RAS. TRW notes, however, that CORF's out-of-band

protection proposals would relegate MSS to co-primary or even lower status in frequency bands that are not allocated to the RAS.¹³⁹ Only LQP generally agrees with CORF's suggestion. According to LQP, there is sufficient 1.6 GHz band spectrum to switch MSS users near RAS sites from potentially interfering channels to channels separated from RAS observations.¹⁴⁰

113. We have considered the impact of this proposal on Big LEO licensees and conclude they would not be unduly burdened by protecting RAS observations from out-of-band MSS emissions. It appears that less than one percent of the MSS consumer use would be affected by CORF's alternative proposals for protecting RAS from out-of-band MSS emissions.¹⁴¹ Further, those affected would not be denied communications. They would simply be assigned to another uplink channel by the MSS network control center. We do not believe that the CORF proposals relegate the MSS to co-primary or even lower status. The RAS is seeking protection in bands only in the 1610.6–1613.8 MHz band, which is allocated to the RAS. Therefore we adopt CORF's proposals to protect RAS, during observations, from out-of-band emissions caused by Big LEO systems. If Big LEO operators cannot meet the power density levels necessary to protect RAS from harmful interference, we will require that Big LEO operations be terminated within the protection zones specified in § 25.213(a)(1)(iii).

c. Out-of-band interference to RAS from secondary downlinks in the 1.6 GHz band. 114. In the Notice, we proposed to codify the Committee's recommendations to eliminate potential harmful out-of-band interference to RAS from secondary MSS downlinks operating at 1613.8–1626.5 MHz.¹⁴² The Committee recommended that such operations be restricted to frequencies separated by the upper edge of the RAS band by at least 2.2 MHz, that MSS downlink emissions be filtered aboard the spacecraft, that frequencies be selectively controlled and that an analysis and testing program be conducted in cooperation with the radio astronomy community. Based on its deliberations, the Committee proposed that we adopt rules governing use of the 1613.8–1626.5 MHz band that limit out-of-band emissions so that they do not

exceed –238 dB(W/m²/Hz) during observations at non-VLBA sites and –198 dB(W/m²/Hz) during observations at VLBA sites.

115. Motorola argues that the limits proposed in the Notice are too rigid and would unduly constrain MSS operations.¹⁴³ In support, Motorola contends that those limits were devised originally using assumptions that are not applicable to Big LEO operations. For example, Motorola notes that the calculations assumed an immobile, continuous interference source, whereas secondary MSS downlink LEO operations would present an intermittent source. Further, Motorola notes that although the Committee reached a consensus on a recommendation regarding limits, it did not agree on a proposed rule to govern Big LEO MSS operations. Motorola asserts that instead of adopting specific protection limits applicable to MSS secondary downlinks, the Commission should only restate the general obligation that secondary services not cause harmful interference to primary services.

116. LQP and TRW disagree with Motorola. LQP states that our proposal is reasonable and should be adopted.¹⁴⁴ TRW asserts that Motorola's proposal does not adequately consider the needs of the RAS. It states, however, that if secondary downlinks are limited to the 1621.35–1626.5 MHz band, thereby creating a 7.5 MHz guardband between RAS and secondary MSS, Motorola's proposals would be acceptable.¹⁴⁵

117. We recognize the need to protect RAS observations from secondary MSS downlink operations. At this juncture, however, we need not consider specific limits on Big LEO MSS secondary downlinks. Secondary services by definition shall not cause harmful interference nor claim protection from primary services.¹⁴⁶ This provision applies to protection of primary services from both in-band and out-of-band emissions and would apply to secondary MSS downlinks regardless of specified pfd levels. Thus, we see no reason to codify specific pfd limits as proposed in the Notice. We will instead modify proposed § 25.213(a)(2) to note that secondary MSS downlinks shall not cause harmful interference to primary RAS operations in the 1610.6–1613.8 MHz band. Further, operators of secondary downlinks will be required to take whatever steps necessary to resolve interference complaints by radio

¹³⁴ Proposed § 25.213(a)(1)(vii).

¹³⁵ Notice, note 2, *supra*, at para. 51.

¹³⁶ See CORF Comments at 3–4.

¹³⁷ Radio astronomy observatories use two types of antennas. Observatories with a very long baseline array (VLBA) use interconnected radio telescopes that are dispersed in widely separated locations. Due to the geographic separation of the telescopes, the chance of correlated interference from any single mobile earth terminal is small. Consequently, VLBA sites are not as susceptible to interference as are observatories using a single radio telescope. Eleven of the 16 radio astronomy sites in the U.S. are VLBA sites and they require relatively smaller protection zones than non-VLBA sites.

¹³⁸ Constellation Comments at 47.

¹³⁹ TRW Reply at 71.

¹⁴⁰ LQP Reply Comments at 57, Reply Tech Appendix at 2.1.

¹⁴¹ CORF Reply Comments at 8.

¹⁴² Notice, *supra* note 2, at para. 51; see also proposed § 25.213(a)(2).

¹⁴³ Motorola Comments at 54.

¹⁴⁴ LQP Reply at 59–60.

¹⁴⁵ TRW Reply Comments at 74.

¹⁴⁶ See note 21, *supra*.

astronomers. We expect that an applicant proposing to operate MSS downlinks in the 1613.8–1626.5 MHz band will be able to demonstrate in its application that it has sufficient satellite out-of-band emission attenuation to protect adjacent band U.S. RAS operations based upon the frequency separation inherent in the frequency assignment scheme adopted here.

118. Finally, Cornell University, Arecibo Observatory, notes its concern that MSS downlink transmissions at 1.6 GHz could have a "disastrous effect" on passive space research in the 1610–1667 MHz band.¹⁴⁷ LQP, in support of Cornell, notes that the Commission must limit MSS downlink transmissions to the 5.15 MHz proposed in the Commission's Notice, that is, to 1621.35–1626.5 MHz.¹⁴⁸ Motorola responds that "the 1613.8–1660 MHz band is not allocated to the RAS on a primary or secondary basis" and thus is not entitled to protection from secondary MSS downlinks operating outside that band.¹⁴⁹

119. There is no RAS allocation in the 1613.8–1660 MHz band and the service is therefore not entitled to protection in these bands. Consequently, we will not limit MSS transmissions in order to protect RAS as suggested by Cornell University and LQP. In any case, we do not believe that RAS observations above 1634 MHz would be affected by secondary MSS downlinks in the 1621.35–1626.5 MHz band given the frequency separation.

d. *Spurious emissions into the 4990–5000 MHz from primary downlinks in the 2483.5–2500 MHz band.* 120. The Commission recognized that second harmonic spurious emissions from primary MSS downlink transmissions in the 2483.5–2500 MHz band could cause unacceptable interference to RAS operations in the 4990–5000 MHz band. It concluded and we proposed in § 25.213(a)(3) that MSS downlink out-of-band spectral power flux density (spfd) levels should be limited to -241 dB(W/m²/Hz) in the 4990–5000 MHz band.

121. We will adopt the rules as proposed. Although Constellation argues that it opposes any such codification of the radio astronomy community's definition of "unacceptable" interference,¹⁵⁰ we note that Constellation participated in the

Committee and its deliberations and agreed to the Committee's Report that included this recommendation. More importantly, as stated in the Notice, we believe that these limits can be readily met through proper amplifier device selection and operating conditions in combination with post-amplifier filtering.

2. Aeronautical Radionavigation Satellite Service and Radionavigation-Satellite Service

122. The U.S. Global Positioning System (GPS) can operate under the radionavigation-satellite (space-to-Earth) service (RNSS) allocation in the 1565.2–1585.6 MHz band. GPS is a space-based positioning, velocity, and time system whose space segment, when fully operational, will be composed of 21 operational satellites in six orbital planes. GLONASS, the Russian Global Navigation Satellite System, can operate under the same service allocation in the 1597–1610 MHz bands.¹⁵¹ Additionally, GLONASS can operate under the aeronautical radionavigation service (ARNS) allocation in the 1610–1616 MHz band pursuant to RR 732 of the International Radio Regulations.¹⁵² The GLONASS system will include 24 operational satellites in three orbital planes. The user segment of both the GPS and GLONASS systems will consist of antennas and receiver-processors that can receive both GPS and GLONASS signals to provide positioning, velocity, and precise timing to the user. The Committee addressed ARNS/RNSS–MSS sharing and developed specific recommendations in that regard. We based the sharing proposals in the Notice on the Committee's recommendations and on requirements embodied in the International Radio Regulations.

a. *In-band interference to ARNS and MSS uplinks in the 1610–1626.5 MHz band.* 123. Pursuant to international Radio Regulations, MSS stations may not cause harmful interference to or claim protection from stations operating under RR 732. Further, international Radio Regulation RR 731F provides that MSS earth stations operating with MSS space stations cannot radiate an equivalent isotropically radiated power

(e.i.r.p.) density greater than -15 dB(W/4KHz) in that portion of the band used by systems operating in accordance with RR 732, and -3 dB (W/4KHz) in bands not so used.

124. The Committee concluded that GLONASS receivers operating on-board high altitude aircraft could be protected against interference from MSS operations operating in accordance with RR 731E.¹⁵³ It also concluded that protection would not be possible if GLONASS is used for aircraft approach and terminal communications, as is contemplated by the FAA.¹⁵⁴ The Committee recommended and we proposed in § 25.213(c)(1) to codify the uplink e.i.r.p. limits contained in RR 731E. The Committee had stated that this limit is needed to allow the proposed Big LEO systems to be implemented, although it acknowledged that it will not protect GLONASS if GLONASS is used to provide aircraft approach and terminal communications as a component of a "sole means" GNASS. The Committee also examined several methods to improve the ARNS/RNSS–MSS sharing environment. One was to reconfigure GLONASS so that it would operate only on frequencies below 1610 MHz.¹⁵⁵ Another method for improving sharing possibilities, it noted, would be to modify GLONASS receiver standards to reduce

¹⁵³ The Committee analyzed the potential levels of interference from a typical CDMA mobile unit to a GPS/GLONASS receiver. It concluded that MSS units would not interfere with enroute GLONASS navigation at altitudes in excess of 10,000 meters (Committee Report, note 23, *supra*, at 3.3.4.3). However, aviation parties participating in the Committee stated that the analysis was inadequate to demonstrate interference compatibility at a 95 percent confidence level.

¹⁵⁴ See para. 49, *supra*. For a further discussion of the disparity between ARNS protection requirements and MSS user terminal e.i.r.p. requirements, see Committee Report, note 23, *supra* at 18–21.

¹⁵⁵ The Committee offered two possible methods for limiting GLONASS operations to frequencies below 1610 MHz. One would be to reconfigure the GLONASS frequency plan. Currently, the plan is for a total of 24 GLONASS satellites to operate using 24 discrete downlink carrier frequencies. However, GLONASS satellites currently under construction have the ability to operate on any of the 24 frequencies distributed between 1602 and 1615.5 MHz. This frequency agility could allow antipodal satellites (those above opposite areas of the earth) to operate using the same frequencies. Thus, the entire system could operate using 12 frequencies below 1610 MHz. The other method would be to shift all 24 GLONASS frequencies to spectrum below 1610 MHz. The Committee noted however, that this more radical approach might require redesign of the GLONASS system. In any event, both the aviation community and the Big LEO community have indicated that they fully expect GLONASS to shift to frequencies below 1610 MHz at some point. The recent bilateral coordination meeting with the Russian Federation have confirmed that the GLONASS system will shift its frequencies to below 1606 by 2005 or sooner.

¹⁵¹ See Notice, note 2, *supra*, at para. 53.

¹⁵² RR 732 reserves the 1610–1626.5 MHz band on a worldwide basis for the use and development of air navigation and directly associated terrestrial or satellite based facilities. It also provides that any satellite use of the band is subject to agreement under the procedures of Article 14 of the International Radio Regulations. Pursuant to the international Radio Regulations, MSS stations may not cause harmful interference to or claim protection from stations operating in accordance with RR 731E.

¹⁴⁷ Cornell Comments at 3–5. The 1610–1667 MHz band is being used passively, without any allocation, by radio astronomers to observe red-shifted Hydroxyl (OH) emissions.

¹⁴⁸ LQP Reply Comments at 59.

¹⁴⁹ Motorola Reply Comments at 49.

¹⁵⁰ Constellation Comments at 48.

vulnerability to interference from in-band MSS. Alternatively, it suggested that the U.S. GPS be enhanced to lessen or eliminate reliance on GLONASS altogether. Further, the Committee recommended, and we proposed in Section 25.213(c)(2), that to protect operations of GLONASS receivers on-board aircraft, MSS terminals should be prohibited from being used on civil aircraft.

125. Aeronautical Radio, Inc., and the Air Transport Association of America (ARINC/ATA), Rockwell International Corporation (Rockwell), and the FAA argue that both GLONASS and GPS operations, as potential components of the GNSS, must be protected during all phases of flight over the United States. To that end, they proffer additional limitations on Big LEO operations. ARINC/ATA argues that the Commission should clarify that the RR 731E limitation of -15 dB (W/4kHz) for MSS mobile terminals should apply only after GLONASS moves to frequencies below 1610 MHz. Until then, they contend, the limit should be -78.5 dB (W/MHz).¹⁵⁶ Similarly, Rockwell states that the RR 731E limit is insufficient for protecting GLONASS operations at 1610-1616 MHz. Rockwell claims that the RR 731E power density level is about 140 dB above the maximum interference level that can be tolerated by a typical GLONASS receiving system. Rockwell asserts that shared use of this band segment is impractical absent significant constraints on either MSS or GLONASS. Therefore, it maintains that MSS operation should not be permitted in the 1610-1616 MHz band segment until GLONASS operations are shifted to frequencies below 1610 MHz.¹⁵⁷ The FAA states that the Commission indicated that use of the 1610-1616 MHz band by MSS is premised upon moving GLONASS below 1610 MHz. It maintains that the e.i.r.p. density specified in RR 731E is too high to protect in-band GLONASS for anything but high altitude enroute communications.¹⁵⁸

126. Several of the MSS applicants also disagree that more restrictive limits should be placed on MSS uplinks pending a GLONASS frequency shift. Constellation states that more realistic interference criteria and models must be developed before any requirements other than the RR 731E uplink e.i.r.p. density limit can be adopted.¹⁵⁹ Ellipsat contends that no additional

requirements should be adopted because the aviation community has not provided a legitimate basis for overly stringent requirements on MSS uplinks. Further, Ellipsat maintains that even if GLONASS becomes a component of the GNSS, the aviation community has not provided a showing that GNSS performance would be impaired if degradation were to occur to the small number of GLONASS satellites that would operate above 1610 MHz.¹⁶⁰ Motorola claims that the proposed limits advocated by the aviation community are based on flawed assumptions and unsound analysis. Additionally, Motorola asserts that the protection the aviation parties claim as necessary is based on the erroneous assumption that corrupting a single measurement from a GLONASS satellite will cause unacceptable degradation in the ability to navigate.¹⁶¹

127. Several MSS applicants also state that, to afford new MSS systems flexibility in how they protect ARNS/RNSS, the Commission should modify proposed rule § 25.213(c)(1), which, in addition to the uplink limits contained in RR 731F, requires all MSS operations in the 1.6 GHz band to be coordinated with systems operating pursuant to RR 732. Motorola argues that rules embodied in the International Radio Regulations are adequate for ensuring coordination with and protection of other services.¹⁶² Constellation contends that footnote RR 731E establishes the only enforceable interference criteria (*i.e.*, a maximum e.i.r.p. density of -15 dB (W/4kHz) from MSS transmitters) that can be incorporated into the Commission's rules at this time. Motorola, in contrast, suggests that the e.i.r.p. value set forth in § 25.213(c)(1) be interpreted as a coordination trigger rather than an absolute limit.¹⁶³ LQP states that the proposed rule requires MSS systems to

protect GLONASS beyond the limits specified in RR 731E.¹⁶⁴

128. We do not believe it is necessary to protect GLONASS operations beyond the provisions of RR 731E and the obligation to coordinate MSS systems under current International Telecommunications Union (ITU) procedures. RR 731E states clearly that MSS stations shall not cause interference to, nor claim protection from ARNS stations operating in accordance with RR 732. In addition, under ITU Resolution 46, Big LEO licensees would be subject to whatever limits or conditions agreed upon during the coordination process. GLONASS would likely be part of the coordination negotiations. Accordingly, we reject the aviation community's requests that additional limits be placed on MSS operations pending a GLONASS move, particularly absent definitive technical characteristics and requirements of a future GNSS system, and a definitive statement as to GLONASS's role in the GNSS.¹⁶⁵ Further, imposing additional constraints on Big LEO use of the 1610-1616 MHz band could jeopardize the applicants' ability to implement their systems. This could deprive the United States and those countries who choose to participate in offering services the potential benefits that Big LEOs could bring. Conversely, we do not believe the limits in RR 731E should be relaxed, as Motorola suggests. It is clear - 15 dB(W/4kHz) is a limit and not a threshold for coordination. Therefore, we adopt the e.i.r.p. limits embodied in RR 731E in Section 25.213(c)(1) with the requirement that coordination of MSS mobile earth terminals must be undertaken according to the provisions of Resolution 46 (WARC-92).

129. We also adopt our proposed rule that prohibits operation of Big LEO terminals on-board civil aircraft unless the terminal has a direct connection to the aircraft's Cabin Communication System. However, we agree with Constellation and others that this is a transceiver operating provision and is not necessarily a sharing requirement. Therefore, since this provision is contained in § 25.136(a) of our rules, it need not be repeated in § 25.213. Consequently, we do not adopt proposed rule § 25.213(c)(2) and refer licensees to § 25.136(a).

b. *Out-of-band interference to ARNS/RNSS in the 1559-1610 MHz band.* 130. *Protection of GPS from out-of-band emissions from primary uplinks in the*

¹⁵⁶ Ellipsat Reply at 11.

¹⁶¹ Motorola Reply Comments at 51. Motorola notes that a study conducted for LQP by Sat-Tech Systems demonstrates that loss of a single satellite will never cause a loss of GNSS (LQP Comments at Technical Appendix, para. 2.2.1 at 12). In addition, the Committee performed an analysis of the availability of GNSS satellites if the GLONASS constellation operated only on frequencies below 1610 MHz. It concluded that a minimum of five satellites would always be available for GNSS. In addition, it noted that this minimum would occur for only 14 minutes in every 51-day period. It noted further that since only four GNSS satellites are required for navigation and an additional one satellite for system integrity, it appears that GLONASS satellites operating above 1610 MHz might not be required for either navigation or terminal approach communications. Committee Report, note 23, *supra* at 3.3.4.4.

¹⁶² Motorola Reply Comments at 47.

¹⁶³ Motorola Comments at 55.

¹⁶⁴ LQP Comments at 66-67.

¹⁶⁵ LQP notes that the FAA has suggested that it is still studying how GLONASS "best fits" a GNSS. LQP Reply at 62.

¹⁵⁶ ARINC/ATA Comments at 2-3.

¹⁵⁷ Rockwell Comments at 2-3.

¹⁵⁸ FAA Comments at 2.

¹⁵⁹ Constellation Reply Comments at 47.

1610-1626.5 MHz band. The Committee concluded that out-of-band emissions by MSS uplinks in the 1610-1626.5 MHz band could potentially interfere with GPS operations near 1575 MHz. The Committee found, however, that sharing is possible if appropriate limits are put on out-of-band emissions from MSS user transceivers.¹⁶⁶ The Committee recommended, and we proposed, that MSS user transceivers limit out-of-band emissions (for broadband noise emissions) so as not to exceed an e.i.r.p. density of -70 dBW/1MHz averaged over any 20 millisecond (ms) period in any portion of the 1574.397-1576.443 MHz band. For any discrete spurious emissions in the same band (i.e., bandwidth less than 600 Hz), the user transceiver e.i.r.p. density is not to exceed -80 dBW.¹⁶⁷

131. ARINC/ATA agrees that the proposed limits will protect GPS.¹⁶⁸ The FAA, however, recommended that the protection bandwidth for GPS "be established at least 20 MHz wide (i.e., 1575.42+/-10 MHz)."¹⁶⁹ No technical analysis was provided to support this recommendation.

132. TRW, Ellipsat, and LQP contend that the proposed out-of-band emission limits should be relaxed.¹⁷⁰ They contend that relaxing the limits will allow for reasonably priced user terminals and will adequately protect GPS from out-of-band emissions from these terminals. Constellation, in contrast, supports the proposed limits. It states that the protection level of GPS receivers is reasonable given the frequency separation between the lower end of the MSS band at 1610 MHz and GPS signals at 1575.42 MHz.¹⁷¹

133. We believe that the proposed out-of-band emission limits for MSS user transceiver operations in the 1610-1626.5 MHz band are appropriate to protect GPS operations near 1575 MHz. Both the aviation and MSS parties participated in the Committee's deliberations that resulted in a consensus on an out-of-band emission limit for protecting GPS. No party has demonstrated that a modification of those limits is now warranted. The MSS parties do not demonstrate that the limits are overly restrictive or that significant additional costs would be

incurred by building transceivers to meet the limits. Similarly, the aviation parties have not shown that additional protection bandwidth for GPS is necessary. We therefore adopt proposed § 25.213(b) with minor editorial changes.

134. *Protection of GLONASS from out-of-band emissions from primary uplinks in the 1610-1626.5 MHz band.* The Committee also addressed potential MSS out-of-band interference to GLONASS operations below 1610 MHz, but did not reach a consensus. It did, however, suggest a methodology that could be used to determine appropriate limits. It also noted that there was general agreement that the MSS user transceiver out-of-band emission limits recommended for protecting GPS would be sufficient to protect GLONASS operations below 1610 MHz.¹⁷² We requested comment on the proposed methodology and on the appropriate parameters to be used in developing protection criteria.

135. ARINC/ATA and Rockwell maintain that the MSS out-of-band emission limits appropriate for protecting GPS operations near 1575 MHz should similarly apply to GLONASS operations below 1610 MHz.¹⁷³ The FAA suggests an interference threshold of -145 dBW/1MHz of GLONASS receivers operating below 1610 MHz and calculates a -71 dBW/1MHz MSS user terminal out-of-band emission limit which, it argues, is necessary to protect GLONASS operations at that particular interference threshold.¹⁷⁴

136. The MSS applicants question whether the assumptions made by the aviation parties in their analyses are appropriate and disagree that a direct correlation can be made between the out-of-band emission limits necessary for protecting GPS and the limits necessary for protecting GLONASS below 1610 MHz. Constellation, for example, noted that the provisions to protect GPS from MSS out-of-band emissions were agreed to in the Committee, but that agreement was "without prejudice to the application of the interference protection model to any other case, i.e., GLONASS, where it would be impractical to provide this same level of protection and for which other solutions are required to avoid harmful interference."¹⁷⁵ LQP notes that while the FAA, ARINC and ATA

seek protection of individual GLONASS signals, they have not provided an analysis of why such protection is required to ensure the integrity of the GLONASS system.¹⁷⁶ Motorola contends that the analyses conducted by the aviation community are "skewed" because they have assumed that the MSS transmitter and the aircraft receiver are static when, in fact, both devices are usually mobile.¹⁷⁷ Motorola also lists a number of factors which it argues would provide a more accurate determination of necessary out-of-band emission limits.¹⁷⁸ TRW requests that we incorporate in the rules the ongoing measurement programs and the system vulnerability analyses now being used to determine actual protection requirements of GNSS.¹⁷⁹

137. We will not adopt out-of-band emission limits to protect GLONASS operations below 1610 MHz at this time. The Committee did not agree on limits and the record indicates that a suitable methodology for determining such limits has still not been agreed upon. We note, however, that RTCA Working Group SC159 ad hoc has been established to assess interference to GNSS and possible interference mitigation techniques. The aviation community and the Big LEO applicants participate in this group. We expect that the report from SC159 ad hoc will include an assessment of the out-of-band emission limits on MSS operations necessary to protect GLONASS operations below 1610 MHz. We also believe that this information will provide a mutually acceptable out-of-band emission level.

c. *Out-of-band interference to ARNS/RNSS from secondary MSS downlinks in the 1613.8-1626.5 MHz band.* 138. The Committee also examined the potential for harmful interference to GPS and GLONASS from secondary MSS downlinks in the 1613.8-1626.5 MHz band. It concluded that interference to GPS operations near 1575 MHz from these downlinks would be negligible due to the low power

¹⁷⁶ See LQP Reply at 60-61. On LQP's behalf Sat-Tech Systems conducted an independent study of GNSS satellite availability. Sat-Tech Systems concluded that since multiple measurements from a number of GPS and GLONASS satellites would always be available, the loss of a single GNSS signal would not impair the ability to navigate using GNSS. LQP Comments, Technical Appendix at para. 2.2.1.

¹⁷⁷ Motorola Reply at 51.

¹⁷⁸ These include the effects of duty cycle, modulation technique, spectral overlap, channel assignment, airframe shielding, time duration of event, and signal processing. Motorola describes in detail the individual impact of each of these factors on the analyses in its reply technical appendix at 1-10.

¹⁷⁹ See TRW Reply at 77 (n. 118).

¹⁶⁶ See Committee Report, note 23, *supra*, at para. 5.2.2.7.

¹⁶⁷ See proposed § 25.213(b).

¹⁶⁸ See ARINC/ATA Comments at 3.

¹⁶⁹ See FAA Comments at 3.

¹⁷⁰ LQP suggested that the limit be -50 dBW/1 MHz averaged over any 20 ms period in any portion of the 1575.42+/-1.023 MHz band for broadband noise emissions. LQP Comments at 65. See also TRW Reply at 77 (n. 118), Ellipsat Reply at 11 (n.7).

¹⁷¹ Constellation Comments at 49.

¹⁷² See Committee Report, note 23, *supra*, at para. 5.2.2.7.

¹⁷³ See ARINC and ATA Comments at 3 and Reply at 7; Rockwell Comments at 4.

¹⁷⁴ FAA Comments at 3-4.

¹⁷⁵ See Constellation Comments at 49.

density level of MSS satellite signals at the Earth's surface and the large frequency separation between the MSS and the GPS frequency bands.¹⁸⁰ To protect GLONASS from interference, however, the Committee recommended that space stations that use the 1613.8–1626.5 MHz band for downlinks not exceed a pfd of –141.5 dBW/m²/4kHz.¹⁸¹ We proposed this limit in the Notice in rule § 25.213(c)(3).

139. Motorola requests that we limit proposed § 25.213(c)(3) to apply only to those frequencies that are used by systems operating in accordance with International Radio Regulation RR 732. Motorola contends that this would "follow any changes in the frequency plan of systems, like GLONASS, operating in accordance with RR 732, and would also avoid restricting the operations of MSS systems in frequencies where there are no aeronautical radionavigation systems and hence no need for a more restrictive power flux density limit."¹⁸² Motorola also asks us to clarify that the pfd limit refers to the pfd level at the Earth's surface.

140. We believe that the pfd limits proposed in § 25.213(c)(3) can be readily achieved by MSS operators using the 1613.8–1626.5 MHz band for secondary downlink transmissions. We also believe that our intra-service sharing plan provides sufficient separation between the MSS downlink band and GLONASS operations below 1610 MHz so as not to create interference. Nevertheless, we have decided not to adopt the proposed rule containing out-of-band emission limits for secondary MSS downlinks. Adopting such a rule could be construed to imply that the secondary service has some protection rights relative to primary services in the band, which, by definition, it does not.¹⁸³

141. We remind MSS operators that plan to use the 1613.8–1626.5 MHz secondary allocation for MSS space-to-Earth operations that downlink MSS operations shall not cause harmful interference to GLONASS operations in the 1598–1610 MHz band.¹⁸⁴ Further, MSS operators may not claim interference protection from out-of-band GLONASS operations. We also remind MSS operators of the obligation to coordinate secondary downlink

operations in the 1613.8–1626.5 MHz band pursuant to RR 731F.¹⁸⁵

3. Industrial, Scientific, and Medical Emissions at 2400–2500 MHz

142. The 2400–2500 MHz band may be used on a co-primary basis for Industrial, Scientific and Medical (ISM) equipment applications. ISM applications include microwave ovens, door openers, high frequency lighting systems, industrial equipment, and other low power devices. The Committee was unable to reach a consensus as to whether ISM use represents a significant interference problem to MSS downlinks at 2483.5–2500 MHz.¹⁸⁶ In the Notice, we stated that the record in this area was insufficient to propose specific MSS/ISM sharing rules and requested additional comment on this subject.¹⁸⁷

143. In their comments, LQP and TRW indicate they conducted independent analyses of the potential for ISM operations to cause harmful interference to 2.4 GHz MSS downlinks. LQP concluded that MSS user-transceivers operated in an urban environment with full signal quality in 98% of the instances it recorded. Further, it concluded that MSS signals would be usable 99.5% of the time. LQP also noted that because urban areas are usually served by terrestrial cellular networks, a dual mode transceiver could be switched to terrestrial cellular frequencies when very high ISM interference is present.¹⁸⁸ TRW states that its study generally corroborates LQP's conclusion that 2.4 GHz MSS operations should not be adversely affected by ISM transmissions.¹⁸⁹

144. Consequently, we do not believe any further inquiry into the MSS/ISM sharing situation is warranted. Should sharing be more difficult than anticipated, affected parties may request that we revisit this matter.

4. Sharing with Fixed Services in the 2483.5–2500 MHz Band

145. Over 700 fixed terrestrial stations, including temporary fixed (transportable) stations, are licensed and operating in the United States in the 2483.5–2500 MHz band. These stations are primarily used as links in microwave relay systems serving petroleum companies and as broadcast

auxiliary links. Since 1985, however, the Commission has prohibited any further terrestrial licensing in this band.¹⁹⁰

146. The Committee recognized that MSS spacecraft operating at power flux density (pfd) levels in excess of the levels prescribed by international radio regulation RR 2566 would be required to be coordinated with these "grandfathered" fixed terrestrial stations.¹⁹¹ It stated, however, that these cases should be infrequent and that, in any event, any interference problems should be resolvable through coordination. The Committee also noted that terrestrial operations could interfere with MSS operations, although no analyses were provided to quantify the sharing constraints needed to prevent such interference. The Committee stated that because there is no inherent reason why fixed services need to continue operating in this frequency band, the Commission should consider moving these fixed stations to a higher frequency band.

147. In the Notice, we accepted the Committee's finding that interference problems between terrestrial fixed-services at 2483.5–2500 MHz and MSS downlinks operating in excess of the prescribed pfd levels may be settled through the coordination process.¹⁹² We requested comment on this assessment. We also specifically requested comment from terrestrial operators, who did not participate in the Negotiated Rulemaking.

148. In the RDSS Allocation Order, we recognized that fixed and temporary-fixed operations are unlikely to pose a serious interference threat to RDSS.¹⁹³ We therefore grandfathered all existing station licenses as of July 25, 1985, permitting them to continue operations and subject only to license renewal. However, we acknowledged that coordination would be somewhat more difficult when temporary-fixed stations are involved since RDSS licensees would not have exact information regarding the location of these stations. Therefore, we required temporary-fixed licensees in this band to notify RDSS licensees directly whenever the station

¹⁸⁰ Report and Order, Gen. Docket 84–689, FCC 85–388 (released Sept. 13, 1985) (RDSS Allocation Order).

¹⁹¹ RR 2566 specifies pfd values at the Earth's surface that may be produced by space station emissions. The values vary from –152 to –142 dB (W/m²/4 kHz) depending upon the angle of arrival. International radio regulation RR 753F incorporates these limits. According to RR 753F, if the limits of RR 2566 are exceeded by the MSS, coordination with terrestrial services is required.

¹⁹² Notice, note 2, *supra*, at para. 62.

¹⁹³ See RDSS Allocation Order, note 190, *supra*, at paras. 18–20.

¹⁸⁰ Committee Report, note 23, *supra*, at para. 3.3.8.

¹⁸¹ Committee Report, note 23, *supra*, at para. 5.2.2.6.

¹⁸² See Motorola Comments at 56.

¹⁸³ See note 21, *supra*.

¹⁸⁴ See note 21, *supra*.

¹⁸⁵ See § 2.106 of the Commission's Rules.

¹⁸⁶ Committee Report, note 23, *supra*, at 3.4.9.

¹⁸⁷ Notice, note 2, *supra* at para. 67.

¹⁸⁸ LQP Comments, Technical Appendix at 32.

¹⁸⁹ TRW Reply Comments at 86. In earlier comments, TRW suggested that the Commission reassess the permissible levels of unwanted ISM emissions in order to maximize sharing possibilities.

is moved to a new location.¹⁹⁴ A similar interference environment is present with MSS operations. Consequently, we proposed to modify Section 94.61(b)(4) to extend the notification requirement for grandfathered temporary-fixed licensees to MSS licensees as well.¹⁹⁵

149. The Big LEO parties argue that the Commission should adopt pfd limits for MSS transmissions that are less stringent than those of RR 2566 and that these limits should be implemented as "triggers" for coordination, not as "absolute limits."¹⁹⁶ This would work in the following manner: the relaxed pfd limit would be established as a "trigger level." If the trigger level is not exceeded, no further action would be required. If the trigger level is exceeded, the interference level to terrestrial systems would then be examined, taking into account the individual system characteristics of the MSS system. Only if the protection levels of the second step are exceeded would coordination be required.¹⁹⁷ According to the Big LEO parties, relaxing the pfd levels and applying the coordination trigger method would enable the MSS systems to enhance capacity and sharing with other MSS operators and avoid time-consuming and costly coordination.¹⁹⁸

150. We adopt the pfd threshold of RR 2566 for our domestic Big LEO systems. The ITU Radiocommunication Study Group, Task Group 2/2 (TG 2/2), is studying the issue of relaxing the pfd limits of RR 2566, with the view to present a recommendation at an upcoming World Radiocommunication Conference (WRC). The Commission participates actively in the work of TG 2/2. We do not believe it would be appropriate to adopt an increase in the allowable pfd limits for MSS downlinks in the 2483.5–2500 MHz band in the United States before limits are agreed upon internationally. Indeed, even if we adopted a relaxation of the RR 2566 pfd limits in the United States, it is questionable whether MSS systems that are not designed for power controlled downlink transmissions would be able

to take advantage of this relaxed limit worldwide.

151. We also adopt the notification requirement for grandfathered temporary-fixed licensees to MSS licensees as proposed in the Notice and will not require these stations to relocate. No comments were filed with respect to a possible relocation of grandfathered terrestrial stations. We therefore have no record in this proceeding on which to base a finding that a move would serve the public interest.

5. Fixed Services above 2500 MHz (ITFS/MMDS)

152. The instructional television fixed service (ITFS) and the multi-channel multipoint distribution service (MMDS) operate in the adjacent 2500–2690 MHz frequency band. The Committee found a potential for out-of-band emission interference into MSS downlinks at 2483.5–2500 MHz from operations in the lowest frequency portion of the ITFS/MMDS allocation. It indicated that because both ITFS and MMDS transmissions are similar to those of television broadcast signals, they will cause harmful interference into MSS mobile user transceivers operating up to several kilometers away from an ITFS or a MMDS transmitter. The Committee concluded that stricter limits on ITFS and MMDS out-of-band emissions should be imposed, and recommended that the Commission initiate such a rulemaking.¹⁹⁹ It acknowledged, however, that making these improvements would cost up to \$30,000 per ITFS or MMDS station, and that this cost might increase if these stations are converted from analog to digital technology.

153. We stated in the Notice that the record was insufficient to allow us to make a specific proposal in this area.²⁰⁰ No ITFS representative participated on the Committee nor did the Committee explore the economic and technical tradeoffs that must be considered in developing a solution. Therefore, we requested comment on all aspects of the ITFS/MSS sharing issue, noting that the regulations we ultimately adopt would

be based on these comments. We noted that these regulations might require ITFS operators to improve out-of-band suppression, might require MSS operators to accept additional interference, or might require a combination of both.

154. Ellipsat and TRW contend that new out-of-band emission constraints on all ITFS/MMDS stations should be applied immediately to allow for a transition period for these transmitters to conform to new requirements and that, according to Section 74.936 of the Commission's Rules, the "onus is on the ITFS operator to provide the required interference protection to adjacent band services."²⁰¹ Further, TRW asserts the licensing of Big LEO systems or the initiation of service should not be delayed to permit ITFS operators additional time to modify their transmitters.

155. The Wireless Cable Association International (WCAI), the National Telephone Cooperative Association (NTCA) and the Corporation for Public Broadcasting (CPB), urge that the Commission adopt rules that will provide adequate compensation to ITFS/MMDS operators for costs associated with improving their transmitters to comply with any stricter out-of-band emission requirements.²⁰² WCAI also notes that broadband repeaters used by some ITFS and wireless cable system operators to relay signals into areas that would otherwise be unreachable could pose a threat to MSS downlink operations at the upper portion of the 2483.5–2500 MHz band.²⁰³

156. LQP, in contrast, does not believe that interference is a significant problem. It conducted a study to assess the impact of ITFS/MMDS out-of-band interference to MSS downlinks in the 2483.5–2500 MHz band and concluded that no harmful interference to MSS operations will result from ITFS/MMDS, including operations of ITFS/MMDS booster stations, and that stricter standards on ITFS/MMDS out-of-band emissions are not necessary. LQP maintains that: (1) MSS downlink operations below 2488.75 MHz will not experience interference from ITFS stations, (2) in urban areas, where ITFS transmitters are prevalent, MSS dual

¹⁹⁴ See 47 CFR 94.61(b)(4).

¹⁹⁵ Notice, note 2, *supra*, at para. 62 (n. 104). See also Allocation Order, note 1, *supra* (modifying NG 147 to the Table of Frequency Allocations, 47 CFR § 2.106, to recognize that "grandfathered" terrestrial stations may continue to operate on a primary basis with the MSS.)

¹⁹⁶ LQP Comments at 75, Ellipsat Reply Comments at 24, TRW Reply Comments at 78.

¹⁹⁷ LQP Comments at 77, TRW Comments at 131.

¹⁹⁸ We note also that LQP has, in a separate proceeding, recommended that these limits be raised. LQP Comments at 74; see Petition for Clarification and Partial Reconsideration of Loral Qualcomm Satellite Service, Inc., ET Docket No. 92-28 at 7-10 (filed Mar. 30, 1994).

¹⁹⁹ Specifically, the Committee concluded that out-of-band emissions from the lowest frequency ITFS/MMDS channel using an analog video signal at 2500–2506 MHz should be limited to -90 dB relative to the carrier at a frequency offset from band edge between 1.25 and 2 MHz, assuming that the channel is operating at 30 dBW e.i.r.p. Adjustments could be made for higher frequency channels and for higher or lower operating e.i.r.p. Currently, ITFS out-of-band emissions extending more than 1 MHz below the lower band edge must be attenuated 60 dB below the peak visual carrier power. See 47 CFR § 74.936(b).

²⁰⁰ Notice, note 2, *supra*, at para. 64.

²⁰¹ TRW Comments at 132, Ellipsat Reply Comments at 24. Section 74.936 of the Commission's rules, which pertains to ITFS facilities, states that "should interference occur as a result of emissions outside the assigned channel, additional attenuation may be required." 47 CFR 74.936.

²⁰² WCAI Comments at 3 and 6, NTCA Comments at 2-3, and CPB Comments at 6.

²⁰³ WCAI Comments at 4.

mode transceivers can be used to switch customers to existing terrestrial cellular radio facilities, and (3) MSS user transceivers operating in the highest channel frequency in the 2483.5–2500 MHz band within an ITFS coverage area will be able to operate satisfactorily in all but a few extreme situations by rejecting the ITFS visual carrier and other out-of-band emissions.²⁰⁴

157. TRW urges that the LQP study "may have taken an overly optimistic view of the interference situation."²⁰⁵ TRW also contends that MSS systems using wider CDMA channels (e.g., 5 MHz or wider) may not have the flexibility to move to a lower frequency channel and that until further required measurements are taken and MSS system designs are finalized, the impact of ITFS/MMDS out-of-band interference is not certain.²⁰⁶

158. Upon review of the technical information in the record, we see no significant threat of harmful out-of-band emission interference into MSS from ITFS/MMDS operations above 2500 MHz. Well designed CDMA receivers should mitigate the effect of out-of-band emissions from ITFS/MMDS.

Additionally, a MSS user transceiver's dynamic channel switching capability should reduce any adverse affects from ITFS/MMDS. Further, our intra-service sharing plan allows enough 2.4 GHz band spectrum for MSS operators to avoid ITFS/MMDS out-of-band emissions in the upper portions of the allocation. Consequently, we will not initiate a proceeding to restrict further the out-of-band emissions on ITFS/MMDS at this time.

6. Other Terrestrial Services provided outside of the United States

159. In sixteen countries throughout the world, the 1550–1645.5 MHz band is allocated on a primary basis to the fixed service pursuant to international Radio Regulation RR 730.²⁰⁷ Ground-based aeronautical radionavigation services (ARNS) are also operating throughout the world in the 1610–1626.5 MHz band pursuant to RR 732.

160. The Committee concluded that existing fixed stations operating in the 1610–1626.5 MHz band pursuant to RR 730 and ground-based ARNS stations operating pursuant to RR 732 will not cause harmful interference to MSS operations. It also concluded that MSS

operations will not cause harmful interference to these terrestrial services. Consequently, we proposed only to reiterate in Section 25.213(d) of our rules the general obligation that MSS stations shall not cause interference to stations operating under RR 730. The requirement that MSS stations shall not cause interference to, or claim protection from, stations operating pursuant to RR 732, (international Radio Regulation RR 732 encompasses both ground-based and satellite-borne ARNS), was addressed by proposed rule section 25.213(c)(1), which was adopted earlier in this order.²⁰⁸

161. Constellation contends that we should not adopt proposed § 25.213(d) since there are no U.S. systems operating pursuant to RR 730.²⁰⁹ We disagree. We have repeatedly emphasized in this proceeding that the operation of LEO MSS systems is inherently global. Though there are no systems operating in the United States pursuant to RR 730, it is important that we make clear the obligations of Big LEO operators to coordinate their systems worldwide. Our rules do not elsewhere address coordination of Big LEO systems with systems operating pursuant to RR 730.

162. We therefore adopt Section 25.213(d), as proposed, with the caveat that the coordination and notification procedures fall under Resolution 46 (WARC-92).²¹⁰ International Radio Regulations RR 731E and RR 731F require, respectively, that MSS uplink transmissions in the 1610–1626.5 MHz band and MSS downlink operations in the 1613.8–1626.5 MHz band be coordinated and notified pursuant to Resolution 46 (WARC-92). Also according to RR 731E, MSS mobile earth terminals may not cause interference to terrestrial stations operating in accordance with RR 730 and they may not claim interference protection from these terrestrial stations. We note that all transmitting MSS subscriber terminals will be subject to the regulatory requirements of those countries in which they are operating. User countries will be responsible for undertaking all necessary coordination with neighboring countries to protect fixed or terrestrial aeronautical radionavigation operations from MSS mobile earth terminals in those neighboring countries. Any secondary MSS downlink operations in the 1613.8–1626.5 MHz band also may not cause harmful interference into

terrestrial services operating pursuant to RR 730 or 732. Nor may a MSS mobile earth terminal which receives secondary downlink transmissions claim protection against harmful interference from these terrestrial operation unless a particular country has agreed to provide this protection.

C. Feeder Links

163. In addition to the mobile links connecting customers with the MSS system, one or more "gateway" or central earth stations are needed to complete the transmission paths, process the information being transmitted, and interconnect the system with other communications networks or with other user transceivers. Without these "feeder links," an MSS system would be useless. Because feeder links operate with gateway stations at fixed locations, the feeder link operates in frequency bands allocated to the fixed-satellite service (FSS).

164. The six applicants requested a variety of feeder link frequency bands and bandwidths. In their applications, Constellation, Ellipsat, and LQP each requested 66 MHz of spectrum in each transmission direction in the 5/6 GHz C-band. Motorola and TRW and each requested approximately 100 MHz in each direction the 20/30 GHz Ka-band. AMSC requested an unspecified amount of spectrum in the 12/14 GHz Ku-band.²¹¹ We note, however, that four of the applicants, in the Joint Proposal, indicate that their feeder link spectrum requirements have increased significantly since they filed their original applications. As recognized in the Notice, the FAA has opposed use of the 5 GHz portion of the C-band for space-to-Earth feeder links because of the interference potential between the feeder links and a navigation system it is considering developing in this band.²¹² The 27.5–29.5 GHz portion of the Ka-band was the subject of a recently completed Negotiated Rulemaking involving various terrestrial and satellite interests seeking to use the band. The Negotiated Rulemaking Committee was unable to devise sharing criteria that would satisfy the feeder link requirements of more than one Big LEO applicant.

165. In the Joint Proposal, the parties nevertheless request the Commission to proceed with licensing. They state that licenses can be issued to those applicants requesting to operate in feeder link bands that are available for

²⁰⁴ LQP Comments, Technical Appendix, at 27.

²⁰⁵ TRW Reply Comments at 79.

²⁰⁶ TRW Technical Appendix to Reply Comments at A-24.

²⁰⁷ These countries are Austria, Bulgaria, Cameroon, Germany, Guinea, Hungary, Indonesia, Libya, Mali, Mongolia, Nigeria, Poland, Romania, Senegal, Czechoslovakia, and the former U.S.S.R.

²⁰⁸ See para. 128, *supra*.

²⁰⁹ Constellation Reply comments at 47 and Constellation Comments at 53.

²¹⁰ See Motorola Comments at 56.

²¹¹ Committee Report, Annex 3, Report of Working Group 3, at 2.

²¹² See Notice, note 2, *supra*, at para. 75.

assignment at the time of licensing. They suggest that conditional licenses be awarded to applicants requesting to operate in feeder link bands that are not available. According to the parties, the license would contain a range of feeder link frequencies that the licensee will be able to use provided that those frequencies become available for Big LEO feeder links and are assigned to that licensee by the Commission.

166. We agree that we should award Big LEO licenses as quickly as possible. While we are optimistic that sufficient spectrum will be identified to support Big LEO feeder link operations, we are not certain when this will occur. It is very likely that we will not be in a position to assign specific feeder link spectrum to any qualified applicant by our target date for licensing in January 1995. Even if we were able to assign specific feeder link spectrum to some, however, we would not issue unconditional grants to some and conditional grants to others as the applicants suggest. Until we are certain that the feeder link requirements of all qualified applicants will be met, we will not foreclose our options by assigning spectrum unconditionally.²¹³ We will permit applicants to notify us whether they would prefer to have conditional feeder link frequencies included in their authorizations or whether they would prefer their initial license to be silent on this issue. We envision granting unconditional licenses, including specific feeder link frequencies, at the earlier of two events: (1) Domestic allocations sufficient to support all Big LEO systems are available, regardless of frequency band or (2) the completion of the upcoming World Radio Conference in the Fall of 1995 (WRC-95) assuming sufficient spectrum is made available to satisfy these feeder link requirements. If sufficient feeder link spectrum to support all licensed Big LEO systems is not identified by the completion of the WRC, we will need to develop a further processing mechanism to assign feeder link bands to Big LEO licensees. In the interim, we will continue our international efforts to identify feeder link spectrum at or below 15 GHz.

167. To this end, in preparation for the WRC, ITU-Radiocommunications Study Group Task Groups 8/3 and 4/5 are attempting to define spectrum requirements, to identify available frequencies and to evaluate sharing

possibilities with existing and future users of the band. When these Groups complete their work in December of this year, both will prepare Reports to the Conference Preparatory Meeting (CPM)-95. These Reports will form the basis for the CPM's Report to WRC-95 on feeder links, which will be the technical basis for international decisions regarding feeder links and the International Table of Allocations.

168. Since the frequencies to be used for LEO feeder links may also be used by GSO satellites, Task Group 4/5 is studying the sharing potential between LEO and GSO satellites in all FSS allocations between 3 and 31 GHz. These studies have indicated that certain FSS frequency bands are used more extensively by GSO FSS systems and other radio services and that these bands are therefore less likely candidates for LEO MSS feeder links due to sharing difficulties. In bands at or below 15 GHz, the 5000-5250 GHz and 15.4-15.7 GHz frequencies appear to be promising candidates for reallocation for LEO feeder links.²¹⁴ Task Group 4/5 has also studied the interference created by antenna beam coupling between GSO earth stations and LEO satellite stations,²¹⁵ and is exploring ways to reduce interference through a variety of coordination procedures, including geographic exclusion zones, reverse band operation, and dedicated frequency allocations for LEO satellite feeder link use. When these studies are completed, we will have an indication as to which bands may be recommended and, hopefully, made available internationally for MSS feeder links at WRC-95.

169. Nevertheless, as we stated in the Notice, we will not allow the uncertain availability of bands below 15 GHz to delay the licensing and implementation

²¹⁴ Task Group 4/5 forwarded a preliminary study to TG 8/3 that identified the 5000-5250 GHz and 15.4-15.7 GHz bands as strong candidates for Non-GSO Earth-to-space feeder links. The study indicated that TG 4/5 was of the preliminary view that sharing of non-GSO feeder links (both downlinks and uplinks) with Aeronautical Radionavigation Services (ARNS) in these bands appeared feasible, since the interference to microwave landing system (MLS) receivers would be within the assumed permissible levels. ICAO, at Task Group 8/3, objected to this study, but further analysis is underway and the bands are still being considered as possibilities within these international forums.

²¹⁵ Antenna beam coupling occurs when a LEO satellite passes below a GSO satellite and crosses into the transmission path of an earth station to the GSO satellite. At that point, the transmission beams from the LEO satellite and the earth station will intersect. If the LEO and GSO systems are operating in the same frequency band, this "coupling" will produce significant interference for very short durations of time when the earth station, LEO and GSO satellites form a straight line.

of Big LEO systems. Consequently, if sufficient spectrum is made available at 20/30 GHz to accommodate all Big LEO licensees before bands below 15 GHz are identified, we will authorize all licensees in the 20/30 GHz band, recognizing that several applicants will be faced with substantial system design and service concept modifications. We will continue, however, to pursue bands at and below 15 GHz for Big LEO feeder links, and will allow licensees to modify their licenses to request operational authority in any new bands if, and when, they become available.

D. Intersatellite Links

170. Motorola's proposed system includes intersatellite transmission links in the 23.18-23.38 GHz band. This proposal falls within the intersatellite service allocation at 22.55-23.55 GHz. The Committee concluded that Motorola's use of this band would be compatible with other operations in the band, which include operations by NASA, the radio astronomy service, and fixed-terrestrial services. The Committee noted, however, that NASA has indicated it would prefer that any future MSS intersatellite links operate in the 24.45-24.75 GHz band, which recently was allocated internationally and domestically for intersatellite links. Nevertheless, the Committee, which included a representative of NASA, proposed that we adopt a rule indicating that the 22.55-23.00 GHz, 23.00-23.55 GHz, 24.45-24.65 GHz, and 24.65-24.75 GHz frequencies are available for use by the intersatellite service. In the Notice, we proposed to adopt the Committee's recommended rule regarding intersatellite service frequencies, coordination with government agencies, and sharing criteria. We adopt the rule as proposed with several minor changes and clarifications suggested by Motorola.

E. Service Rules

1. Regulatory Treatment

171. In the Notice, we asked parties to comment on our tentative conclusion that Big LEO MSS service may be offered as a commercial mobile radio service (CMRS). We further sought comment on whether we should exercise our discretion under Section 332(c)(5)²¹⁶ to determine that Big LEO space station licensees making satellite capacity available to CMRS providers

²¹⁶ Section 332(c)(5) reads as follows: "SPACE SEGMENT CAPACITY Nothing in this section shall prohibit the Commission from continuing to determine whether the provision of space segment capacity by satellite systems to providers of commercial mobile services shall be treated as common carriage." 47 U.S.C. 332(c)(5).

²¹³ We will, however, take action on requests for waiver of the construction permit requirement under Section 319(d) of the Communications Act, 47 U.S.C. 319(d). If an applicant's waiver request were approved, it would permit the applicant to commence construction of its system, including the feeder links, at the applicant's own risk.

shall be required to operate as common carriers. In the alternative, we asked parties to comment on how we should regulate Big LEO space station operators if they are not offering CMRS. We noted that when making determinations regarding common carriage obligations in the past, the Commission has examined individual service proposals in light of the criteria delineated in *National Association of Regulatory Utility Commissioners v. FCC*, 525 F.2d 630, 642 (D.C. Cir.), cert. denied, 425 U.S. 999 (1976) (*NARUC I*).²¹⁷ Referencing the two-pronged test in *NARUC I*, in the Notice, we requested comment regarding (1) the likelihood that space station capacity in this service will be offered indifferently to the public, and (2) if there is no such likelihood, whether there should be a legal compulsion for space segment providers to serve the public indifferently.²¹⁸ We also asked for comment on the impact of requiring common carrier operation on the amount of foreign investment and the international coordination of these satellites, given the requirements of Section 310(b) of the Act.²¹⁹

172. In a recent rulemaking, we determined the classification and regulatory treatment of providers of CMRS.²²⁰ Regarding satellite services, we held that, to the extent that a space station licensee provides a service that meets the elements of the CMRS definition,²²¹ we will generally regulate the provision of that service on a common carrier basis.²²² We concluded, however, that so long as the service provider is not providing service directly to end users, the Commission retains the authority under section 332(c)(5) to continue to employ its

existing procedures to determine whether the provision of space segment capacity by satellite licensees to CMRS providers will be offered on a common carrier or private carrier basis.²²³ We also determined that the Commission has the discretion to extend this treatment to any entity that sells or leases space segment capacity, to the extent that the entity is not providing CMRS directly to end users.²²⁴

173. Motorola and LQP agree that the Commission must regulate Big LEO space station licensees as common carriers to the extent that they provide CMRS to end users.²²⁵ If the licensees offer only space segment capacity to resellers, however, the parties contend that this provision of service does not fall within the definition of CMRS, and therefore need not be made available on a common carriage basis.²²⁶ LQP argues that in this situation, the public is assured common carriage access to the service because, at some point a reseller will meet the definition of a CMRS provider and will be required to operate as a common carrier.²²⁷

174. Big LEO space station licensees providing service directly to end users must be regulated as common carriers if the service offering meets the definition of CMRS. We will determine whether a service offering meets the definition based on the service description contained in the operator's application. Operators with pending applications may amend their applications to the extent necessary to enable us to make the determination regarding the nature of the service.²²⁸

175. Pursuant to section 332(c)(5), however, if space segment capacity is offered by a Big LEO space station licensee to a reseller or other entity who then offers CMRS to end users, we have the discretion to determine whether to require the Big LEO licensee to offer such service on a common carriage basis, or to permit such offering to be made on a private carriage basis. In making this determination, we have looked to the analysis enunciated in *NARUC I*.

176. Regarding the first prong of the *NARUC I* test, the commenters agree unanimously that nothing in the nature of the applicants' service proposals supports a conclusion that their services will be offered indifferently to the public. Motorola points out that it and

the other applicants propose to market their space segment capacity to a small number of resellers, and to tailor these offerings to the individual requirements of these few customers. Motorola contends that such offerings have never been viewed as "common carriage" under the *NARUC I* standard.²²⁹ Constellation, LQP, TRW, and AirTouch concur, noting that Commission has historically viewed a service provider's lack of intent to serve end users as an indication of non-common carriage.²³⁰

177. We agree with the commenters that the record in this proceeding does not support a finding that the proposed space segment services are likely to be offered to the public indifferently, a basic characteristic of common carrier service.²³¹ First, in cases where licensees have not intended to serve the user public directly, the Commission has found services to be non-common carrier in nature. In Domestic Fixed-Satellite Transponder Sales, for example, the Commission noted the slim likelihood that non-common carrier domestic satellites would hold themselves out indifferently to serve the user public as key to its decision to permit qualified persons to apply for domestic satellite licenses for non-common carrier purposes.²³² More recently, the Commission, in assessing its discretion under section 332(c)(5), held that non-voice, non-geostationary (NVNG) MSS space station licensees would be permitted to provide system access to CMRS providers on a non-common carrier basis.²³³ Second, these limited offerings will be tailored to provide resellers with a wide variety of options, ranging from position determination and data messaging services, such as those proposed by the NVNG MSS proponents, to global telephony. Consequently, there is nothing in this record to support a finding that the services will be offered indifferently to the public.

178. Regarding the second prong of the *NARUC I* test, the commenters

²¹⁷ Notice, note 2, *supra*, at para. 80.

²¹⁸ *Id.* at paras. 80-81.

²¹⁹ *Id.* at para. 81.

²²⁰ Implementation of Sections 3(n) and 332 of the Communications Act, 9 FCC Rcd 1411 (1994) (CMRS Second Report and Order), recon. pending.

²²¹ *Id.* at 1457-58. A commercial mobile radio service is defined as "any mobile service (as defined in section 3(n)) that is provided for profit and makes interconnected service available (A) to the public or (B) to such classes of eligible users as to be effectively available to a substantial portion of the public, as specified by regulation by the Commission." 47 U.S.C. 332(d)(1). A private mobile radio service is defined as "any mobile service (as defined in section 3(n)) that is not a commercial mobile service or the functional equivalent of a commercial mobile service, as specified by regulation by the Commission." 47 U.S.C. 332(d)(3).

²²² It should be noted, however, that we have chosen to forbear (pursuant to Section 332(c)(1)(A)) from the application of certain provisions of Title II of the Act with regard to CMRS providers. As such, for example, CMRS providers are not permitted to file tariffs for their services. See CMRS Second Report and Order, note 220, *supra*, at 1478-80.

²²³ *Id.* at 1457-58.

²²⁴ *Id.* at 1457.

²²⁵ Motorola Comments at 67-68.

²²⁶ See e.g., TRW Comments at 153-54 & n.239;

LQP Comments at 97-98.

²²⁷ LQP Comments at 97, 100.

²²⁸ See para. 2, *supra*.

²²⁹ Motorola Comments at 64-65 (asserting that space capacity on the Iridium system will never be offered directly to the public; rather, it will be provided on a wholesale basis to the operators of the Iridium system gateways, who in turn may provide services to end users or sell capacity in bulk to service providers, or both).

²³⁰ Constellation Comments at 60; LQP Comments at 97-98; TRW Comments at 158-160; AirTouch Comments at 9-10.

²³¹ See para. 171, *supra*. See also Motorola Comments at 64.

²³² Domestic Fixed-Satellite Transponder Sales, 90 FCC 2d 1236, 1256-57 (1982), *aff'd*, *Wold Communications, Inc. v. FCC*, 735 F.2d 1456 (D.C. Cir. 1984), *modified* *Martin Marietta Communications Systems, Memorandum Opinion and Order*, 60 Rad.Reg. (P&F) 2d 779 (1986).

²³³ NVNG MSS Order, note 48, *supra*, at 8456.

unanimously agree that there should be no legal compulsion for space segment provides to serve the public indifferently. AirTouch and other commenters allege that there will be significant competition in the provision of these services to CMRS providers, both from Big LEO systems, as well as from GSO MSS and NVNG MSS systems.²³⁴ These commenters also assert that sufficient capacity will be available to assure service availability to those that wish to receive it.²³⁵ TRW further contends that the danger of unreasonable or anticompetitive practices that common carrier regulation is designed to prevent will not exist in the competitive environment in which Big LEO licensees will operate because five applicants seek authority to operate these services.²³⁶

179. We concur that there does not appear to be a need to impose common carrier requirements on Big LEO licensees at this time. The Commission has found the presence of capacity and the resulting competition to be an important factor in determining whether non-common carrier treatment should be permitted.²³⁷ As the commenters state, competitive voice mobile services already exist or are imminent. Furthermore, satellite-delivered radiolocation and messaging services are currently provided by a Commission licensee,²³⁸ and are proposed by a number of NVNG MSS applicants.²³⁹ Moreover, under our rules adopted today, sufficient spectrum is available to support the grant of up to five of the pending Big LEO applications.²⁴⁰ Thus, significant direct competition is approaching.²⁴¹ We accordingly believe

that sufficient competitive capacity will be available to assure the public of ample access to these services. Therefore, we find that there is no reason to require the provision of space segment capacity to be offered to resellers on a common carrier basis.²⁴² Of course, if a space segment capacity provider chooses to provide service on a common carrier basis, that service provider would be subject to regulation as a CMRS provider.²⁴³ The Commission has forbore from applying certain provisions of Title II to CMRS providers.²⁴⁴

180. In so finding, we recognize that the commenters argued the imposition of common carrier requirements may have an adverse effect on the development of this service. AirTouch and others argue that Section 310(b) restrictions on foreign involvement in the affairs of domestic common carrier licensees may significantly hinder investment by foreign entities, as well as their willingness to allow a U.S. licensee to operate within their own borders.²⁴⁵ The commenters allege that this investment is critical to the development of a global satellite service.²⁴⁶ Further, Motorola states that the submission of U.S. service providers to common carrier requirements will inhibit their ability to compete with foreign systems that are not similarly encumbered.²⁴⁷ LQP concurs, noting that the space station licensees should be free to tailor their business plans to their respective customer bases.²⁴⁸

181. While we have already found that common 2 carrier requirements

need not be imposed on space segment operators providing service to resellers, there are several other factors that militate against the imposition of common carrier requirements, particularly those limiting alien ownership under Section 310(b) of the Communications Act. Specifically, these systems are inherently global, and extremely expensive. Systems may be comprised of as many as 66 satellites, only a small number of which are visible over the United States at any one time. Because of their global nature, many systems are raising capital in international markets.²⁴⁹ As such, it is reasonable to expect that investors will want to be involved with system operation, particularly if the system will be accessed from the investor's jurisdiction. We concur that this foreign participation is likely to improve the likelihood of receiving a grant of space station access by foreign administrations.

2. System License and License Term

182. As proposed in the Notice, and unanimously endorsed by the parties, we will follow the policy we established in licensing NVNG MSS systems, which are also composed of constellations of technically identical LEO satellites. Specifically, we will issue a single "blanket" authorization for the construction, launch, and operation of all the satellites in an entity's constellation. This authorization will cover all construction and launches necessary to put the complete constellation into place and to maintain it until the end of the license term, including any replacement satellites necessitated by launch or operational failures, or by the retirement of satellites prior to the end of the license period. All replacement satellites, however, must be technically identical to those in service and may not cause a net increase in the number of operating satellites.²⁵⁰ This blanket authorization will include any in-orbit spares for which the applicant seeks authorization as part of its system. Any such spares can be activated as required. Within ten days of activation, the licensee must certify to the Commission that the activation did not cause it to exceed the total number of operation satellites for which its

²³⁴ See, e.g., AirTouch Comments at 7-8; Ellipsat Comments at 46; TRW Comments at 156-157.

²³⁵ AirTouch Comments at 8; TRW Comments at 157; Ellipsat Comments at 46.

²³⁶ See TRW Comments at 156. See also Motorola Comments at 63.

²³⁷ Domestic Fixed-Satellite Transponder Sales, note 232, *supra*, at 1250-53.

²³⁸ See Qualcomm, Inc., Application for Blanket Authority to Construct and Operate a Network of 12/14 GHz Transmit/Receive Mobile and Transportable Earth Stations and a Hub Earth Station, 4 FCC Rcd 1543 (1989).

²³⁹ Final rules have been adopted establishing the NVNG mobile-satellite service, and three applications are pending. See NVNG MSS Order, note 48, *supra*.

²⁴⁰ See paras. 44-45, *supra*.

²⁴¹ There is also support in antitrust law and policy for examining potential competition for that purpose. See Implementation of Sections 3(n) and 332 of the Communications Act, Regulatory Treatment of Mobile Services, Amendment of Part 90 of the Commission's Rules To Facilitate Future Development of SMR Systems in the 800 MHz Frequency Band, Amendment of Parts 2 and 90 of the Commission's Rules To Provide for the Use of 200 Channels Outside the Designated Filing Areas in the 896-901 MHz and 935-940 MHz Band Allotted to the Specialized Mobile Radio Pool, GN

Docket No. 93-252, PR Docket No. 93-144, PR Docket No. 89-553, FCC 94-212, at paras. 69-70, (released Sept. 23, 1994).

²⁴² We emphasize that our decision with regard to the regulatory status of the provision of space segment capacity is taken pursuant to the Commission's authority under Section 332(c)(5). Therefore, our actions here should not be viewed as altering our decision in the CMRS Second Report and Order regarding individualized or customized service offerings made by CMRS providers to individual customers. As we explained in the CMRS Second Report and Order, individualized or customized offerings will be classified and regulated as CMRS, regardless of whether such offerings would be treated as common carriage under existing case law, if the service falls within the definition of CMRS. See CMRS Second Report and Order note 220, *supra*, at 1439 and n.130. We also explained that the public availability prong of the CMRS definition is met unless the service is used for a licensee's internal use or if Commission rules limit eligibility to specified user groups. *Id.* at 1441.

²⁴³ See CMRS Second Report and Order, note 220, *supra*, at 1475-90.

²⁴⁴ See 47 CFR 20.15.

²⁴⁵ See AirTouch Comments at 4-7. See also TRW Comments at 161-163.

²⁴⁶ See Ellipsat Comments at 46; AirTouch Comments at 5-6; Motorola Comments at 66-67.

²⁴⁷ Motorola Comments at 66-67.

²⁴⁸ LQP Comments at 99.

²⁴⁹ See, e.g., Motorola Comments at 67; TRW Comments at 161-162 (noting that global geostationary satellite systems, like Panamsat, also have found it necessary to form partnerships with foreign companies in order to raise foreign capital).

²⁵⁰ Technically identical satellites must have identical satellite antenna footprints and transmission parameters. They need not, however, have the identical physical structure or microelectronics.

system is authorized. Any spares or replacements that do not fall under the blanket authorization will need separate authorizations to build, launch and operate, but their terms will expire concurrently with the blanket authorization. As proposed in the Notice, the license will run from the date on which the first space station in the system begins transmissions and will be valid for a ten-year period.

183. Some applicants urge us to permit replacement satellites that are "functionally equivalent" to those authorized or have "the same particulars of operation," to enable them to more readily include evolutions in design into newer satellites. These are the same proposals and arguments we rejected when we adopted the blanket authorization standards for NVNG MSS satellites.²⁵¹ In the absence of arguments or evidence demonstrating that the NVNG MSS service is not analogous to the Big LEO service, we continue to believe our interests in assuring the continued compatibility of the subject systems with other users of the spectrum outweigh any convenience for licensees in a laxer standard. A modification application to upgrade satellite design will not be unduly burdensome and should not impede technical innovation.

184. We also deny the request of LQP and Constellation that a licensee be permitted to put "spare" satellites into service under their blanket license in order to enhance their systems. These parties would require only that there be no overall increase in effective isotropically radiated power (e.i.r.p.), pfd, or any other sharing criterion, and argue that this policy would allow licensees to increase path diversity, which can be a significant service improvement for CDMA systems. We are not convinced by LQP and Constellation that other operators would not be affected by the operation of facilities that have not been specifically analyzed and appropriately authorized. Accordingly, we affirm our requirement that any satellites that an applicant wishes to include in its system must be specified in its initial application or a modification application.

185. We proposed in the Notice that license terms will begin automatically with the first transmission from the first authorized satellite, and will continue for ten years.²⁵² All parties agree with the length of the license term. One party

proposes that a license term should commence only after commencement of actual service or within six months of launch, whichever occurs first. Apparently, the concern is that the license term will begin to run before a licensee has launched a sufficient number of satellites with which to begin commercial operations. This overlooks our general policy that, because all transmissions are capable of causing interference, satellite license terms in all satellite services begin when radio transmissions commence. We will not treat Big LEO operators differently by permitting them to engage in any transmissions, whether those transmissions are to test the system's functioning or to provide a fully implemented commercial service, without a valid operating license. Further, we do not believe that Big LEO operators will be unduly burdened if the license term for the system begins to run on the date of the first transmission. If fuel is left on the satellite after its license term has expired, we will entertain a request for special temporary authority to continue to operate if that location has not been assigned to a new system.²⁵³ Thus, we adopt our rule as proposed.

186. We also proposed a filing window for system replacement applications identical to the one implemented in the analogous NVNG MSS service. Specifically, we proposed that applications for the next generation Big LEO systems must be filed no earlier than three months prior to and no later than one month after the end of the seventh year of the existing license.²⁵⁴ Motorola, LQP and Constellation variously contend that some replacement applications could affect other licensees' rights and thus potentially affected licensees should be able to file replacement applications earlier. No party has explained, however, why our proposed rules fail to provide adequate opportunity for affected entities to respond to proposed replacement systems, thus protecting their rights. We will therefore adopt the filing window for replacement systems as proposed.

187. In the Notice, we stated that we intend to grant replacement applications if frequencies remain available for use by such systems, consistent with our

practice for other satellite services.²⁵⁵ Three applicants urge us to adopt an explicit replacement expectancy, with TRW proposing a specific provision that would provide such an expectancy upon a licensee's consistent regulatory compliance. The Commission, however, has historically rejected establishing an explicit replacement expectancy for space station systems.²⁵⁶ We have repeatedly noted circumstances such as intervening international agreements or changes in technology may affect our determination as to whether a replacement system would serve the public interest. We assure Big LEO licensees that given the enormous investment necessary to construct and operate a satellite system, we will consider replacement applications in this service similar to other satellite services, that is, we will grant authority to implement a next generation system unless extraordinary circumstances prevent us from doing so.

3. Implementation Milestones

188. As proposed in the Notice, we will adopt a set of satellite construction milestones modeled on those used in the NVNG MSS service. All parties agree that implementation milestones to monitor the progress of system implementation are advisable, and most parties approve of the essential elements of our proposed milestones, with certain minor clarifications and modifications, some of which we are adopting.

189. Each licensee will be required to adhere to a strict timetable for the system implementation. Failure to meet this timetable will render the authorization null and void. We will generally require each licensee to begin construction of its first two satellites within one year of the unconditional grant of its authorization, and complete construction of those first two satellites within four years of that grant. Construction for the remaining authorized operating satellites in the constellation must begin within three years of the initial authorization, and the entire authorized system must be operational within six years.²⁵⁷ While we do not intend to deviate from these requirements for commencing construction, we may authorize a different schedule if an applicant concretely demonstrates that its

²⁵¹ Notice, note 2, *supra*, at n. 134.

²⁵² See, e.g., Assignment of Orbital Locations to Space Stations in the Domestic Fixed-Satellite Service, 3 FCC Rcd 6972 (1988 Assignment Order), at n. 31.

²⁵³ Some applicants' suggestions for additional milestones are based on their mistaken belief that the Notice did not include a final system completion requirement.

²⁵⁴ See NVNG MSS Order, note 48, *supra*, at 8452.

²⁵⁵ This follows the one-step processing and licensing policy that has been used for satellites since 1980. See 1980 Assignment Order, 84 FCC 2d 584 (1981).

²⁵⁶ In the past, we have granted such requests when continued operations will not prevent a state-of-the-art satellite from taking its place. See, e.g., Hughes Communications Galaxy, Inc., 9 FCC Rcd 217 (1994); Hughes Communications Galaxy, Inc., 9 FCC Rcd 218 (1994); and American Telephone and Telegraph Co., 8 FCC Rcd 8741 (1993).

²⁵⁷ Proposed § 25.120(e).

proposed system's size and/or complexity warrants additional time because of the size or complexity of its proposed system.²⁵⁸ In every case, the licensee's individual milestone timetable will be set and become a condition of its authorization. Some parties propose that we consider granting extensions of time to a licensee that has launched at least part of its system. We will not adopt such a provision, which would suggest that we will not enforce strictly the system completion requirement. Incomplete systems will not justify the reservation of the orbit/spectrum resource from other potential users, and applicants should not anticipate that their authorization will require anything less than a complete commitment of those resources necessary to execute the full global system upon which their authorization is premised.

190. We also will not impose a separate deadline for construction of in-orbit spares. We will leave the determination of what is an appropriate timetable for building or launching in-orbit spares to each licensee. It is reasonable to believe that if the rest of the system is implemented in a timely fashion, any in-orbit spares will also be put into place on a timetable deemed prudent by the operator. Moreover, we do not wish to discourage applicants from proposing as many in-orbit spares for inclusion in their initial blanket authorizations as they deem appropriate.

191. Some of the parties ask us to forego the construction commencement milestone in favor of a timetable that would focus only on the initiation of commercial service. They primarily contend that our milestones are unfair to those systems that could begin to provide service in stages (and, presumably, finance construction of the last satellites from initial revenue streams). We are concerned, however, that such a timetable would prevent prompt identification and elimination of those applicants that are not, for whatever reason, committed to building a system expeditiously that is capable of providing global service.²⁵⁹ Most applicants fully support a global coverage requirement.²⁶⁰

²⁵⁸ See Notice, note 2, *supra* at 1136.

²⁵⁹ Any applicant whose financial capability would be so constrained by the proposed construction milestones likely will not meet our financial qualifications. The milestones and the financial requirements provide a balanced approach to determining the actual capability of the applicants to implement the system and service they propose.

²⁶⁰ See paras. 21-23, *supra*.

192. Several applicants suggest that we adopt a more detailed standard or a series of milestones to enable us to track implementation progress more closely. LQP argues that this could result in long undetected delays in progress. We do not believe interim milestones are necessary. The annual reporting requirements (further discussed below) and our ability to demand additional contract and construction information should enable us to respond promptly to any implementation failures.

193. Motorola suggests that we require a specific and significant portion of the ground segment to be constructed on the same timetable as the space segment.²⁶¹ Such a requirement, opposed by all other applicants, is undesirable. As noted, service provision in foreign countries will be subject to a particular country's authorization. We cannot require a licensee to meet an implementation milestone when its ability to do so is outside of its control. In any event, licensees that have launched enough satellites to provide service should have no difficulty constructing their corresponding earth segments.

4. Reporting Requirements

194. We will also generally follow the NVNG MSS rules for annual reporting requirements for this service, as proposed in the Notice and supported by most parties. Every licensee must provide an annual report fully describing the status of its construction, system loading and any outages or malfunctions that have occurred during the reporting period. These reports will be required on June 30 of each year.

195. Although several applicants argue that the information requested is either too burdensome or too proprietary in nature for dissemination, we believe this information is needed to allow us to evaluate whether, and to what extent, the spectrum is being used and to monitor construction progress. Licensees may request confidentiality for any portion of their report, pursuant to § 0.459 of the Commission's rules, 47 CFR 0.459. As proposed in the Notice, we will also require that each licensee to certify to us within ten days of the date of any milestone requirement that the milestone was met or to advise us that it was not.

5. Distress and Safety Communications

196. Although Big LEO applicants did not indicate that they plan to use their systems for extensive distress and safety

²⁶¹ Motorola would require a ground segment covering 75% of the world's population and 75% of the world's land area within six years of initial system authorization.

communications, we recognized in the Notice that because these systems have position determination capability,²⁶² they have the potential to complement existing search and rescue (SAR) and disaster response services. Further, although we recognize that Big LEO services cannot be used in lieu of distress beacons, such as satellite emergency position locator transmitters or emergency indicator radio beacons, that are required to be carried by international agreement or statute,²⁶³ Big LEO system operators have certain obligations relating to maritime distress communications under sections 321(b) and 359 of the Communications Act, 47 U.S.C. 321(b), 359.²⁶⁴ Other than these mandated requirements, we did not propose to require Big LEO systems to provide search and rescue or disaster response communications as a general service offering. We stated, however, that we expected that any satellite licensee that chose to offer emergency or safety communications services will coordinate its effort with the appropriate search and rescue organizations.²⁶⁵ These requirements were contained in proposed rule § 25.143(f).

197. Mr. Bernard Trudell (Trudell) states that in cases of emergency all MSS providers should be required to comply with standards and call routing that will ensure the safety and well being of the public.²⁶⁶ Additionally, Trudell states that most MSS providers

²⁶² See para. 104, *supra*.

²⁶³ Compulsory equipment carriage requirements are established in portions of the Commission's rules as well as by statute. See, e.g., 47 CFR 80.801, *et seq.*; Ch. IV, International Convention on the Safety of Life at Sea, 32 U.S.T. 47, T.I.A.S. 9700 (1974).

²⁶⁴ Specifically, Section 321 of the Communications Act, 47 U.S.C. § 321, requires, *inter alia*, that all radio stations including Government stations and foreign ship stations within U.S. territorial waters, give absolute priority to radio communications or signals relating to ships in distress. Section 359 of the Communications Act, 47 U.S.C. 359, requires, *inter alia*, that U.S. ships that encounter dangers to navigation such as, dangerous ice or winds whose force is 10 or above on the Beaufort scale must transmit such information to ships in the vicinity and authorities on land. Section 359 also prohibits ships or mobile stations from charging for transmitting messages related to dangers to navigation.

²⁶⁵ For example, the Interagency Committee on Search and Rescue (ICSAR) is composed of representatives from seven Federal Agencies, including the FCC, and has search and rescue responsibilities in the United States. Any satellite operator offering emergency services within the United States should coordinate the establishment of emergency services and procedures for its use with this organization. Similar procedures should be developed with all other domestic and international search and rescue organizations so that coordinated rescue operations can be quickly effected in the geographic area of concern.

²⁶⁶ Trudell Comments at 4.

indicated that they would provide distress and safety services in part as justification for license authority.²⁶⁷ Trudell concludes that the Commission should require MSS providers to address these issues. The U.S. Coast Guard (Coast Guard) states that it will depend increasingly on 9-1-1 type services and caller ID for its SAR operations and to prevent hoaxes. It requests, therefore, that Big LEO systems be required to provide standard location and caller ID information.²⁶⁸ Several commenters expressed similar opinions stating, generally, that the Commission should require that Big LEO systems be required to provide standardized information that would identify the calling party, give the calling party's location and route emergency messages to an appropriate emergency organization.²⁶⁹ The Interagency Committee for Search and Rescue²⁷⁰ (ICSAR) noted all proposed Big LEO providers had stated that their systems will be available for distress and safety communications and recommends that the Commission develop requirements to ensure that MSS systems meet public safety needs.²⁷¹ ICSAR also recommends that these issues—standardized location, caller ID and routing of emergency or distress calls—be addressed in a separate rule making.²⁷² The National Emergency Number Association states that the Commission should adopt a rule to require that licensees of Big LEO systems cooperate in the provision of National Security and Emergency Preparedness (NS/EP) communications.²⁷³

198. LQP states that it supports the Commission's proposed rule regarding distress and safety communications and in principle its obligation regarding distress communications, but opposes having to provide search and rescue or disaster response communications as a

general service offering.²⁷⁴ LQP stated that the Commission should follow its decision reached in the Little LEO proceeding.²⁷⁵ Motorola states that it does not object to the proposed rule and notes that consistent with the Commission's decision in the Little LEO proceeding, the Commission did not intend to require that Big LEO MSS licensees show specific means of interconnection to route distress calls and did not intend for big LEO MSS stations to be used in lieu of emergency beacons required to be carried by international agreement or statute.²⁷⁶ Motorola strongly opposes the imposition of a specific technical model for the 9-1-1 interconnection and location information delivery.²⁷⁷

199. Many of the Big LEO applicants acknowledge that they may carry distress and safety or disaster response communications. They argue that this would be, however, no different than the capability of cellular radios today or future personal communications services that may be used in the event of a distress or an emergency. In the Notice, we reminded licensees of their obligations under the Communications Act regarding distress communications and noted the potential for such systems to complement existing services, but, also recognized that Big LEO systems are not intended to replace existing international safety services. Further, the Commission has begun to examine matters related to enhanced 9-1-1 capability including position locations in PCS, cellular and other mobile services in a recently initiated rule making.²⁷⁸ We are, therefore, denying commenters requests that the Commission require caller ID, standardized position information and automatic routing for distress and safety communications or disaster response communications. We will address those issues in our rulemaking proceeding on enhanced 9-1-1 capability.²⁷⁹ and we will adopt section 25.143(f) substantially as proposed.

200. We also noted, however, that we expected any satellite licensee that chose to offer emergency or safety communications to coordinate with appropriate SAR organizations.²⁸⁰ No

commenters opposed this suggestion and we are adding it to the proposed rule.

201. Comsat states that because of the critical nature of distress and safety communications to the maritime community and the extensive international effort that is underway to implement the Global Maritime Distress and Safety System (GMDSS),²⁸¹ the Commission should determine the extent to which applicants for Big LEO systems will provide distress and safety communications and participate in the GMDSS.²⁸² Mobile Datacom requests clarification of the proposed requirement for position determination capability for Big LEO systems related to distress communications.²⁸³ Specifically, it requests that the Commission clarify whether Big LEO systems will be permitted to arrange for radio determination satellite service (RDSS) from companies such as Mobile Datacom.²⁸⁴

202. As we noted in paragraph 86 of the Notice, Big LEO systems may not be used in lieu of emergency beacons required to be carried by statute or treaty. In response to Comsat's request, we note that Big LEO systems cannot now be used to comply with the requirements of the GMDSS. The requirements for GMDSS equipment and the approval process are contained in §§ 80.1101 and 80.1103, respectively, of the Commission's Rules.²⁸⁵ There are, however, no restrictions prohibiting any Big LEO system from carrying distress and safety communications on an ancillary basis. Finally, in response to Mobile Datacom's request for clarification of whether position determination information can be supplied by an RDSS licensee, we proposed that Big LEO systems be capable of determining the position of a user transceiver, but did not specify how licensees have to derive the

²⁸¹ Certain U.S. ships are required to carry radio equipment. Carriage requirements are established by statute, treaty and in the Commission's Rules. See, Sections 351 through 386 of the Communications Act of 1934, 47 U.S.C. 351-386; Amendments to the 1974 SOLAS Convention concerning Radiocommunications for the Global Maritime Distress and Safety System, Ch. IV, International Convention for the Safety of Life at Sea, 32 U.S.T. 47, T.I.A.S. 9700 (1974); and subparts Q, R, S, T and W of the Commission's Rules, 47 CFR subparts Q, R, S, T and W.

²⁸² COMSAT Comments at 14.

²⁸³ Mobile Datacom apparently believes that the Commission proposed a requirement for position information because of the requirements in the Communications Act related to distress and safety communications. The proposed requirement for position information is, however, related to interference protection for the radio astronomy service.

²⁸⁴ Mobile Datacom Comments at 14.

²⁸⁵ See 47 CFR 80.1101 and 80.1103.

²⁶⁷ *Id.* at 2.

²⁶⁸ Coast Guard Comments at 1.

²⁶⁹ See, e.g., Comments of the National Association of EMS Physicians at 1; Comments of the Texas Advisory Commission on State Emergency Communications at 2; Reply Comments at 2; Reply Comments of the National Institute for Urban Search and Rescue at 2 and 3; and Reply Comments of the National Emergency Number Association at 3.

²⁷⁰ ICSAR is made up of representatives from seven Federal agencies including the Federal Communications Commission. This Committee has search and rescue responsibilities under the United States National Search and Rescue Plan.

²⁷¹ ICSAR Reply Comments at 2.

²⁷² *Id.* See also Summary of Pertinent Comments attached to ICSAR's Reply comments for a summary of issues.

²⁷³ National Communications System Comments at 2.

²⁷⁴ LQP Comments at 116, Reply Comments at 94. See also Comments of TRW at 193 and Constellation Reply Comments at 54.

²⁷⁵ See NVNG MSS Order, note 48, *supra*, at 8458.

²⁷⁶ Motorola Comments at 68.

²⁷⁷ See Motorola Reply Comments at 54-55.

²⁷⁸ See Second Report and Order, Gen. Docket No. 90-314, 8 FCC Rcd 7700 (1993), at para. 139. Notice of Proposed Rulemaking in CC Docket No. 94-102, FCC 94-237 (adopted September 19, 1994) (Enhanced 9-1-1 Notice).

²⁷⁹ *Id.*

²⁸⁰ See Notice, note 2, *supra*, at para. 86.

position information. We believe that decision is best left to the system provider. In conclusion, we are clarifying the language in Section 25.143(f) regarding a licensee's responsibility to protect distress communications and to make clear that although it is the licensee's responsibility to determine position information of transceivers that we are not prescribing how this must be accomplished.²⁸⁶

6. Other Requirements

203. As proposed in the Notice and without objection from any interested parties, we will adopt a specific rule that prohibits any licensee from selling a bare license for a profit.²⁸⁷ This provision is critical to discourage speculators and to prevent unjust enrichment of those who do not implement their proposed systems. This provision is not intended to prevent the infusion of capital by either debt or equity financing, but any such transaction will be monitored to ensure that it does not constitute an evasion of our anti-trafficking provision.²⁸⁸ This rule, however, will not apply if auctions are implemented. It is not intended to prohibit applicants who obtain licenses by competitive bidding from negotiating post-auction resale transactions.²⁸⁹

204. In the Notice, we also requested comment on whether any additional public service requirements should be imposed on Big LEO licensees. Those favoring such a requirement were instructed to provide an analysis of the utility of Big LEO systems to provide these services and an analysis of the existing systems used to provide these services, including their costs. Several commenters recognize the important potential of MSS for educational and public service uses.²⁹⁰ The Corporation for Public Broadcasting (CPB), for

example, discusses the promise of Big LEO systems to provide educational services to those in remote areas and to allow users throughout the world to take "electronic field trips." CPB urges that to ensure public access to these services, the Commission should require licensees to make their systems available to educators and students at preferential rates. It further argues that even if the Commission does not mandate a rate preference in this proceeding, it should consider imposing such a requirement in a variety of other services.

205. None of the LEO applicants support a mandatory service or preferential rate requirement. Ellipsat notes that MSS systems are unsuitable for providing the envisioned services. According to Ellipsat, Big LEO systems have inherently low data rates and cannot supply the high bandwidth required to support the contemplated educational services without drastically absorbing MSS capacity.²⁹¹ Motorola further argues that requiring Big LEO operators to dedicate a portion of their capacity to non-revenue generating activities would unduly constrain MSS systems and would handicap them in their ability to compete with other wireless services and with foreign MSS providers.²⁹² TRW and Motorola argue that none of the proponents of such a requirement have provided a detailed analysis of existing systems and costs, as required. In the absence of this analysis, they conclude that there is no basis upon which the Commission could impose public service requirements.²⁹³

206. In light of the service hardships alleged by the system proponents, we believe that a strong demonstration of need and feasibility is required prior to adopting specific public service requirements for Big LEO systems. We agree with Motorola and TRW that there is not sufficient information in this record to support such requirements at this time.

207. The National Communication Systems (NCS) believes that Big LEO licensees should be required to cooperate in providing national security/emergency preparedness services (NS/EP) and that any discussion of technical requirements for Big LEO systems should address survivable and endurable communications. NCS does not propose specific rules but instead requests that the Commission consider these issues in

its report and order. We note that the Commission has chartered a federal advisory committee, the Network Reliability Council (NRC), to consider whether and to what extent essential services, including emergency 9-1-1 service, health, safety and other emergency communications services, are compromised during network outages.²⁹⁴ The NRC agreed that national security would be included within the topic of emergency services pursuant to its charter.²⁹⁵ We further note that on September 19, 1994 the Commission adopted a Notice of Inquiry requesting comment on the extent to which mobile radio services, including LEO MSS, should be required to meet compatibility requirements with 9-1-1 services.²⁹⁶ The Commission will consider issues regarding the availability of reliable emergency services in these proceedings.

F. Mobile Earth Station Licensing

208. In the Notice, the Commission proposed a licensing procedure for the earth station segment of the satellite system. We indicated that the ground segment will be comprised of central fixed-earth "gateway" stations operating in the feeder link frequency bands, mobile user transceiver units operating in the mobile satellite frequency bands, and tracking, telemetry and command (TT&C) earth stations operating in either the feeder link, mobile service or space bands. We proposed to license gateway and TT&C stations as fixed-satellite earth stations under Part 25. In addition, we proposed a blanket licensing approach for the user transceivers. Under this approach, a service vendor, which may or may not be the space station licensee, would hold the authorization and would be responsible for a specified number of technically identical transceiver units. Blanket applications would include a demonstration that the operation of transceivers will not interfere with other authorized users. License term would be ten years from date of grant and requests for additional units would be treated as minor license modifications.²⁹⁷ In addition, we proposed that an end user be required to obtain authorization of the space station operator before the user may transmit to that system and, that once access authority is obtained, the operations of that transceiver would fall under the blanket earth station

²⁸⁶ TRW states that Big LEO system licensees operating on U.S. territorial waters are required to give priority to distress communications. See TRW Comments at 194. Motorola stated that the requirements of proposed rule section 25.143(f) would apply only for MSS stations used to comply with an international agreement or statute. See Motorola Comments at 68 and Reply Comments at 58.

²⁸⁷ See Notice, note 2, *supra*, at para. 84.

²⁸⁸ Motorola is concerned that one applicant might prop up another simply to guarantee access to the maximum possible spectrum by CDMA operations. This concern can be appropriately addressed as a real party in interest question if the issue arises. Motorola's speculation about a possible future occurrence does not warrant further consideration or action at this time.

²⁸⁹ See para. 96, *supra*.

²⁹⁰ See Joint Comments of the Association of America's Public Television Stations and Public Broadcasting Service at 2; Comments of National Public Radio at 2; Comments of the Corporation for Public Broadcasting at 2-3.

²⁹¹ Ellipsat Reply Comments at 36.

²⁹² Motorola Reply Comments at 58.

²⁹³ TRW Reply Comments at 95; Motorola Reply Comments at 59.

²⁹⁴ See 59 FR 31246 (June 17, 1994).

²⁹⁵ See Minutes of the Network Reliability Council Meeting, July 6, 1994.

²⁹⁶ See Enhanced 9-1-1 Notice, note 278, *supra*.

²⁹⁷ See proposed §§ 25.115(d), 25.130(b), 25.133(b), 25.136, and 25.213.

license of the space station operator or the vendor. Our proposed rules would not preclude bilateral, government-to-government discussions regarding international roaming arrangements. They would also permit roaming into the United States by users having technically compatible transceivers designed to operate with U.S. licensed systems and once authorized to access a U.S. system, a roaming user's transceiver operations would fall within the blanket license of the satellite operator or the service vendor. The regulatory treatment of earth station licensees providing commercial mobile radio services would be as common carriers.²⁹⁸

209. The comments received in response to our proposals were favorable²⁹⁹ and thus we will adopt the rules substantially as proposed. Constellation and Motorola, suggested several minor clarifications to the final rules and we will adopt these suggestions.³⁰⁰ We will not, however, adopt at this time a complete revision of § 25.115, Applications for Earth Station Authorizations, as suggested by Motorola. If experience with these licensing procedures indicates that this rule, as it applies to the Big LEO service, needs to be amended, we will consider doing so at a later time.³⁰¹

G. International Issues

1. Coordination

210. As we stated in the *Notice*, non-geostationary mobile satellites, in their orbits around the world, will pass over all countries. Because these systems provide global coverage, each will require global coordination. As with all satellite services, each Big LEO applicant and licensee will be required to provide the Commission with all

information necessary for advance publication, coordination, and notification of frequency assignments pursuant to the international Radio Regulations and for consultation pursuant to Article 14 of the INTELSAT Agreement and Article 8 of the INMARSATQ Convention.³⁰²

211. Furthermore, the ITU (WARC-92) has adopted Resolution 46 to govern the coordination of mobile satellite systems in this frequency band. This procedure assures that worldwide coordination is accomplished in a manner that requires both the administration proposing the system and the administration that is affected by the planned system to cooperate in resolving coordination difficulties.³⁰³ We agree with LQP and TRW that successful coordination under Resolution 46 is not a prerequisite for licensing, launching and operating these systems.³⁰⁴ We note, however, that until they successfully complete coordination they cannot cause harmful interference to other primary services operating in these frequency bands, nor can they claim protection. We, however, will follow the coordination procedures prescribed by the ITU and will work with the global community to promote mobile satellite services through the development of sharing techniques and the exploration of other technical issues.³⁰⁵ Moreover, as we stated in our *Notice*, we will continue to require our licensees to meet both their international obligations and any national requirements imposed by other licensing administrations regarding operations within their territories.³⁰⁶ We continue to believe that decisions relating to the implementation of Big LEO service within a country's territory will remain within that country's jurisdiction and control.

212. In the Joint Proposal, the parties state that the Commission should establish a global band segmentation

sharing plan different than the spectrum domestic spectrum plan. Specifically, the parties state that outside of North America, CDMA MSS licensees should be limited to operating their systems over 9.75 MHz of spectrum at 1610–1619.75 MHz and that the TDMA MSS licensee should be limited to operating its system over 6.75 MHz of spectrum at 1619.75–1626.5 MHz. According to the Joint Proposal, all U.S. international coordination activity should be based either on the domestic band segmentation plan we are adopting today, or, outside North America, on the proposed global plan. In addition, the parties to the Joint Proposal request the Commission to prohibit MSS licensees from seeking or accepting an exclusive assignment in the 1.6 GHz band that would preclude other MSS systems from providing service in any foreign country. LQP objects to these proposals, stating that they could be construed as preempting other nations' sovereign decisions.

213. We will not impose a global band sharing plan on U.S. licensees at this time. The four parties to the Joint Proposal have not given any justification for doing so, and one applicant specifically opposes the imposition of such a plan. We have no evidence on the record before us of imminent coordination conflicts among the applicants beyond U.S. borders. Neither is it clear at present that operating constraints designed to accommodate our domestic licensees will provide either necessary or effective in other jurisdictions. Perhaps most importantly, we do not believe it is appropriate for the United States to impose global band sharing restrictions, that directly impact the ability of other countries to access these systems as they see fit, absent indications from these countries regarding their planned use of these frequency bands. Accordingly, we will not mandate a band sharing scheme to be followed beyond U.S. borders.

2. EC Concerns

214. The Delegation of the European Commission (EC) is concerned that the proposals in the *Notice* are based purely upon domestic U.S. interests despite the global nature of the proposed systems and services. Specifically, the EC alleges that the *Notice*: (1) Fails to take into account proposed non-U.S. or future systems, their access to the U.S. market and use of spectrum in the U.S.; (2) indicates an intention to extend Section 310 restrictions to the proposed systems inhibiting potential European investment; (3) advances trade and industrial policy arguments underlining the importance of the proposed systems

²⁹⁸ See *Notice*, note 2, *supra*, at paras. 88–90.

²⁹⁹ See e.g., Comments of TRW, Inc. and Comsat Corporation.

³⁰⁰ These include adding to § 25.115(d)(3) the words "if not already licensed under this subpart" to clarify that gateway, TT&C and Network Control earth stations can be licensed under other procedures; adding to § 25.120(e) language relating to renewals and cut-off periods; clarifying § 25.136(b) to distinguish between authorization of a particular unit and use of the system; clarifying § 25.130(b) to recognize specific procedures for NVNG MSS transceiver units; and clarifying § 25.136(a) to include cockpit communications.

³⁰¹ Other than § 25.213(b), we will not adopt specific technical requirements for Big LEO transceivers at this time. These requirements are being considered in domestic and international fora and will be codified, if necessary, when earth station applications have been filed. We note that user transceivers will be required to comply with all applicable domestic and international standards governing their operations, including the radiofrequency radiation levels recommended by the American National Standards Institute (ANSI). See 47 CFR 1.1.1307(b).

³⁰² See 47 CFR 25.111(b).

³⁰³ ITU Resolution No. 46 (WARC-92, Res. 46) states that "[a]ffected administrations, as well as the administration seeking coordination, shall make all possible mutual efforts to overcome the difficulties in a manner acceptable to the parties concerned."

³⁰⁴ See LQP Comments at 117 and TRW Comments at 196. However, as we stated in our *Notice*, if a licensee has not completed coordination prior to launch, it must operate on a non-interference basis with respect to authorized users. See International Radio Regulation (RR) 342.

³⁰⁵ Indeed, the United States participates actively in ITU-R Study Groups 2, 4 and 8, all of which are examining issues that address sharing and coordination of MSS systems.

³⁰⁶ To the extent a licensee does not desire to meet a national requirement of a licensing administration within its territory, it may refrain from providing service to that particular administration. See TRW Comments at 196.

to the U.S. economy and U.S. leadership; (4) proposes unilateral solutions to orbit, frequency and coverage issues that are global in nature; (5) fails to discuss requirements to effect the satisfactory application of Resolutions 46 and 70 of WARC-92; and (6) fails to address issues related to the 2 GHz band. The EC states that the regulatory approach that we proposed raises global regulatory and trade issues and that the U.S. should not proceed with its domestic licensing process until it consults with foreign administrations.

215. We agree that the proposed systems have international ramifications. Many of these are or will be addressed in appropriate international fora and in ITU satellite coordination activities. Others may be appropriate for bilateral consultations of the nature sought by the EC. However, we do not agree that the U.S. domestic licensing process must await final resolution of these issues.

216. We find delaying the U.S. licensing process is unacceptable. Delaying our regulatory process would delay the improved communications and economic growth that Big LEO services will create. These benefits would be developed both for citizens of the United States and all other countries that may choose to participate in rendering these services. Such a delay would also harm developing countries by limiting their opportunity to improve their communications infrastructure. The uncertainty associated with delay could also adversely impact the viability of the proposed systems in the financial markets and the ability of the applicants to attract additional investors. U.S. applicants have already invested significant resources in research and development, satellite design, marketing and participation in ITU meetings and conferences. Even if the United States were to delay its licensing process, it is unclear how the EC proposes to resolve the issues it has identified, resulting in open-ended delay. Further, the EC's criticism of our proposals is not accompanied by recommendations. Indeed, it is not clear that the EC is yet in a position to speak authoritatively for its member countries. We do not believe that an indefinite delay in the U.S. regulatory process under such circumstances is warranted.

217. It is also clear that we do not need to delay the domestic licensing proceeding until international agreements are finalized. Regardless of our domestic decisions, each administration will retain the right to license gateway earth stations and mobile earth stations needed to provide service. In addition, U.S. licensees will

be subject to ITU recommendations and coordination procedures. Further, the United States is working with the ITU Radio Communications sector to develop standards applicable to LEO systems. However, we seek to leave system design and service offerings to the licensees as much as possible in order to encourage technological innovation, to promote rapid implementation of Big LEO services and to maximize consumer choice. Therefore it is in the interest of the United States government and U.S. system operators to seek globally acceptable standards and we will strive to do so. We disagree with the EC that we are not taking into account projects envisaged outside the United States and future global systems that might use the spectrum. In the Notice, we noted that all U.S. satellite systems are subject to ITU coordination procedures.³⁰⁷ Thus, U.S.-licensed operators are required to coordinate their proposed systems with countries whose existing services, or whose possible future MSS systems, might be affected. Regardless of the spectrum licensing arrangement within the United States, we would work with affected administrations to resolve any spectrum sharing or technical issues. Further, we are not precluding access to the U.S. market. We believe, however, that subject is more appropriately handled through bilateral discussions (as the EC contemplates) and the ITU coordination process.

218. In addition, we are not seeking to extend § 310 restrictions on the proposed systems with the intention of inhibiting European investment. In fact, § 310(b) restrictions will not necessarily apply to the systems because we are not requiring them to operate on a common carrier basis.³⁰⁸ This policy will permit investment by European industry and other non-government interests. Some of the proposed systems already anticipate significant non-U.S. investment and continue to seek additional such participation. We recognize multinational participation as an integral part of developing a global system.

219. With regard to the EC's concern that we are advancing trade and industrial policy arguments by moving ahead with the proposed systems, we note that a report prepared by PKMG Peat Marwick on behalf of the European Commission suggests that (with regard to Europe), "the immediate priority is international trade and policy

issues;"³⁰⁹ the very issues the EC accuses the United States of advancing. Notwithstanding the EC's views, the United States has every right under established ITU procedures to move forward with licensing systems that are necessary to satisfy domestic demand for new communication services. Other administrations have the right to decide whether these or any other non-U.S. licensed systems will operate in their countries and whether to participate in the provision of services. Participation in providing these MSS services will give their industries the opportunity to share in the global economic benefits we believe these systems will bring.

220. The EC also argues that the Notice proposes unilateral solutions to orbit, frequency and coverage issues that have global implications. Further, it contends that the Notice fails to discuss requirements necessary to effect the application of ITU Resolution Nos. 46 and 70.

221. With regard to orbit considerations³¹⁰ and the use of 1.6/2.4 GHz frequencies, we note that as a matter of course the United States engages in good faith negotiations with respect to whatever non-U.S. systems have been filed with the ITU at the time U.S. systems are ready to begin coordination.³¹¹ Consequently, the use of the orbits and of frequencies by U.S.-licensed systems will be subject to the outcome of the ITU coordination process. The worldwide coverage conditions proposed in the Notice³¹² result from our desire that these systems be capable of providing coverage to all areas of the world. This could further U.S. participation in the global information infrastructure and potentially benefit developing countries. Again, however, whether U.S.-licensed systems provide services outside the United States would be subject to the agreement of and authorization by other administrations.

222. With regard to the application of Resolutions No. 46 and 70, we note that Resolution No. 46 relates to "interim" procedures for the coordination and notification of non-geostationary

³⁰⁹ See "Satellite Personal Communications and their Consequences for European Telecommunications Trade and Industry," KPMG Peat Marwick, at 4, *emphasis added*.

³¹⁰ We assume here that the EC refers to non-geostationary vs. geostationary orbits.

³¹¹ We note that the following administrations have proposed MSS systems in the 1.6/2.4 GHz bands that have been advance published, coordinated or notified with the ITU: France (2 systems); Germany; INMARSAT; Russian Federation (2 systems); Tonga (4 systems); and the United States (2 systems).

³¹² Notice, note 2, *supra*, at para. 23.

³⁰⁷ Notice, note 2, *supra*, at para. 91.

³⁰⁸ See paras. 171-181, *supra*.

satellite networks. As an interim procedure it is subject to further development and will likely evolve. Nevertheless, U.S.-licensed systems will be subject to whatever coordination procedures are in effect at the time, including Resolution 46 or its successor. In the Notice we stated explicitly that we would follow coordination procedures prescribed by the ITU, and in fact we reference Resolution No. 46 and its applicability to Big LEO systems.³¹³ We also note that each Big LEO applicant will be required to provide us all information necessary to advance publish, notify and coordinate their proposed systems. Implicitly, all applicants will be required to assist us in effecting whatever coordination procedures the ITU requires.³¹⁴

223. On the other hand, Resolution 70 relates to "establishment" of standards for low-orbit satellite systems and has no requirements per se. It seeks to begin the process of establishing standards for low-orbit satellite systems and invites the appropriate ITU organs to begin studies in this regard. The United States participates in these ITU activities and will continue to do so. However, as Resolution No. 70 has not resulted in any specific ITU recommendations, it is not possible to address "requirements" in a domestic licensing proceeding.

224. Finally, the EC contends that the Notice fails to address issues related to access to 2 GHz MSS bands³¹⁵ and the relation between access to those bands and the bands under consideration here. First, we note that the 2 GHz bands have not yet been allocated for MSS in the United States. Therefore, these bands will be the subject of another proceeding. In such a proceeding, all matters relevant to the use of 2 GHz bands would be discussed. Nevertheless, we note the increasing demand for access to MSS spectrum worldwide and the potential value of the 2 GHz bands for the provision of MSS. We are also aware of proposals to use the 2 GHz bands for services similar and competitive to those envisaged by the Big LEO applicants.³¹⁶ The United

States would like to facilitate access to these bands, as does the EC. We believe that WRC-95 and future multi-lateral consultations would present the appropriate fora to discuss access to and use of 2 GHz MSS bands.

IV. Final Regulatory Flexibility Analysis

225. *Need for Rules and Objective.* We have codified proposed rules that will permit Big LEO systems to be licensed. Our objectives have been to promote efficiency and innovation in the licensing and use of the electromagnetic spectrum, to develop competitive and innovative communications systems, and to promote effective and adaptive regulations.

226. *Issues Raised by the Public in Response to the Initial Analysis.* No comments were received specifically in response to the Initial Regulatory Flexibility Analysis. We have, however, taken into account all issues raised by the public in response to the proposed rules. In certain instances, we have eliminated or modified our proposed rules in response to those comments.

227. *Alternatives that would Lessen Impact.* The minimal regulatory burden that we have imposed is necessary in order to carry out our duties under the Communications Act and other Federal statutes. We will continue to examine these requirements in an effort to eliminate unnecessary regulations and to minimize significant economic impact on small businesses.

V. Conclusion and Ordering Clause

228. By our action today, we are adopting regulations that will allow the licensing of competitive voice and data Big LEO systems. This service has the potential to provide the United States public with a wide range of needed mobile voice services and to help stimulate the domestic economy as these multi-billion dollar systems are implemented in the United States and throughout the world.

229. Accordingly, *It Is Ordered* that Parts 25 and 94 of the Commission's rules are amended as specified in Appendix B, effective November 21, 1994.

230. *It Is Further Ordered* that the applicants will be required to file conforming amendments and all necessary fees no later than November 16, 1994 for continued consideration in this processing group.

List of Subjects

47 CFR Part 25

Communications common carriers, Reporting and recordkeeping requirements, Satellites

47 CFR Part 94

Communications equipment, Radio, Reporting and recordkeeping requirements

For the reasons set forth in the preamble, Title 47, Parts 25 and 94, of the Code of Federal Regulations, is amended as set forth below.

Title 47 of the Code of Federal Regulations, Parts 25 and 94, are amended as follows:

PART 25—[AMENDED]

1–2. The authority citation for Part 25 continues to read as follows:

Authority: Secs. 25.101 to 25.601 issued under Sec. 4, 48 Stat. 1066, as amended; 47 U.S.C. 154. Interprets or apply secs. 101–104, 76 Stat. 419–427; 47 U.S.C. 701–744; 47 U.S.C. 554.

3. Section 25.114 is amended by revising paragraphs (c)(6), (c)(18), and (c)(26), and adding new paragraphs (c)(28) and (d), to read as follows:

§ 25.114 Applications for space station authorizations.

- (c) * * *
- (6)(i) For geostationary satellite orbit satellites, orbital location, or locations if alternatives are proposed, requested for the satellite, the factors which support such an orbital assignment, the range of orbital locations from which adequate service can be provided and the basis for determining that range of orbital locations, and a detailed explanation of all factors that would limit the orbital arc over which the satellite could adequately serve its expected users.
- (ii) For non-geostationary satellite orbit satellites, the number of space stations and applicable information relating to the number of orbital planes, the inclination of the orbital plane(s), the orbital period, the apogee, the perigee, the argument(s) of perigee, active service arc(s), and right ascension of the ascending node(s).
- (iii) For 1.6/2.4 GHz Mobile-Satellite Service space stations, the feeder link frequencies requested for the satellite, together with the demonstration required by §§ 25.203 (j) and (k).

(18) Detailed information demonstrating the financial qualifications of the applicant to construct and launch the proposed satellites. Applications for domestic fixed-satellite systems and mobile-satellite systems shall provide the financial information required by § 25.140(b)–(e), § 25.142(a)(4), or § 25.143(b)(3), as appropriate. Applications for international satellite systems authorized pursuant to

³¹³ Notice, note 2, *supra*, at para. 92 and n. 149.

³¹⁴ This requirement applies to all FCC-licensed satellite systems and is codified in the FCC rules. See 47 CFR 25.111(b).

³¹⁵ The "2 GHz" MSS bands were allocated at WARC-92 as follows: 1970–1980 MHz and 2160–2170 MHz: (Regions 1 and 3)—Fixed, Mobile; (Region 2)—Fixed, Mobile, Mobile-Satellite*. 1980–2010 MHz and 2170–2200 MHz: (Regions 1, 2 and 3)—Fixed, Mobile, Mobile-Satellite*. (*=These MSS allocations are available for use after Jan. 1, 2005, except in the U.S., when they will be available after Jan. 1, 1996.)

³¹⁶ For example, the FCC has received two petitions (names) to provide MSS services in this range. In addition, spectrum in this range has been identified for a satellite component of FLMPST.

Establishing of Satellite Systems Providing International Communications, 50 FR 42266 (October 18, 1985), 101 FCC 2d 1046 (1985), *recon.* 61 RR 2d 649 (1986), *further recon.* 1 FCC Rcd 439 (1986), shall provide the information required by that decision.

(26) Applications for authorizations in the Mobile-Satellite Service in the 1545-1559/1646.5-1660.5 MHz frequency bands shall also provide all information necessary to comply with the policies and procedures set forth in Rules and Policies Pertaining to the Use of Radio Frequencies in a Land Mobile Satellite Service, 52 FR 4017 (Feb. 9, 1987), 2 FCC Rcd 485 (1987).

(28) Applications for authorizations in the 1.6/2.4 GHz Mobile-Satellite Service shall also provide all information specified in § 25.143.

(d) Applicants requesting authority to construct and/or launch a system comprised of technically identical, non-geostationary satellite orbit mobile-satellite service space stations may file a single "blanket" application containing the information specified in paragraph (c) of this section for each representative space station.

4. Section 25.115 is amended by revising paragraph (d) to read as follows:

§ 25.115 Applications for earth station authorizations.

(d) User transceivers in the NVNG and 1.6/2.4 GHz Mobile-Satellite Service need not be individually licensed. Service vendors may file blanket applications for transceiver units using FCC Form 493 and specifying the number of units to be covered by the blanket license. Each application for a blanket license under this section shall include the following:

(1) A general narrative section describing the applicant and the overall system operation,

(2) A Form 430 (Licensee Qualification Report), if not already on file in conjunction with other facilities licensed under this subpart,

(3) A Form 493 for each representative type of user transceiver terminal unit,

(4) A designation of a point of contact where records of individual users will be maintained.

In addition, applicants in the NVNG MSS service shall provide the information described in § 25.135.

Applicants in the 1.6/2.4 GHz Mobile-Satellite Service shall demonstrate that the stations comply with the technical requirements specified in § 25.213.

5. Section 25.120 is amended by revising paragraphs (d) and (e) to read as follows:

§ 25.120 License term and renewals.

(d) *Space stations.*

(1) For geostationary satellite orbit satellites, the license term will begin at 3 a.m. EST on the date the licensee certifies to the Commission that the satellite has been successfully placed into orbit and that the operations of the satellite fully conform to the terms and conditions of the space station radio authorization.

(2) For non-geostationary satellite orbit satellites, the license term will begin at 3 a.m. EST on the date that the licensee certifies to the Commission that its initial space station has been successfully placed into orbit and that the operations of that satellite fully conform to the terms and conditions of the space station system authorization. All space stations launched and brought into service during the ten-year license term shall operate pursuant to the system authorization, and the operating authority for all space stations will terminate upon the expiration of the system license.

(e) *Renewal of licenses.* Applications for renewals of earth station licenses must be submitted on FCC Form 405 (Application for Renewal of Radio Station License in Specified Services) no earlier than 90 days, and no later than 30 days, before the expiration date of the license. Applications for space station system replacement authorization for non-geostationary orbit satellites shall be filed no earlier than 90 days, and no later than 30 days, prior to the end of the seventh year of the existing license term.

6. Section 25.130 is amended by revising paragraph (b) to read as follows:

§ 25.130 Filing requirements for transmitting earth stations.

(b) A frequency coordination analysis in accordance with § 25.203 shall be provided for earth stations transmitting in the frequency bands shared with equal rights between terrestrial and space services, except that applications for user transceiver units associated with the NVNG mobile-satellite service shall instead provide the information required by § 25.135 and applications for user transceiver units associated with the 1.6/2.4 GHz Mobile-Satellite Service shall demonstrate that user transceiver operations comply with the requirements set forth in § 25.213.

7. Section 25.133 is amended by revising paragraph (b) to read as follows:

§ 25.133 period of construction; certification of commencement of operation.

(b) Each license for a transmitting earth station included in this part shall also specify as a condition therein that upon the completion of construction, each licensee must file with the Commission a certification containing the following information: The name of the licensee; file number of the application; call sign of the antenna; date of the license; a certification that the facility as authorized has been completed and that each antenna facility has been tested and is within 2 dB of the pattern specified in § 25.209, § 25.135 (NVNG MSS earth stations), or § 25.213 (1.6/2.4 GHz Mobile-Satellite Service earth stations); the date on which the station became operational; and a statement that the station will remain operational during the license period unless the license is submitted for cancellation. For stations authorized under § 25.115(c) of this part (Large Networks of Small Antennas operating in the 12/14 GHz bands) and § 25.115(d) of this part (User Transceivers in the Mobile-Satellite Service), a certificate must be filed when the network is put into operation.

8. A new § 25.136 is added to read as follows:

§ 25.136 Operating provisions for earth station networks in the 1.6/2.4 GHz mobile-satellite service.

In addition to the technical requirements specified in § 25.213, earth stations operating in the 1.6/2.4 GHz Mobile-Satellite Service are subject to the following operating conditions:

(a) User transceiver units associated with the 1.6/2.4 GHz Mobile-Satellite service may not be operated on civil aircraft unless the earth station has a direct physical connection to the aircraft Cabin Communication system.

(b) User transceiver units in this service are authorized to communicate with and through U.S. authorized space stations only. No person shall transmit to a space station unless the specific transmission is first authorized by the space station licensee or by a service vendor authorized by that licensee.

(c) Any user transceiver unit associated with this service will be deemed, when communicating with a particular 1.6/2.4 GHz Mobile-Satellite Service system pursuant to paragraph (b) of this section, to be temporarily associated with and licensed to the system operator or service vendor holding the blanket earth station license awarded pursuant to Section 25.115(d). The domestic earth station licensee

shall, for this temporary period, assume the same licensee responsibility for the user transceiver as if the user transceiver were regularly licensed to it.

9. Section 25.141 is amended by revising paragraphs (a) and (f) to read as follows:

§ 25.141 Licensing provisions for the radio-determination satellite service.

(a) *Space station application requirements.* Each application for a space station license in the radiodetermination satellite service shall describe in detail the proposed radiodetermination satellite system, setting forth all pertinent technical and operational aspects of the system, including its capability for providing and controlling radiodetermination service on a geographic basis, and the technical, legal and financial qualifications of the applicant. In particular, each application shall include the information specified in Appendix B of Space Station Application Filing Procedures, 93 FCC 2d 1260, 1265 (1983), except that in lieu of demonstrating compliance with item II.F (two degree spacing), applicants are required to demonstrate compatibility with licensed satellite systems in the same frequency band. Applicants must also file information demonstrating compliance with all requirements of this section, specifically including information demonstrating how the applicant has complied or plans to comply with the requirements of paragraph (f) of this section.

(f) *Radiodetermination satellite service.* Licenses shall coordinate with radiodetermination satellite system licensees to avoid harmful interference to other radiodetermination satellite systems through:

- (1) Power flux density limits;
- (2) Use of pseudorandom-noise codes (for both the satellite-to-user link and for the user-to-satellite link); and
- (3) Random access, time division multiplex techniques.

Licensees shall coordinate with 1.6/2.4 GHz Mobile-Satellite Service system licensees to avoid interference to 1.6/2.4 GHz Mobile-Satellite Service systems.

10. A new § 25.143 is added to read as follows:

§ 25.143 Licensing provisions for the 1.6/2.4 GHz Mobile-Satellite Service.

(a) *System License:* Applicants authorized to construct and launch a system of technically identical non-geostationary satellite orbit satellites will be awarded a single "blanket" license covering a specified number of

space stations to operate in a specified number of orbital planes.

(b) *Qualification Requirements.*

(1) *General Requirements:* Each application for a space station system authorization in the 1.6/2.4 GHz mobile-satellite service shall describe in detail the proposed satellite system, setting forth all pertinent technical and operational aspects of the system, and the technical, legal, and financial qualifications of the applicant. In particular, each application shall include the information specified in § 25.114.

(2) *Technical Qualifications:* In addition to providing the information specified in paragraph (b)(1) of this section, each applicant shall demonstrate the following:

(i) That the proposed system employs a non-geostationary constellation or constellations of satellites;

(ii) That the proposed system be capable of providing mobile satellite services to all locations as far north as 70° latitude and as far south as 55° latitude for at least 75% of every 24-hour period, i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° for at least 18 hours each day within the described geographic area;

(iii) That the proposed system is capable of providing mobile satellite services on a continuous basis throughout the fifty states, Puerto Rico and the U.S. Virgin Islands, U.S., i.e., that at least one satellite will be visible above the horizon at an elevation angle of at least 5° at all times within the described geographic areas;

(iv) That operations will not cause unacceptable interference to other authorized users of the spectrum. In particular, each application shall demonstrate that the space station(s) comply with the requirements specified in § 25.213.

(3) *Financial Qualifications:* Each applicant for a space station system authorization in the 1.6/2.4 GHz mobile-satellite service must demonstrate, on the basis of the documentation contained in its application, that it is financially qualified to meet the estimated costs of the construction and launch of all proposed space stations in the system and the estimated operating expenses for one year after the launch of the initial space station. Financial qualifications must be demonstrated in the form specified in §§ 25.140(c) and (d). In addition, applicants relying on current assets or operating income must submit evidence of a management commitment to the proposed satellite system. Failure to make such a showing

will result in the dismissal of the application.

(c) *Replacement of Space Stations Within the System License Term.*

Licensees of 1.6/2.4 GHz mobile-satellite systems authorized through a blanket license pursuant to paragraph (a) of this section need not file separate applications to construct, launch and operate technically identical replacement satellites within the term of the system authorization. However, the licensee shall certify to the Commission, at least thirty days prior to launch of such replacement(s) that:

(1) The licensee intends to launch a space station that is technically identical to those authorized in its system authorization, and

(2) Launch of this space station will not cause the licensee to exceed the total number of operating space stations authorized by the Commission.

(d) *In-Orbit Spares.* Licensees need not file separate applications to operate technically identical in-orbit spares authorized as part of the blanket license pursuant to paragraph (a) of this section. However, the licensee shall certify to the Commission, within 10 days of bringing the in-orbit spare into operation, that operation of this space station did not cause the licensee to exceed the total number of operating space stations authorized by the Commission.

(e) *Reporting requirements.*

(1) All operators of 1.6/2.4 GHz mobile-satellite systems shall, on June 30 of each year, file with the International Bureau and the Field Office in Laurel, Maryland a report containing the following information:

(i) Status of satellite construction and anticipated launch dates, including any major problems or delays encountered;

(ii) A listing of any non-scheduled space station outages for more than 30 minutes and the cause or causes of the outage;

(iii) A detailed description of the utilization made of the in-orbit satellite system. That description should identify the percentage of time that the system is actually used for U.S. domestic or transborder transmission, the amount of capacity (if any) sold but not in service within U.S. territorial geographic areas, and the amount of unused system capacity; and

(iv) Identification of any space stations not available for service or otherwise not performing to specifications, the cause or causes of these difficulties, and the date any space station was taken out of service or the malfunction identified.

(2) All operators of 1.6/2.4 GHz mobile-satellite systems shall, within 10

days after a required implementation milestone as specified in the system authorization, certify to the Commission by affidavit that the milestone has been met or notify the Commission by letter that it has not been met. At its discretion, the Commission may require the submission of additional information (supported by affidavit of a person or persons with knowledge thereof) to demonstrate that the milestone has been met.

(f) *Safety and distress communications.*

(1) Stations operating in the 1.6/2.4 GHz Mobile-Satellite Service that are voluntarily installed on a U.S. ship or are used to comply with any statute or regulatory equipment carriage requirements may also be subject to the requirements of sections 321(b) and 359 of the Communications Act of 1934. Licensees are advised that these provisions give priority to radio communications or signals relating to ships in distress and prohibits a charge for the transmission of maritime distress calls and related traffic.

(2) Licensees offering distress and safety services should coordinate with the appropriate search and rescue organizations responsible for the licensee's service area.

(g) *Considerations involving transfer or assignment applications.*

(1) "Trafficking" in bare licenses issued pursuant to paragraph (a) of this section is prohibited, except with respect to licenses obtained through a competitive bidding procedure.

(2) The Commission will review a proposed transaction to determine if the circumstances indicate trafficking in licenses whenever applications (except those involving *pro forma* assignment or transfer of control) for consent to assignment of a license, or for transfer of control of a licensee, involve facilities licensed pursuant to paragraph (a) of this section. At its discretion, the Commission may require the submission of an affirmative, factual showing (supported by affidavits of a person or persons with personal knowledge thereof) to demonstrate that no trafficking has occurred.

(3) If a proposed transfer of radio facilities is incidental to a sale of other facilities or merger of interests, any showing requested under paragraph (g)(2) of this section shall include an additional exhibit which:

- (i) Discloses complete details as to the sale of facilities or merger of interests;
- (ii) Segregates clearly by an itemized accounting, the amount of consideration involved in the sale of facilities or merger of interest; and

(iii) Demonstrates that the amount of consideration assignable to the facilities or business interests involved represents their fair market value at the time of the transaction.

11. Section 25.201 is amended by adding new paragraphs, in alphabetical order, to read as follows:

§ 25.201 Definitions.

* * * * *

Mobile-Satellite Service. A radiocommunication service:

- (1) Between mobile earth stations and one or more space stations, or between space stations used by this service; or
- (2) Between mobile earth stations, by means of one or more space stations.

This service may also include feeder links necessary for its operation. (RR)

* * * * *

1.6/2.4 GHz Mobile-Satellite Service. A mobile-satellite service that operates in the 1610–1626.5 MHz and 2483.5–2500 MHz frequency bands, or in any portion thereof.

* * * * *

12. Section 25.202 is amended by adding new paragraphs (a)(4) and (a)(5) to read as follows:

§ 25.202 Frequencies, frequency tolerance and emission limitations.

* * * * *

(a) * * *

(4) The following frequencies are available for use by the 1.6/2.4 GHz Mobile-Satellite Service:

1610–1626.5 MHz: User-to-Satellite Link
1613.8–1626.5 MHz: Satellite-to-User Link (secondary)
2483.5–2500 MHz: Satellite-to-User Link

(5) The following frequencies are available for use by the inter-satellite service:

22.55–23.00 GHz
23.00–23.55 GHz
24.45–24.65 GHz
24.65–24.75 GHz

13. Section 25.203 is amended by revising paragraph (c)(2)(vii) and adding new paragraphs (j) and (k) to read as follows:

§ 25.203 Choice of sites and frequencies.

* * * * *

(c) * * *

(2) * * *

(vii) Antenna horizon gain plot(s) determined in accordance with § 25.253(b) for satellite longitude range specified in paragraph (c)(2)(v) of this section, taking into account the provisions of § 25.253(a)(2) for earth stations operating with non-geostationary satellites.

* * * * *

(j) Applicants for non-geostationary 1.6/2.4 GHz Mobile-Satellite Service/radiodetermination satellite service feeder links shall indicate the frequencies and spacecraft antenna gain contours towards each feeder-link earth station location and will coordinate with licensees of other fixed-satellite service and terrestrial-service systems sharing the band to determine geographic protection areas around each non-geostationary mobile-satellite service/radiodetermination satellite service feeder link earth station.

(k) An applicant for a non-geostationary 1.6/2.4 GHz Mobile-Satellite Service space station or earth station that will operate with a geostationary satellite or non-geostationary satellite in a shared frequency band in which the non-geostationary system is (or is proposed to be) licensed for feeder links, shall demonstrate in its application that its proposed space or earth station will not cause unacceptable interference to any other satellite network that is authorized to operate in the same frequency band, or certify that the operations of its space or earth station shall conform to established coordination agreements between the operator(s) of the space station(s) with which the earth station is to communicate and the operator(s) of any other U.S. space station licensed to use the band.

14. Section 25.208 is amended by revising paragraph (c) to read as follows:

§ 25.208 Power flux density limits.

* * * * *

(c) In the 17.7–19.7 GHz, 22.55–23.00 GHz, 23.00–23.55 GHz, and 24.45–24.75 GHz frequency bands, the power flux density at the Earth's surface produced by emissions from a space station for all conditions and for all methods of modulation shall not exceed the following values:

(1) 115 dB (W/m²) in any 1 MHz band for angles of arrival between 0 and 5 degrees above the horizontal plane.

(2) 115+0.5 (d–5) dB (W/m²) in any 1 MHz band for angles of arrival d (in degrees) between 5 and 25 degrees above the horizontal plane.

(3) 105 dB (W/m²) in any 1 MHz band for angles of arrival between 25 and 90 degrees above the horizontal plane.

15. A new § 25.213 is added to read as follows:

§ 25.213 Inter-Service coordination requirements for the 1.6/2.4 GHz Mobile-Satellite Service.

(a) Protection of the radio astronomy service in the 1610.6–1613.8 MHz band against interference from 1.6/2.4 GHz Mobile-Satellite Service systems.

(1) *Protection zones.* All 1.6/2.4 GHz Mobile Satellite Service systems shall be capable of determining the position of the user transceivers accessing the space segment through either internal radiodetermination calculations or external sources such as LORAN-C or the Global Positioning System. During periods of radio astronomy observations, land mobile earth stations shall not operate when located within geographic protection zones defined by the radio observatory coordinates and separation distances as follows:

(i) In the band 1610.6–1613.8 MHz, within a 160 km radius of the following radio astronomy sites:

Observatory	Latitude (DMS)	Longitude (DMS)
Arecibo, PR	18 20 46	66 45 11
Green Bank Telescope, WV	38 25 59	79 50 24
	38 26 09	79 49 42
Very Large Array, NM	34 04 43	107 37 04
Owens Valley, CA	37 13 54	118 17 36
Ohio State, OH	40 15 06	83 02 54

(ii) In the band 1610.6–1613.8 MHz, within a 50 km radius of the following sites:

Observatory	Latitude (DMS)	Longitude (DMS)
Pile Town, NM	34 18 04	108 07 07
Los Alamos, NM	35 46 30	106 14 42
Kitt Peak, AZ	31 57 22	111 36 42
Ft. Davis, TX	30 38 06	103 56 39
N. Liberty, IA	41 46 17	91 34 26
Brewster, WA	48 07 53	119 40 55
Owens Valley, CA	37 13 54	118 16 34
St. Croix, VI	17 45 31	64 35 03
Mauna Kea, HI	19 48 16	155 27 29
Hancock, NH	42 56 01	71 59 12

(iii) Out-of-band emissions of a mobile earth station licensed to operate within the 1610.0–1626.5 MHz band shall be attenuated so that the power flux density it produces in the 1610.6–1613.8 MHz band at any radio astronomy site listed in paragraph (a)(1)(i) or (ii) of this section shall not exceed the emissions of a mobile earth station operating within the 1610.6–1613.8 MHz band at the edge of the protection zone applicable for that site. As an alternative, a mobile earth station shall not operate during radio astronomy observations within the 1613.8–1615.8 MHz band within 100 km of the radio astronomy sites listed in paragraph (a)(1)(i) of this section, and within 30 km of the sites listed in paragraph (a)(1)(ii) of this section, there being no restriction on a mobile earth station operating within the 1615.8–1626.5 MHz band.

(iv) For airborne mobile earth stations operating in the 1610.0–1626.5 MHz band, the separation distance shall be the larger of the distances specified in paragraph (a)(1)(i), (ii) or (iii) of this section, as applicable, or the distance, d , as given by the formula:

$$d \text{ (km)} = 4.1 \text{ square root of } (h)$$

where h is the altitude of the aircraft in meters above ground level.

(v) Smaller geographic protection zones may be used in lieu of the areas specified in paragraphs (a)(1)(i), (ii), (iii), and (iv) of this section if agreed to by the Mobile-Satellite Service licensee and the Electromagnetic Spectrum Management Unit (ESMU), National Science Foundation, Washington, D.C. upon a showing by the Mobile-Satellite Service licensee that the operation of a mobile earth station will not cause harmful interference to a radio astronomy observatory during periods of observation.

(vi) The ESMU shall notify Mobile-Satellite Service space station licensees authorized to operate mobile earth terminals in the 1610.0–1626.5 MHz band of periods of radio astronomy observations. The mobile-satellite systems shall be capable of terminating operations within the frequency bands and protection zones specified in paragraphs (a)(1)(i) through (iv) of this section, as applicable, after the first position fix of the mobile earth terminal either prior to transmission or, based upon its location within the protection zone at the time of initial transmission of the mobile earth terminal. Once the mobile-satellite system determines that a mobile earth terminal is located within an RAS protection zone, the mobile-satellite system shall immediately initiate procedures to relocate the mobile earth terminal operations to a non-RAS frequency.

(vii) A beacon-actuated protection zone may be used in lieu of fixed protection zones in the 1610.6–1613.8 MHz band if a coordination agreement is reached between a mobile-satellite system licensee and the ESMU on the specifics of beacon operations.

(viii) Additional radio astronomy sites, not located within 100 miles of the 100 most populous urbanized areas as defined by the United States Census Bureau at the time, may be afforded similar protection one year after notice to the mobile-satellite system licensees by issuance of a public notice by the Commission.

(2) Mobile-Satellite Service space stations transmitting in the 1613.8–1626.5 MHz band shall take whatever steps necessary to avoid causing harmful interference to the radio

astronomy facilities listed in paragraphs (a)(1)(i) and (ii) of this section during periods of observation.

(3) Mobile-Satellite Service space stations operating in the 2483.5–2500 MHz frequency band shall limit spurious emission levels in the 4990–5000 MHz band so as not to exceed –241 dB (W/m²/Hz) at the surface of the Earth.

(4) The Radioastronomy Service shall avoid scheduling radio astronomy observations during peak MSS/RDSS traffic periods to the greatest extent practicable.

(b) Protection of the radionavigation-satellite service. Mobile earth stations operating in the 1610–1626.5 MHz band shall limit out-of-band emissions in the 1574.397–1576.443 MHz band so as not to exceed an e.i.r.p. density level of –70 dB (W/MHz) averaged over any 20 ms period. The e.i.r.p. of any discrete spurious emission (i.e., bandwidth less than 600 Hz) in the 1574.397–1576.443 MHz band shall not exceed –80 dBW.

(c) Protection of aeronautical radionavigation systems. Mobile-satellite earth stations transmitting in the 1610–1626.5 MHz band shall limit e.i.r.p. levels to no greater than –15 dB (W/4kHz) on frequencies being used by systems operating in accordance with international Radio Regulation RR 732, and to no greater than –3 dB (W/4kHz) on frequencies that are not so being used. Pursuant to international RR 731F, respectively, all mobile-satellite Earth-to-space operations in the 1610–1626.5 MHz band and mobile-satellite space-to-Earth operations in the 1613.8–1626.5 MHz band must be coordinated and notified under the procedures set forth in Resolution 46 (WARC-92). Such mobile-satellite stations shall not cause harmful interference to, or claim protection from, stations in the aeronautical radionavigation service and stations operating pursuant to international RR 732.

(d) Fixed stations operating pursuant to international Radio Regulation RR 730. Pursuant to international Radio Regulations RR 731E and RR 731F, all mobile-satellite operations in the 1610–1626.5 MHz band (Earth-to-space transmissions) and all operations in the 1613.8–1626.5 MHz band (space-to-Earth transmissions), respectively, must be coordinated with systems operating pursuant to international RR 730 according to the coordination and notification procedures set forth in Resolution 46 (WARC-92). All such mobile-satellite stations shall not cause harmful interference to, or claim protection from, stations in the fixed service operating pursuant to international RR 730.

16. A new § 25.278 is added to subpart D to read as follows:

§ 25.278 Additional Coordination Obligation for Non-Geostationary and Geostationary Satellite Systems in Frequencies Allocated to the Fixed-Satellite Service.

Licensees of non-geostationary satellite systems that use frequency bands allocated to the fixed-satellite service for their feeder link operations shall coordinate their operations with licensees of geostationary fixed-satellite service systems licensed by the Commission for operation in the same frequency bands. Licensees of geostationary fixed-satellite service systems in the frequency bands that are licensed to non-geostationary satellite systems for feeder link operations shall coordinate their operations with the licensees of such non-geostationary satellite systems.

17. A new § 25.279 is added to subpart D to read as follows:

§ 25.279 Inter-satellite service.

(a) Any non-geostationary satellite communicating with other space stations may use frequencies in the inter-satellite service as indicated in § 2.106. This does not preclude the use of other frequencies for such purposes as provided for in several service definitions, e.g., FSS. The technical details of the proposed inter-satellite link shall be provided in accordance with § 25.114(c).

(b) *Operating conditions.* In order to ensure compatible operations with authorized users in the frequency bands to be utilized for operations in the inter-satellite service, these inter-satellite service systems must operate in accordance with the conditions specified in this section.

(1) *Coordination requirements with federal government users.* (i) In

frequency bands allocated for use by the inter-satellite service that are also authorized for use by agencies of the federal government, the federal use of frequencies in the inter-satellite service frequency bands is under the regulatory jurisdiction of the National Telecommunications and Information Administration (NTIA).

(ii) The Commission will use its existing procedures to reach agreement with NTIA to achieve compatible operations between federal government users under the jurisdiction of NTIA and inter-satellite service systems through frequency assignment and coordination practice established by NTIA and the Interdepartment Radio Advisory Committee (IRAC). In order to facilitate such frequency assignment and coordination, applicants shall provide the Commission with sufficient information to evaluate electromagnetic compatibility with the federal government users of the spectrum, and any additional information requested by the Commission. As part of the coordination process, applicants shall show that they will not cause interference to authorized federal government users, based upon existing system information provided by the government. The frequency assignment and coordination of the satellite system shall be completed prior to grant of construction authorization.

(2) *Coordination among inter-satellite service systems.* Applicants for authority to establish inter-satellite service are encouraged to coordinate their proposed frequency usage with existing permittees and licensees in the inter-satellite service whose facilities could be affected by the new proposal in terms of frequency interference or restricted system capacity. All affected applicants, permittees, and licensees, shall at the direction of the Commission, cooperate

fully and make every reasonable effort to resolve technical problems and conflicts that may inhibit effective and efficient use of the radio spectrum; however, the permittee or licensee being coordinated with is not obligated to suggest changes or re-engineer an applicant's proposal in cases involving conflicts.

PART 94—[AMENDED]

18. The authority citation for Part 94 continues to read as follows:

Authority: Secs. 4, 303, 48 Stat., as amended, 1066, 1082; 47 U.S.C. 154, 303, unless otherwise noted.

19. The table in paragraph (b) of § 94.61 is amended by revising footnote 4 to read as follows:

§ 94.61 Applicability.

* * * * *

(b) * * *

Frequencies in this band are shared with mobile and radiolocation stations in other services, and must accept harmful interference that may be experienced from operations of industrial, scientific, or medical (ISM) equipment operating at 2450 MHz. In the 2483.5–2500 MHz band, no applications for new stations or modifications to existing stations to increase the number of transmitters will be accepted. Existing licensees as of July 25, 1985, are grandfathered and their operation is co-primary with the Radiodetermination Satellite Service and Mobile-Satellite Service. However, all grandfathered temporary fixed licensees are required to notify directly each Radiodetermination Satellite Service and Mobile-Satellite Service licensees concerning present and proposed locations of operations. Federal Communications Commission.

William F. Caton,

Acting Secretary.

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