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NUCLEAR REGULATORY COMMISSION

10 CFR Parts 19, 20, 30, 36, 40, 51, 70 and 170

RIN 3150–AC98

Licenses and Radiation Safety Requirements for Irradiators

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission is amending its regulations by establishing a new part 36 to specify radiation safety requirements and licensing requirements for the use of licensed radioactive materials in irradiators. Irradiators use gamma radiation to irradiate products to change their characteristics in some way. The safety requirements apply to panoramic irradiators (those in which the material being irradiated is in air in a room that is accessible to personnel when the source is shielded) and underwater irradiators in which the source always remains shielded under water and the product is irradiated under water. The rule does not cover self-contained dry-source-storage irradiator devices, medical uses of sealed sources (such as teletherapy), or nondestructive testing (such as industrial radiography).

EFFECTIVE DATE: July 1, 1993.

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I. Background

In response to the Commission's concern over irradiator use, the NRC conducted a review of its safety requirements and policies governing irradiators. Material pertinent to irradiators was contained in various sources including portions of NRC's regulations, a regulatory guide, and specific license conditions.

On December 4, 1990 (55 FR 50008), the NRC published a proposed rule that would specify the radiation safety requirements applicable to the use of licensed material in irradiators. The proposed rule was intended to enhance the efficiency of the regulatory process governing irradiators by consolidating, clarifying, and standardizing the requirements for current and future irradiators.

Irradiators use gamma radiation to irradiate products in order to change their characteristics in some way. Irradiators are used for a variety of purposes in research, industry, and other fields. The supplementary information section of the proposed rule contained a detailed discussion of the uses of irradiators, operating experience with irradiators, and the number and types of accidents involving irradiators.

The 90-day public comment period expired on March 4, 1991. The comment period was not formally extended. However, people who requested an extension were assured that comments received by April 15 would be given full consideration, and, in fact, those comments were given full consideration. The NRC also held a public meeting on February 12 and 13, 1991, to discuss the proposed rule. The meeting was held to provide interested persons an opportunity to better understand the rule and also to allow the NRC staff to hear the concerns of the public.

The transcript of the public meeting, which is available for inspection and copying in the NRC Public Document Room, and the 33 written public comments were reviewed in developing the final rule. The significant issues raised by public comment and NRC's response to these comments are discussed in Section IV of this supplementary information. Section IV presents section by section discussion of the regulation.

Because of the variety of designs, four general categories of irradiators have been defined by the American National Standards Institute (ANSI) in Standard N13.10, "Safe Design and Use Of Panoramic Wet Source Storage Gamma Irradiators (Category IV)." These categories are as follows:

Category I—Self-contained, Dry-source-storage Irradiators

This type of irradiator is built as a self-contained device. The sealed sources are completely enclosed within a shield constructed of solid materials. Human access to the sealed sources and to the space subject to irradiation is not physically possible. The physical size of the device, the space subject to irradiation, the source strength, or all three are generally not large.

This rule does not cover self-contained dry-source-storage irradiators (Category I) for several reasons. First, they are devices that the licensee usually purchases without participating in their design and manufacture. Because safety features are designed into them, self-contained irradiators present less potential hazard and they are considered to be adequately addressed by existing requirements. This type of irradiator (Category I) would continue to be licensed under the general requirements of 10 CFR 30.33. Licensees may continue to use the criteria in Regulatory Guide 10.9, Revision 1, "Guide for the Preparation of Applications for Licenses for the Use of Self-Contained Dry Source-Storage Irradiators," December 1988, and the "Standard Review Plan for Applications for Licenses for the Use of Self-Contained Dry Source-Storage Gamma Irradiators," December 1988.

Category II—Panoramic, Dry-source-storage Irradiators

This category includes irradiators in which the sealed sources are stored in a shield constructed of solid materials and are fully shielded when not in use. Irradiations occur in air within a room accessible to personnel only while the sources are shielded. This category also includes certain beam-type irradiators in which the source remains partially

shielded. Irradiators of this type are covered by the rule.

Category III—Underwater Irradiators

This category includes irradiators in which the sealed sources are always in a storage pool and are shielded at all times. Human access to the sealed sources and the space subject to irradiation is not physically possible without entering the pool. Irradiators of this type are covered by the rule.

Category IV—Panoramic, Wet-source-storage Irradiators

This category includes irradiators in which the sealed sources are in a storage pool containing water and are fully shielded when not in use. Irradiations occur in air within a room made inaccessible to personnel by an entry control system while the sources are exposed. Irradiators of this type are covered by the rule.

The NRC's regulation uses the terms "panoramic irradiator" and "pool irradiator." "Panoramic irradiators" include Category II and IV irradiators. "Pool irradiators" include Category III and IV irradiators.

II. Need for a Rule

Before the adoption of part 36, irradiators were licensed primarily under: (1) The general provisions of 10 CFR 30.33, which requires that "equipment and facilities are adequate" and that the "applicant is qualified by training and experience"; (2) the general requirements of part 20; for example, dose limits and the need for "adequate" surveys; and (3) the specific requirements in 10 CFR 20.203(c)(6) and (7) (or the new 10 CFR 20.1603) that deal with access control requirements for panoramic irradiators. There was also a draft regulatory guide FC 403–4, "Guide for the Preparation of Applications for Licenses for the Use of Panoramic Dry Source-Storage Irradiators, Self-Contained Wet Source-Storage Irradiators, and Panoramic Wet Source-Storage Irradiators," that was published in January 1985. However, the scope of the proposed guide was limited, and many subjects were not covered or were covered in a way now considered obsolete.

Although the safety requirements and policies for irradiators were generally understood and agreed upon and were incorporated on a case-by-case basis in the licenses for operating irradiators, they were not contained in a single comprehensive document. This rule consolidates, clarifies, and standardizes the requirements for the licensing and operation of current and future irradiators.

There are also some areas in which either technology is changing or NRC policy is evolving. This rule provides comprehensive and up-to-date requirements in these areas.

Several commenters misunderstood the effect of the rule. The issue in the rulemaking is not whether irradiators should be licensed or whether they should continue to be licensed. Instead, the issue is whether to license them under a formal, detailed, comprehensive set of regulations as was proposed or whether to continue licensing on a case-by-case basis with relatively few specific requirements contained in formal regulations. The NRC's decision is to adopt a comprehensive, formal set of regulations.

III. The Use of WESF Sources in Irradiators

WESF (Waste Encapsulation and Storage Facility) sources are sealed sources containing cesium-137 that were produced at the U.S. Department of Energy's Hanford facility. The Department of Energy had leased this type of source to four commercial irradiators in the United States. In June 1988, a WESF source leaked at an irradiator operated by Radiation Sterilizers, Inc., in Decatur, Georgia.

A Department of Energy board investigated the cause of the leak but has not yet identified the cause of the failure (Interim Report of the DOE Type B Investigation Group, DOE Report DOE/ORO–914, July 1990).

Subsequently, the NRC decided that the long-term use of WESF sources is unacceptable in commercial facilities licensed by NRC and that the sources currently being used should therefore be removed and returned to the Department of Energy. In February 1991, the two remaining irradiators still using WESF capsules were notified of the NRC decision. Both facilities requested that the Department of Energy remove the WESF sources as soon as it could do so. Thus, for the purposes of this rulemaking, the WESF source issue is closed.

As a consequence, this final rule was written to require that irradiators use radioactive materials that are as insoluble and nondispersible as practical (typically cobalt–60).

IV. Summary of the Requirements and the Resolution of Comments on the Requirements

This discussion summarizes by section the major requirements in the regulation and discusses the substantive comments on the requirements of the irradiator rule and how they were resolved. The bases and origins of the requirements are also explained.

Authority Citation

The authority citation was changed by moving the content of the second paragraph of the proposed citation into a new § 36.93, "Criminal penalties." This was done to be consistent with a proposed rule, "Clarification of Statutory Authority for Purposes of Criminal Enforcement," (57 FR 222, January 3, 1992).

Subpart A—General Provisions

Section 36.1 Purpose and Scope

This section describes the types of irradiators covered in the rule. The rule covers panoramic wet-source-storage, panoramic drysource-storage, and underwater irradiators that can deliver a dose of 5 grays (500 rads) or greater in 1 hour at a distance of 1 meter, either in air or under water as appropriate for the irradiator type. The dose rate criterion is taken from the access control requirements in the new standards for protection against radiation published in the **Federal Register** on May 21, 1991 (56 FR 23360). See 10 CFR 20.1003, Definitions, "Very High Radiation Area." A cobalt-60 source of approximately 1.5×10^{13} becquerels (400 curies) would deliver this dose in air if the source were small with little self-absorption. For underwater irradiators, the source activity to deliver a 5-gray (500-rad) dose at 1 meter is about 10 times larger than if the exposures were performed in air.

Some commenters suggested that small university or research irradiators should be excluded from the rule or be excluded from some of the rule's requirements because they have lower activity sources and are used less often than commercial production irradiators.

In general, this suggestion was not adopted, although in certain specific areas an attempt was made to allow more flexibility in operating a small university or research irradiator. While university and research irradiators have lower activity sources, there is still a significant potential hazard. In addition, the safety records of universities in handling radioactive materials are not substantially different from those of commercial facilities, suggesting that a similar set of regulations may be appropriate for each.

Commenters noted that some medical facilities have converted teletherapy machines from human use to the irradiation of materials and suggested it would be appropriate to allow these machines to continue to be licensed under part 35. The NRC did not accept

this suggestion. Teletherapy machines converted to irradiate materials present hazards similar in nature to other irradiators and thus should meet similar safety standards. However, a paragraph was added to § 36.17 stating that the NRC would consider certain exemptions for those devices.

Section 36.2 Definitions

This section defines terms that are used in the new part 36.

Section 36.5 Interpretations

This section explains that the only interpretations of the regulations that are binding are written interpretations by NRC's General Counsel.

Section 36.8 Information Collection Requirements: OMB Approval

This section explains that the information collection requirements of part 36 have been approved by the Office of Management and Budget as required by the Paperwork Reduction Act of 1980 (44 U.S. 3501 et seq.).

Subpart B—Specific Licensing Requirements

Section 36.11 Application for a Specific License

This section states how to apply for a license and where the application must be sent.

Section 36.13 Specific Licenses for Irradiators

This section describes information that must be included in a license application if it is to be approved by the Commission.

The applicant's proposed activities must be for a purpose authorized by the Atomic Energy Act of 1954 as amended. This is a standard requirement for all types of licenses.

The applicant's proposed equipment and facilities must be adequate to protect the health of workers and the public and minimize danger to life and property. The applicant must be qualified by training and experience to use the radioactive material for the purpose requested and in a manner that protects health and minimizes danger to life and property. These are standard requirements for all NRC licensees.

The application must describe the training for irradiator operators and the qualifications of the instructors. Some commenters recommended that the regulation specify a minimum number of hours of safety training. The NRC decided that establishing a specific number of hours for formal classroom training is not critical and represents too rigid an approach to regulation. Instead, the NRC will review the training proposed by the applicant as part of the license application.

The application must contain an outline of the operating and emergency procedures that describes the important radiation safety aspects of the procedures. Some commenters supported the idea of submitting only the outline of the procedures while others preferred submitting complete procedures. The NRC decided to require an outline that describes the operating and emergency procedures in broad terms that specifically state the radiation safety aspects of the procedures rather than to require the complete operating and emergency procedures. In addition, if specific procedures were submitted with the license application, then minor changes that the facility might need to make from time to time (for example, improving procedures based on what is learned from operating experience) would require NRC review prior to implementation. This could unnecessarily hamper the safety of facility operation. Detailed procedures would be available to inspectors for reference during facility operation however. Procedures could be changed by the licensee under the conditions described in § 36.53. Records on changes in procedures have to be retained for 3 years for inspection by the NRC (§ 36.81(d)).

The application must describe the radiation safety responsibilities and authorities of the radiation safety officer and those management personnel who have important radiation safety responsibilities or authorities. The applicant must also describe the qualifications of the radiation safety officer. These requirements are used to judge whether the applicant's personnel are qualified to handle radioactive materials safely.

Some commenters suggested that the rule contain specific requirements for the qualifications and training of the radiation safety officer, such as the amount of formal radiation safety training, the amount of on-the-job training, the length and type of previous experience, and the amount of formal education. The NRC decided not to specify minimum qualifications in the rule to allow flexibility in evaluating qualifications. Instead, it was decided that final determination of adequacy will be based on the actual qualifications of specific individuals on a case-by-case basis based on previous experience in reviewing such qualifications. This would allow the license reviewer the flexibility to consider the strengths and weaknesses of a specific individual in making the determination.

The comment was made that the rule should require that the radiation safety officer be independent from both sales and production organizations and should have the authority to cease operations. The NRC does not believe that it is necessary for the radiation safety officer to be totally independent of the sales and production organizations or that the authority to suspend operations should be rigidly fixed in the rule. The NRC believes that this suggested proposal is too rigid. The NRC believes that the authority and responsibility of the radiation safety officer is something that can and should be evaluated as part of the licensing process on a case-by-case basis based on previous NRC experience in making this type of determination.

Applications to operate panoramic irradiators must describe the access control system. Applications also must contain information on how sealed sources would be tested for leakage and contamination.

The applicant must also describe the frequency of the inspection and maintenance checks required by § 36.61. Guidelines on the frequency of checks may be included in future NRC licensing guides.

The applicant must submit information on loading and unloading sources. If the applicant intends to load and unload sources, the applicant must show that the personnel assigned to the task are qualified and trained to do so safely and that procedures are adequate to protect health and safety. The applicant may also have the loading and unloading done by another organization that the NRC or an Agreement State has specifically authorized to do loading or unloading. Most organizations that would do the loading and unloading have a license from the NRC or an Agreement State authorizing them to load and unload sources. If the qualifications of the organization have not been previously reviewed, they would then be reviewed as part of the current license application.

Section 36.15 Start of Construction

This section as proposed would have prohibited the start of construction of an irradiator before a license was issued. This proposed requirement was criticized by Agreement State regulatory agencies, who did not want to issue a license until construction was well underway or largely complete. Irradiator companies also objected because they thought the lead time would cause a severe financial burden.

Therefore, the rule was changed to require that an application and required fee be submitted before start of construction rather than requiring that the license be issued before start of construction. The object of the requirement is to allow regulatory agencies to inspect the construction of the facility as it is built. The revised wording accomplishes that objective.

Section 36.17 Applications for Exemptions

This section describes the circumstances in which the NRC may grant an exemption to a requirement in part 36.

Some commenters stated that licensees using teletherapy machines for medical treatment should be able to change their use to irradiate materials without changing the requirements that they must meet. The NRC did not specifically adopt this comment because a teletherapy machine used to irradiate materials presents potential hazards that are the same as those from any other dry-source-storage panoramic irradiator. However, a new paragraph has been added to § 36.17 stating that the NRC is willing to consider exemptions as long as the proposed alternative provides an adequate level of safety.

Section 36.19 Request for Written Statements

This section codifies a requirement (found in Section 182 of the Atomic Energy Act) that the licensee must supply any additional information required by NRC to assure that health and safety will be protected.

Subpart C—Design and Performance Requirements for Irradiators

Section 36.21 Performance Criteria for Sealed Sources

This section lists performance criteria required for sealed sources used in irradiators. Normally the tests used to demonstrate that the criteria can be met are conducted by the source manufacturer, not the irradiator licensee. The manufacturer then applies to the NRC or an Agreement State agency for approval for use in irradiators. If this procedure has been followed, the licensee need only note the manufacturer's name and model of the sources in its license application to demonstrate that the requirement is met.

A number of commenters objected to allowing the use of cesium-137 in wet-source-storage irradiators. The requirement that the radioactive material in the sources be as insoluble (if used in wet-source-storage irradiators) and nondispersible as practical was not included in the proposed rule, although comment was sought on whether the use of cesium-137 should be permitted in irradiators in view of its solubility. The NRC has decided not to approve further use of cesium sources, although the term "as practical" would allow the NRC to make an exception where justified to the NRC. In addition, a requirement was added that source encapsulation must be of corrosion resistant materials such as 316L or 321 stainless steel or equivalent for sources to be used in pools. Since this has been a de facto requirement for meeting § 32.210, this requirement should have no impact.

The performance criteria required by the rule were taken from American National Standard N43.6–1977, "Classification of Sealed Radioactive Sources" (formerly numbered N542–1977) (Available for purchase from the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.) The NRC has used this standard for many years and generally is satisfied with the performance of the sealed sources that meet the standard. Nonetheless, there is a requirement in part 36 that sealed sources installed after July 1, 1993, also be doubly encapsulated and use radioactive material that is as insoluble and nondispersible as practical. Double encapsulation provides additional protection in case one of the welds in the source is defective. Most of the approved sources currently in use are doubly encapsulated.

The temperature test specifies an upper temperature of 600 °C. The temperature specified in American National Standard N43.6–1977 is 400 °C. However, American National Standard N43.10 changed the temperature to 600 °C after several fires occurred at panoramic wet-source-storage irradiators.

The rule does not specify any requirements for sealed sources installed prior to July 1, 1993. Sources previously installed were approved by NRC on a case-by-case basis under § 32.210, a review which includes consideration of the criteria in American National Standard N542–1977. Licensees may continue to use sources that were previously approved.

Several commenters stated that the performance criteria in this section by themselves are not sufficient to establish the adequacy of the performance of sealed sources in irradiators. The NRC agrees with the comment but notes that the criteria in the section are not the only criteria that the sealed sources must meet. The adequacy of sealed sources is reviewed and approved by NRC under § 32.210 of its regulations. The § 32.210 review is very extensive and considers many factors that could affect the integrity of the sealed sources, including their manufacture and conditions of use, on a case-by-case basis. Because of the large number of factors that must be considered and the special circumstances that could arise, it is not possible to establish specific criteria beyond the basic framework in § 36.21. The NRC believes that this method of sealed source review is adequate. Therefore, no additional changes in § 36.21 were necessary.

Section 36.23 Access Control

This section states requirements for systems intended to prevent entry into the radiation room of a panoramic irradiator while the source is exposed.

The requirements were taken largely from 10 CFR 20.203 (c)(6) and (c)(7), but an attempt was made to simplify the wording.

For panoramic irradiators, a primary access control system and an independent backup access control system are required. In addition, operational requirements for preventing a person from being in the radiation room while the source is exposed are contained in § 36.67, "entering and leaving the radiation room."

The door or barrier that serves as the primary access control system must have controls that would (1) prevent the source from being moved out of its shielded position if the door or barrier were open and (2) cause the source to return to its shielded position if the door or barrier were opened while the source was exposed.

The backup access control system must be able to detect entry while the source is exposed. If entry is detected, the system must (1) automatically cause the source to return to its shielded position and (2) activate audible and visible alarms.

In addition, the rule requires a radiation monitor in the radiation room of panoramic irradiators to detect high radiation levels. The radiation monitor would have alarms and an interlock on the personnel access door. This requirement is not contained in the existing § 20.203(c). The purpose is to provide an additional level of protection in case of some failure of the source movement mechanism combined with a failure of the operator to make the required radiation survey upon entry into the radiation room.

Comments were made about how fast the sources must return to the shielded position. The phrase used in § 20.203(c)(6) concerning reduction of radiation levels upon entry is worded so

that an individual could not receive "a dose in excess of 100 mrem in one hour." This requirement has been changed in § 36.23 to state that the sources must return promptly to the fully shielded position.

The requirement for a door or other physical barrier applies to each entrance of the radiation room of a panoramic irradiator whether intended for personnel access or intended only for product entrance or exit. Panoramic irradiators with a conveyor system could meet the requirement by providing such small clearances around the product carriers that a person could not squeeze through or by using barriers that would require unusual exertion to bypass. A photoelectric system cannot be considered a physical barrier. The requirement is that the door or barrier must prevent inadvertent entry, not that it need prevent a deliberate and determined effort to bypass the barrier. The purpose of this requirement is to prevent a reasonably prudent person from carelessly, inattentively, or accidentally entering the radiation room while the source is exposed.

This section also requires an independent backup access control system on panoramic irradiators. The purpose of the backup system is to provide a redundant means of preventing a person from being accidentally exposed to the source. In case of a failure of the interlocks on the door or barrier combined with a failure to follow operating procedures, the backup system should warn the person entering the radiation room of the danger and automatically cause the sources to return to their shielded position. The backup system could use photo-electric cells in an entrance maze, pressure mats on the floor, or similar means to detect a person entering the radiation room while the source is exposed. The system must also alert another person of the entry. That person must be prepared to render or summon assistance. This provision prevents the operation of the panoramic irradiator without a second person being available to render or summon assistance. The proposed rule contained a statement that the irradiator could not operate if the access control requirements were not met. The statement was deleted because it is unnecessary. Operation of the facility without meeting the requirements of the section would always be a violation of the regulations.

This section also contains requirements for underwater irradiators. For example, the pool must be within an area surrounded by a personnel access barrier with an intrusion alarm when the facility is not operating.

Section 36.25 Shielding

This section specifies maximum dose rates in normally occupied areas outside the radiation room of a panoramic irradiator. The maximum dose rate of 0.02 millisievert (2 millirems) per hour is considered practical to achieve. Areas with higher levels would have to be locked, roped off, or posted.

The comment was made that some areas that are normally not occupied, such as the equipment access area on the roof of the irradiator, normally have radiation dose rates well above 0.02 millisievert (2 millirems) per hour. Therefore, the final rule was changed to permit radiation levels outside the shield to exceed 0.02 millisievert (2 millirems) per hour in areas not normally occupied as long as the areas were locked, roped off, or posted.

For measurements to determine compliance with the requirement, the final rule specifies 30 cm as the distance from the shield to the detector. This distance is selected because at that distance the dose would be a whole-body-dose. The maximum area of 100 square centimeters for averaging dose effectively establishes a maximum detector size.

The section does not require that the NRC approve the shield design. Instead the regulations contain only a performance requirement on maximum dose rate outside the shield. The requirements apply to the completed shield.

The section also specifies maximum radiation dose levels outside the shielding of dry-source-storage irradiators. The levels are considered practical and adequate to maintain doses to workers as low as is reasonably achievable.

Section 36.27 Fire Protection

The heat generated by irradiation can cause combustible materials to catch fire. The requirements in this section are intended to prevent fires, detect fires if they occur, and allow fires to be extinguished without entry of personnel into the radiation room.

The requirements for fire detection and sprinklers or other systems to extinguish a fire at a panoramic irradiator were taken from the ANSI Category IV Standard. The fire extinguishing system does not have to be automatically activated. In response to public comments, a requirement for a shut-off valve to control flooding was added.

Overall, fires are considered to present relatively little hazard to irradiators. Radiation rooms use little combustible material in their construction, and irradiation of flammable and explosive materials is prohibited (by § 36.69) without specific NRC approval. The products being irradiated are likely to be combustible, but there is not likely to be present a sufficient quantity of combustible material to result in prolonged high-temperature fires. Thus, the temperature reached if a fire were to occur is not likely to be high enough to melt or rupture the stainless steel capsules containing the radioactive sources. Therefore, the NRC would not expect a fire to cause loss of encapsulation even if the fire were not controlled and the sources were not dropped into a source-storage pool.

The fire extinguishing system is required because a fire could disable the access control system or could prevent the sources from being shielded, thereby lowering the margin of safety. The fire extinguishing system must be operable without entry into the room. During a fire, there would be no means of assuring that the access control systems and source position indicators were operating properly. Also, no one could be sure that the mechanism that returns the source to the shielded position had operated properly.

Section 36.29 Radiation Monitors

This section requires a radiation monitor to detect radioactive sources on the exiting product. The requirement was taken from 10 CFR 20.203(c)(6)(viii). The purpose of this requirement is to detect sources that have somehow become loose from the source rack and are being carried out with the product and to stop them from being carried out of the radiation room.

This section also requires a monitor over the pool at underwater irradiators.

The comment was made that irradiated products should be routinely monitored for radioactive contamination. The NRC did not adopt this suggestion because no need for product monitoring on a routine basis was identified. The suggestion was apparently prompted by the leaking of a WESF capsule containing soluble cesium. However, even in that situation no known exposure of the public occurred. The NRC considers the monitoring required by § 36.59 to be adequate to prevent excessive radiation exposures from contaminated products in the event of a source leak.

A requirement in the proposed § 36.29 for a means to detect radioactive contamination in pool water at pool irradiators was moved to § 36.59(b) so that the subject of detection of leaking sources would be combined into a single section instead of being split up

unnecessarily. This was done to improve the clarity of the rule.

Section 36.31 Control of Source Movement

This section contains requirements for the control of source movement at a panoramic irradiator. Generally, the requirements are taken from the ANSI Category IV Standard.

A proposed requirement specifying a color-code system for irradiator controls was deleted. Upon reconsideration of the proposed requirement, the NRC decided that it was of minor safety significance.

Section 36.33 Irradiator Pools

For facilities licensed after July 1, 1993, the rule would require either: (1) A stainless steel pool liner (or a liner metallurgically compatible with other components in the pool) or (2) construction so there is a low likelihood of substantial leakage. The purpose of the requirement is to reduce the likelihood of pool leakage. It is desirable to control pool leakage in case the pool water should become contaminated. Backfitting is not required because modifying an existing pool would be prohibitively expensive and any gain in safety would be marginal, especially since cobalt-60 has very low solubility. Older facilities sometimes used concrete pools, sometimes lined with tiles, but usually without stainless steel liners or other ways to reduce the likelihood of leakage.

A comment was made that "substantial leakage" should be defined. The comment was not adopted. The requirement is a design standard, not an operating limit. It means the pool should be designed to prevent large leaks, which could create a radiation safety hazard.

One comment suggested that pools have a means of detecting water leakage from pools more sensitive than monitoring water loss. Examples of more sensitive systems include requiring the use of a double-lined pool or channels at welds with a means to detect water leaking from the pool. The NRC decided that it would be adequate to monitor pool water loss and unnecessary to have a more sensitive means of detecting leaks. In normal circumstances, a pool leak is not a safety concern because pool water contains little or no radioactive material. If a source leak occurred while the pool had a leak that was too small to be detected, some contaminated water could escape from the pool. Experience with cobalt-60 has shown that pool contamination levels do not increase significantly because of the very low solubility in water of cobalt-60. Therefore, the NRC does not consider that a pool leak system more sensitive than that required in the rule is necessary.

The proposed rule required both a means to replenish water that is lost and a low-water level indicator. In response to public comments, a requirement for a high water level indicator was added. The means to replenish the water does not have to be automatic. An indicator is needed even if the replenishment is automatic in case the system to replenish the water does not work. In response to a comment, a requirement for an audible alarm in the water level indicators was deleted as unnecessary. Changes in water level are expected to occur slowly and to have safety significance only after a prolonged time.

The requirement for a cover or railing to prevent workers from falling into the pool is taken from the ANSI Category IV Standard.

The rule requires a water purification system. The purposes of the purification system are to prevent the pool water from becoming cloudy and reducing visibility and from becoming corrosive and thus corroding the stainless steel sealed sources or the source rack. If the water is clear, it should be possible to visually inspect the sources and the source rack. Thus, the sources and the source rack could be inspected for damage, and the location of the sources could be checked to make sure they are in their proper positions. The criterion for design basis conductivity during normal operation is explained in the discussion on 10 CFR 36.63.

The 0.02 millisievert (2 millirems) per hour limit on the dose rates for poles and long-handled tools to be used in irradiator pools is imposed to require prevention of radiation "streaming." Hollow and low density poles and tools can have either vent holes to allow shielding water to enter or sufficient bends to prevent radiation levels at handling areas of the tools from exceeding 0.02 millisievert (2 millirems) per hour.

Section 36.35 Source Rack Protection

This section requires a barrier to prevent the moving products from hitting the source rack or the mechanism that raises and lowers the sources.

Section 36.37 Power Failures

This section requires automatic source retraction for loss of power for more than 10 seconds at a panoramic irradiator. The retraction must be accomplished without offsite power. Backup power is not required as long as loss of power will cause the source to return to its shielded position, for example, the source returns to the shielded position due to gravity.

Section 36.39 Design Requirements

This section describes design requirements for irradiators constructed after July 1, 1993. Included in the section is a requirement that all irradiators must have shielding walls constructed of reinforced concrete designed to meet generally accepted building code requirements for reinforced concrete. This provides adequate protection against moderate earthquakes, tornadoes, and other hazards. The requirement to meet generally accepted building code requirements for reinforced concrete was intentionally left general to allow licensees flexibility in complying with local building codes. Irradiator shield walls by their nature are inherently strong, stable structures so that there was no need to provide very specific requirements.

In addition, irradiators built in seismic areas must have radiation shields designed to retain their integrity in an earthquake. Seismic areas are defined in § 36.2 as any area where the probability of a horizontal acceleration in rock exceeding 0.3 times the acceleration of gravity in 250 years is greater than 10 percent, as designated by the U.S. Geological Survey. The NRC selected 250 years to include some areas that could have a large earthquake even if large earthquakes would seldom occur.

Maps of the United States showing these seismic areas are published by the U.S. Geological Survey (see S. T. Algermissen, et al., "Probabilistic Estimates of Maximum Acceleration and Velocity in Rock in the Contiguous United States," United States Department of the Interior, Geological Survey, Open-File Report 82–1033, 1982. This report may be purchased for $24.50 from: U.S. Geological Survey, Books and Report Sales, Box 25425, Denver, Colorado 80224. Prepayment is required). Minor updates of this report are possible as new geological information becomes available.

Studies of irradiator shield designs have shown that the shields are inherently able to withstand large earthquakes. ANSI determined that reinforced concrete shields constructed to meet generally accepted building code requirements for reinforced concrete (for example, American Concrete Institute Standard ACI 318–89, "Building Code Requirements for Reinforced Concrete," available for purchase from the American Concrete Institute, Box 19150, Redford Station,

Detroit, Michigan 48219) can withstand an earthquake with an acceleration in rock of 0.3 times the acceleration of gravity plus any multiplication of acceleration that would occur due to soil. Therefore, there are no seismic requirements for irradiators located where accelerations in rock are not likely to exceed 0.3 times the acceleration of gravity.

The intent of the final rule is that shield walls in seismic areas would have to retain their integrity in the event of an earthquake by requiring that they be designed to meet the seismic requirements of local building codes or other appropriate sources. Local building codes in seismic areas are likely to specify requirements for things such as: spacing of reinforcing bars; how to tie reinforcing bars together; preferred arrangements for reinforcing bars; and requirements for joining reinforcing bars to floor slabs. If local building codes do not contain seismic requirements, "other appropriate sources" could include: American Concrete Institute Standard ACI 318–89, "Building Code Requirements for Reinforced Concrete," Chapter 21, "Special Provisions for Seismic Design."

NRC also considered a comment favoring requirements for a seismic detector to automatically start the mechanism that causes the sources to return to their fully shielded position. As typically installed and as envisioned, the return mechanisms have not been designed to be fully reliable in the event of an earthquake. The NRC does not consider an automatic return necessary because shield walls must be designed to provide adequate shielding to protect workers and the public in the event of an earthquake. Thus, there would be no imminent hazard. The NRC does require that licensees have an emergency procedure for responding to earthquakes (§ 36.53(b)(9)). Therefore, NRC concluded that automatic source return is not necessary to protect public health and safety.

The NRC also considered a comment on whether there should be design requirements for shield integrity against tornadoes. The NRC decided that there was no need for special design requirements because the shielding by its very nature (about six feet thick reinforced concrete) is inherently resistant to tornadoes.

The comment was made that only wiring with insulation that is relatively resistant to radiation should be used in the radiation room. The NRC agreed with this comment and added a design requirement that electrical wiring and electrical equipment in the radiation room be selected to minimize failures due to prolonged exposure to radiation.

A comment was made concerning the location of radiation monitors to detect contamination in § 36.39(e). The comment indicated that it might not be possible to identify the exact "spot at which the highest radiation levels would be expected." The NRC agreed and revised the wording of this paragraph to allow more flexibility in locating the radiation monitor.

In § 36.39(f), a requirement was added that the design of the source holder must avoid corrosion-promoting crevices. (The word "crevices" is used in the technical sense as understood by metallurgists.) Crevices can strongly promote corrosion in even the cleanest water.

Section 36.41 Construction Monitoring and Acceptance Testing

This section describes checks that the licensee must make before sources are loaded to be sure the facility was constructed as designed and that alarms, controls, interlocks, and instruments operate properly.

The comment was made that the section does not address changes made in the facility after the granting of a license. That issue is dealt with in the license for the facility. It is a standard condition of licenses that facilities must be operated in accordance with the statements made in the license application. A license amendment would be necessary for any modifications making substantive changes from what was described in the license application. The NRC believes that to be the appropriate method to handle this issue.

A comment was made that the paragraph on computer controllers should explicitly address multiple simultaneous faults and also computer controllers in which a single computer controls both the process and access safety. The NRC believes that its regulations are adequate as written. The requirements include the access control system described in § 36.23 and, in particular, the independent backup system described in § 36.23(b), the acceptance testing in § 36.41(j), and the periodic operability checks in § 36.61(a)(1). A comment suggested that no modifications to software should be made without licensing Agency approval. The NRC did not adopt this suggestion. The NRC does not believe that review of software modifications would be a useful, productive, or effective use of NRC staff time. Rather, the responsibility for a proper operating computer system rests with the licensee.

Subpart D—Operation of the Irradiator

Section 36.51 Training

This section contains safety training requirements for irradiator operators. The emphasis is on practical knowledge directly necessary for the job, rather than theoretical principles.

The subjects that an irradiator operator must be trained in are:

(1) The fundamentals of radiation protection as they apply to irradiators. The goal here is to provide the individual with the necessary foundation to perform his or her task safely and to help the individual worker understand the basis for the safety requirements and procedures that will be taught.

(2) The requirements of parts 19 and 36 of NRC regulations. The operator is not expected to be an expert on NRC regulations or to be able to determine whether a given procedure is adequate to meet NRC regulations. Instead, operators should be instructed on NRC requirements that are directly applicable to their responsibilities.

(3) The operation of the irradiator. The objective is to help the person understand the operating and emergency procedures, not to make the individual an engineer.

(4) Licensee operating and emergency procedures that the individual will perform. This is the most important part of the training because the safe operation of the irradiator depends on the procedures being followed correctly. The objective is that the operator be able to correctly perform the procedures that he will be expected to perform. The training does not have to include procedures that the individual will not perform. For example, if the individual will not perform leak tests, the individual need not be trained in the procedure.

(5) Case histories of accidents and problems involving irradiators. The individual should be taught about situations that could lead to trouble. Instruction material on accidents is often difficult to obtain. However, NUREG–1345, "Review of Events at Large Pool-Type Irradiators," should provide some relevant information. Copies of NUREG 1345 may be purchased from the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013–7082. Copies are also available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161. A copy is also available for inspection and copying for a fee in the NRC Public Document Room, 2120 L Street, NW. (Lower Level), Washington, DC. Also, NRC

Information Notice No. 91–14, "Recent Safety-Related Incidents at Large Irradiators," can be used as a source of information.

Comments suggested that the rule should specify minimum hours of classroom training and on-the-job training for irradiator operators. In order to provide flexibility, the final rule does not specify how many hours of classroom training and on-the-job training are necessary to become an irradiator operator. This is intentional. A license applicant would describe the training program in its license application. The NRC would review the numbers of hours proposed by the applicant as part of the license application.

Comments suggested that the rule should specify the training and qualifications required for the radiation safety officer. The final rule also does not specify the training or qualifications needed by the radiation safety officer. This is also to allow flexibility. The license applicant would describe the minimum training, experience and qualifications of the radiation safety officer in its license application. A review would then be conducted on a case-by-case basis.

The NRC considered whether the regulation should include training requirements for other types of workers such as package handlers and maintenance workers. The NRC concluded that the general training requirements specified in § 19.12, "Instructions to workers," are suitable for other types of workers and, therefore, additional or more specific requirements are not necessary.

Paragraphs (f) and (g) allow oral tests following training given to certain workers (who are not operators). The comment was made that the tests should be written. The NRC did not adopt this comment. In this case the training is very minimal and could be very informal, such as a one-on-one discussion. In view of the informal and limited nature of the training, oral testing seems adequate.

Section 36.53 Operating and Emergency Procedures

This section lists the specific operating and emergency procedures that a licensee must have. The section also lists requirements for changing these procedures. Operators must be instructed in a changed procedure before it may be put into use. Changes in procedures that do not reduce the safety of the facility, are consistent with the outline submitted in the license application, and have been reviewed and approved by the radiation safety officer do not have to be approved by NRC nor must changed procedures of this type be reported to NRC. However, documentation on the changes must be retained for inspection by NRC (§ 36.81(d)). In response to a public comment, a requirement was added to require an emergency procedure in case of a jam of an automatic conveyor system.

One comment suggested that there should be written emergency procedures describing how to identify an individual leaking source, how it would be isolated and removed from an irradiator, the equipment that would be used, and how the facility would be restored to a noncontaminated state. The NRC did not accept the suggestion. The final rule requires an emergency procedure for dealing with a leaking source (§ 36.53(b)). The final rule also requires monitoring of personnel, facilities, equipment, and products if a leaking source is detected (§ 36.59(c)). After the emergency, the facility would enter a decontamination phase. Decontamination procedures could be developed at that time based on the specific situation.

A comment suggested that there should be written procedures on how to repair malfunctions. The NRC did not accept this comment. There are so many possible kinds of repairs that might be needed and so many different ways that the repairs could be done that it is not feasible to have written procedures addressing each situation. The NRC believes that repairs should be done by qualified personnel using their judgment and skills to respond to each particular situation.

Section 36.55 Personnel Monitoring

This section contains the personnel monitoring requirements for irradiator operators and other people entering the radiation room of a panoramic irradiator.

A commenter argued that this section is not needed because personnel monitoring requirements in § 20.1502, "Conditions requiring individual monitoring of external and internal occupational dose," are adequate for irradiators. Section 20.1502 requires the use of individual monitoring devices for anyone likely to receive in excess of 10 percent of an applicable dose limit. At irradiators, as currently designed and operated, operators are unlikely to exceed 10 percent of a dose limit. Therefore, § 20.1502 might not require any use of personnel dosimeters at irradiators. Nevertheless, the use of dosimeters by operators ensures that there is a dose measurement in case there is an unexpected entry into the radiation room while the source is exposed.

Film badge and thermoluminescent dosimeter (TLD) processors must be accredited for high energy photons in the normal and accident dose ranges. Paragraph (c) of § 20.1501, "General," requires that film badges and TLDs must be processed by an accredited processor for the types of radiation that would be encountered. For irradiators, the radiation type is high energy photons in both the normal and accident dose ranges. In the "American National Standard for Dosimetry-Personnel Dosimetry Performance—Criteria for Testing," ANSI N13.11–1983, the normal dose range is 0.3 to 10 millisieverts (0.03 to 10 rems) and the accident dose range is 0.1 to 5 grays (10 to 500 rads).

For groups of visitors, two people who enter the radiation room would have to wear dosimeters. The people wearing the dosimeters could be employees. Two dosimeters are required rather than one because occasionally a single reading could be misleading.

Section 36.57 Radiation Surveys

Radiation surveys to verify shield adequacy must be done every 3 years. They should also be done after new sources have been added or when modifications to the facility have been made that might increase dose rates outside the shield. If a licensee has performed surveys prior to the effective date of the rule that are adequate to demonstrate compliance with the requirements in § 36.25, the next survey would not have to be done for 3 years from the previous survey or until new sources were added or the facility modified. If the previous surveys were not adequate to demonstrate compliance with § 36.25, the surveys described in § 36.57 would have to be performed when the rule became effective.

A comment suggested a semiannual survey meter calibration frequency. An annual survey instrument calibration is recommended in American National Standard N323–1978, "Radiation Protection Instrumentation Test and Calibration." The NRC considers modern survey meters reliable and stable, making more frequent calibrations unnecessary.

The accuracy requirement for survey meter calibration is ±20 percent. In the past, the NRC has specified accuracy requirements of ±10 percent for some uses and ±20 percent for other uses. Modern survey meters can fairly easily be calibrated to be accurate to ±20 percent on all scales over their entire range of dose rates. At irradiators, survey meters are most frequently used

to determine whether dose rates in the entrance maze are the normally-occurring very low dose rates or are many times higher than normal. For these purposes, a survey meter accurate to ±20 percent is acceptable.

Another use of the survey meter is to verify that the dose rates outside the shielding wall and at the restricted area boundary are in compliance with NRC limits. These measurements are done infrequently. The most important purpose of these measurements is to check that the shielding contains no voids or poorly designed penetrations. Another purpose is to verify that limits on dose rates are not exceeded. A quantitative measurement is needed rather than a qualitative yes or no indication to verify that dose rate limits are not exceeded. However, at most facilities it has been found that the actual dose rates outside shield walls and at restricted area boundaries are far below the regulatory limits. Therefore, a highly accurate, quantitative measurement is not normally needed. Accuracy of ±20 percent is normally adequate to verify compliance.

It is possible that a measured dose rate might be very close to a limit. In those special situations, the licensee might need a measurement more accurate than ±20 percent. Thus, the accuracy requirement of ±20 percent in the regulations does not mean that the licensee would never need a measurement more accurate than ±20 percent. Rather, the regulation means that the ordinary, routine, periodic calibration need only be within ±20 percent.

A comment suggested that high range survey meters should be required. The NRC decided not to require high range survey meters (i.e., those that could measure dose rates in the radiation room while the source is exposed) because the NRC could not see a need for quantitative measurements of high doses. Upon entry to the maze of a radiation room, the dose rates would be relatively low if sources were exposed because of the shielding provided by the structure. The person entering should survey at a low range and exit if radiation is detected. Normal range survey meters are adequate and appropriate for that function. There is no need or use for quantitative high range measurements.

A comment on a related subject suggested required survey meters that do not saturate at high radiation dose rates. The NRC agreed with this suggestion and added a requirement to use survey meters that do not saturate.

Section 36.57 also requires that deionizing resins be monitored for radioactivity before release. A comment suggested prohibiting the return of deionizing resins to suppliers for recycling because irradiator sources could have small amounts of radioactive contamination on their surfaces due to manufacturing processes. Some of this contamination could be collected in the resins. Thus, resins could contain small amounts of radioactivity.

Instead, the rule requires an approach to monitoring very low quantities of radioactivity using survey instruments that has been used for medical waste. (See Regulatory Guide 10.8, "Guide for the Preparation of Applications for Medical Use Programs," Appendix R). The guide is available for inspection and copying for a fee at the Commission's Public Document Room, 2120 L Street, NW., (Lower Level), Washington, DC. Copies of issued guides may be purchased from the Government Printing Office at the current GPO price. Information on current GPO prices may be obtained by contacting the Superintendent of Documents, U.S. Government Printing Office, P.O. Box 37082, Washington, DC 20013–2171. Issued guides may also be purchased from the National Technical Information Service on a standing order basis. Details on this service may be obtained by writing NTIS, 5825 Port Royal Road, Springfield, VA 22161.)

The requirement in the regulation is that before releasing resins, they must be monitored in an area with a background radiation level less than 0.5 microsievert (0.05 millirem) per hour. Radiation levels from the resin must not be detectable above background radiation levels. The survey meter must be capable of detecting radiation levels of 0.5 microsievert (0.05 millirem) per hour.

Calculations show that the maximum dose rates that could go undetected correspond to concentrations of radioactivity in resins that would be below the effluent limits for water in 10 CFR part 20, Appendix B to §§ 20.1001–20.2401. If the resins were regenerated, the amount of backwash solution that would remove the radioactive material from the resins would dilute the concentration of the material by at least a factor of 20, based on the volumes of water used in regeneration. If mixed with other resins, the dilution would be that much larger. Thus, concentrations in the waste stream from regeneration, if any, would be far below the water effluent concentrations in 10 CFR part 20, Appendix B, to § 20.1001–20.2401. The Commission considers this approach adequate to protect public health and safety and has therefore not adopted the commenter's recommendation.

Section 36.59 Detection of Leaking Sources

This section describes how and when leak testing of sealed sources must be done. There are different requirements for dry-source-storage and wet-source-storage sources.

The requirements for dry-source-storage sources are similar to those contained in Regulatory Guide 10.9, Revision 1, "Guide for the Preparation of Applications for Licenses for the Use of Self-Contained Dry Source—Storage Irradiators." Although termed a "leak test," the test performed is a "contamination test." A positive indication does not necessarily indicate leakage. It could indicate surface contamination deposited during the manufacturing process.

A level of about 200 becquerels (0.005 microcurie) on a dry wipe is the level of contamination considered to indicate a leaking or contaminated source. (The value of 0.005 microcurie is represented as 200 becquerels in SI units rather than the more arithmetically precise value of 185 becquerels. The reason this value is used to represent no contamination is an order-of-magnitude value that should be stated with no more than one significant figure since a greater precision has no physical significance.)

Traditionally, the level for irradiator sources has been about 2000 becquerels (0.05 microcurie); however, previous manufacturing processes caused considerable surface contamination and irradiator sources could not be cleaned to below 2000 becquerels (0.05 microcurie). Detection of quantities below 2000 becquerels (0.05 microcurie) was difficult. Source manufacturing techniques have improved so that sources now have less surface contamination, and instruments have improved so it is possible to detect 200 becquerels (0.005 microcurie) of activity. Thus, the NRC believes it is now practical to meet a contamination level of 200 becquerels (0.005 microcurie).

The 200-becquerel (0.005-microcurie) quantity serves to alert the licensee that there might be leakage. If any leakage is discovered, the source must be removed from service.

Leak testing of sources used in pools by wipe-testing the sources is not highly sensitive or effective. The final rule requires that radioactive contamination be monitored each day the irradiator operates either by monitors on a pool water circulating system or by analysis of pool water. There are two basic methods for monitoring a pool water

circulating system. One method is to use a very sensitive detector, such as a sodium iodide detector, to look at a sample of water. The other method is to use a less sensitive detector, such as a geigermuller detector, to look at a filter/demineralizer where radioactive material would be concentrated and would build up. Both methods are acceptable.

One comment suggested that pool water should be monitored for contamination continuously. The NRC did not accept this suggestion because the monitoring frequency in the proposed rule (each day of operation) seemed adequate to avoid worker overexposures and overexposures of the public from contamination on products because significant leaks would still be discovered in time for effective protective actions.

The NRC considered whether water purification systems should be shielded. The NRC concluded that the buildup of radiation from cobalt-60 sources would be so slow that shielding would not be necessary.

One comment suggested the NRC should specify appropriate contamination levels for cleanup. The NRC did not do that in this rule. NRC's policy on this subject is being considered by NRC on a generic basis.

Section 36.61 Inspection and Maintenance

Inspection and maintenance includes the items that the licensee must periodically check to assure proper operation of the facility. The frequency of checks is not stated in the regulations because the frequency will be site-specific depending on the design of the facility. The frequency of checks must be described in the license application, as required in § 36.13(h).

A commenter suggested that the frequency of checks on the access control system, probably the most important safety feature of an irradiator, should be specified in the regulations. The NRC concluded that there is too much variation in irradiator design and operation to specify a frequency that would apply in all cases. Therefore, the NRC decided that the applicant should propose a frequency in the license application. This approach allows flexibility and at the same time allows the NRC to approve a frequency of checks that it considers adequate for a specific facility. Although not specifically stated in the regulations, the NRC expects a general check of the access control system each day the irradiator operates. The daily check, however, would not necessarily have to include a check of all components. The licensee could tailor the test to the particular facility.

Section 36.61(a)(3) requires a check of the operability of the radiation monitor on the pool water circulating system with a radiation check source. The monitor is used to detect radiation levels that are above normal, rather than to make quantitative measurements of dose. For this purpose, simple operability checks are appropriate.

The rule requires that malfunctions and defects be repaired "without undue delay." The criterion, "without undue delay," was chosen to provide the licensee with leeway in making some repairs. This provision was intentional. Sometimes it may be necessary to obtain a special part, piece of equipment, or particular skilled labor that may not be readily available. The NRC intended to allow the licensee wide latitude and flexibility in making some noncritical repairs. As long as reasonable effort had been made, the licensee would meet the requirement. Note, however, that some repairs would not be subject to this latitude given in this section. For example, 10 CFR 36.23 requires an operable access control system. Operating the irradiator with an inoperable system would immediately be a violation of 10 CFR 36.23.

Section 36.63 Pool Water Purity

This section requires that the licensee run water purification systems in irradiator pools sufficiently to maintain pool water conductivity below 20 microsiemens (micromhos) per centimeter. If water conductivity exceeds 20 microsiemens (micromhos) per centimeter, the licensee must take corrective actions.

The proposed rule used a conductivity of 10 rather than 20 microsiemens per centimeter. Some commenters said that there was no need for a conductivity as low as 10 microsiemens per centimeter and that 10 was very difficult to maintain. Another commenter said that underwater irradiators should not have to maintain pool conductivity below 10 microsiemens per centimeter because (1) the sources remain under water and do not cycle thermally, (2) they do not cause impurities to concentrate on the surface when water evaporates in the air, and (3) conductivity is not a good measure of the corrosive potential because the impurities introduced are monomers and proteins, not chlorides.

The purpose of maintaining clean water is to reduce corrosion of the sources and to keep the water clear. Clear water is desirable so that the sources and source rack can be inspected visually to check their condition. The NRC considers conductivity to be a good method of checking the purity of the water in irradiator pools. Analysis of pool water for chloride ions would be a better measurement of corrosion potential, but the analysis is more difficult than conductivity measurements.

The decision to change from the proposed rule value of 10 to the final rule value of 20 microsiemens per centimeter is based in large part on recent studies conducted at Argonne National Laboratory and Savannah River Laboratory. The studies were performed to determine the cycle crack growth rate, the stress corrosion cracking resistance, and the pitting resistance of stainless steels in water environments similar to those at irradiators and in the temperature range from 50°C to 150°C. The temperature in irradiator pools is generally below 40°, which is a less corrosive condition. The experiments used 316NG (a nuclear grade version of 316L used for most irradiator sources and 316LN stainless steels. Other stabilized stainless steels occasionally used for irradiator sources, such as 321, are expected to behave similarly to the 316 grades studied.

The studies indicated that, in water environments at 50° to 150°C containing up to 3 parts per million chloride and conductivity of 20 microsiemens per centimeter, the 316L stainless steels are resistant to stress corrosion cracking and pitting corrosion and do not show enhanced cyclic crack growth rates. The studies indicate that the 316L grades of stainless steel will be resistant to corrosion even at higher chloride concentrations and conductivities. Tests currently underway at Argonne National Laboratory will determine the threshold levels of chloride required to induce pitting corrosion.

Thus, the final rule endorses a conductivity value of 20 microsiemens per centimeter as adequate to prevent corrosion. There are likely to be unavoidable events that will occasionally cause pool conductivities to rise from time to time, but higher conductivities for limited times are not likely to initiate corrosion problems.

The final rule requires that pool water conductivity be checked frequently enough, but no less than weekly, to assure that the conductivity remains below 20 microsiemens per centimeter. This can be done by taking frequent measurements such as daily or by less frequent measurements combined with commonly-used statistical process control methods. For example, control charts can be used to demonstrate that the process is in control and fluctuating within a range that is always below the

limit. Similarly, trend analysis can be used to identify significant upward trends in conductivity that are likely to result in a conductivity exceeding 20 microsiemens per centimeter.

Section 36.65 Attendance During Operation

This section describes how an irradiator must be attended during operation. A considerable number of comments objected to the proposed requirements as excessive.

A suggestion was made that panoramic irradiators with automatic conveyor systems should be able to operate with only an operator present and an automatic telephone dialing device for responding to alarms. Another suggestion was made that the irradiator should be able to operate unattended but with an automatic telephone dialing device. The NRC did not accept these suggestions because automatic conveyor systems have enough malfunctions to require that an operator should be present at the site. The NRC further believes that the operator should have some type of backup in case of a problem.

The final rule requires another person onsite in addition to the operator for responding to alarms at a panoramic irradiator when product movement is involved. The term "onsite" was intended to give flexibility to the licensee. Thus, for example, for a research irradiator at a university, the person could be a guard located on campus but not in the building containing the irradiator.

A phrase in the proposed § 36.65(c) stating that static irradiations can be conducted only if the personnel access barrier is locked and all required alarms operable was deleted because it was redundant.

Section 36.67 Entering and Leaving the Radiation Room

This section describes the requirements for first entering the radiation room of a panoramic irradiator after an irradiation and for leaving the radiation room and locking it up before an irradiation. It also covers entry to the pool area of an underwater irradiator during a power failure.

Section 36.69 Irradiation of Explosive or Flammable Materials

The final rule prohibits the irradiation of explosive materials or more than small quantities of flammable materials unless the licensee has prior written authorization from the NRC. The reason for these prohibitions is that irradiation can cause chemical reactions that would cause a fire or explosion of flammable or explosive materials.

Flammable materials are those with a flash point temperature below 140°F. The flash point of 140°F was taken from the ANSI Category IV Standard. The flash point is the lowest temperature at which a substance will volatilize to yield sufficient vapor to form a flammable gaseous mixture with air, demonstrable through the production of a flash on contact with a small open flame. The flash points of common substances are tabulated in various engineering handbooks and manuals, for example, "Accident Prevention Manual for Industrial Operations," National Safety Council, Chicago, 1974, and "Handbook of Laboratory Safety," Second edition, Chemical Rubber Company, 1971. Examples of common flammable materials with a flash point below 140°F are: Acetone, benzene, most alcohols, number two fuel oil, gasoline, kerosene, toluene, turpentine, and any flammable gas.

Subpart E—Records

Section 36.81 Records and Retention Periods

The records that a licensee must maintain and their retention periods are specified in a single section, § 36.81. Thus, the licensee has a convenient "check list" to use to make sure that all records required by part 36 are kept.

Section 36.83 Reports

Since the proposed rule concerning irradiators was published, an amendment of part 30 (§ 30.50) expanded the reporting requirements for all part 30 licensees including irradiators. (56 FR 40757, August 16, 1991). It was therefore necessary to reevaluate the section in light of the new part 30 reporting requirements.

The proposed section listed certain irradiator-specific events to be reported that were considered to have safety significance. After comparing the events listed in the proposed section with the requirements of 10 CFR 30.50, it was concluded that 10 CFR 30.50 will require reporting of some significant events that could occur at irradiators. However, to remove any ambiguity and be sure that significant events would be reported, the NRC decided to retain the list of irradiator-specific events. However, the timing and contents of reports were made consistent with those in § 30.50 by referencing that section.

In addition, a requirement to report pool conductivity exceeding 100 microsiemens per centimeter was added. If pool conductivities approach valves at which corrosion might start to occur, the NRC wants to be informed so that it can monitor the problem.

Subpart F—Enforcement

Section 36.91 Violations

This section is provided to inform licensees and the public of legal actions the NRC can take against violations of the regulations. The wording of the section was changed to be consistent with a proposed rule on, "Clarification of Statutory Authority for Purposes of Criminal Enforcement" (57 FR 222, January 3, 1992).

Section 36.93 Criminal Penalties

This section was created from the last paragraph on the proposed § 36.91. The wording is consistent with that in the proposed rule on "Clarification of Statutory Authority for Purposes of Criminal Enforcement" (57 FR 222, January 3, 1992).

V. Other Issues

Certain other issues that were considered in response to public comments are discussed here.

A. Siting, Zoning, Land Use, and Building Code Requirements

The NRC recognizes that many areas have zoning, land use, and building code requirements that would apply to irradiators. It is the responsibility of the applicant or licensee to assure that any proposed facility meets the zoning, land use, and building code requirements of the local and State governments having jurisdiction over the intended site. The granting of an NRC license does not override applicable local zoning, land use, or building requirements. The rule was revised to reflect this. The applicant is advised to consult with the State and local governments before starting construction to assure that the facility would meet all State and local siting, zoning, and land use requirements. The NRC may review facility siting, on a case by case basis, if a unique threat is involved which may not be addressed by State and local requirements. Some commenters were concerned with the large number of curies of radioactive material that are contained in irradiators. Some commenters compared the number of curies with the radioactive inventory at nuclear research reactors. These comparisons are not strictly relevant because the radioactive materials in irradiators are not volatile like the noble gases and iodines produced in a reactor and because irradiators do not have a driving force equivalent to the decay heat from a reactor to expel the materials from the facility.

The NRC believes that an irradiator meeting the requirements in the new Part 36 would present no greater hazard or nuisance to its neighbors than other industrial facilities, because there is little likelihood of such an irradiator causing radiation exposures offsite in excess of NRC's part 20 limits for unrestricted areas. All irradiator experience to date indicates that irradiators do not present a threat to people outside the facility. Therefore, the NRC believes that, in general, irradiators can be located anywhere that local governments would permit an industrial facility to be built.

The NRC considered whether there should be siting requirements dealing with possible flooding of the irradiator or tidal waves. The NRC decided that no siting requirements with respect to possible flooding or tidal waves could be justified on a health and safety basis because flooding of the facility would not destroy the integrity of the shielding walls. Section 36.39 contains a requirement that shielding walls of panoramic irradiators must be constructed of reinforced concrete designed to meet generally accepted building code requirements for reinforced concrete. With this type of construction, shielding and sources are well protected from being carried off or damaged by a flood or wave. Furthermore, the final rule includes a requirement to have emergency procedures for coping with natural phenomena, which would include floods, so that the irradiator can be safely shut down and repaired. Flooding of the facility would undoubtedly result in the need for a time-consuming and expensive repair of flood damage, but no particular radiation hazard would be involved during repair of flood damage because sources could be safely stored during the repairs. Thus, while it may be in the licensee's own economic interest to avoid siting an irradiator at a location subject to flooding, flooding would not create a health and safety hazard.

The NRC also considered whether seismic zones should be considered in siting requirements. The NRC decided that irradiators could be built in any area of the country, but that irradiators in seismic areas (as defined in § 36.2) would need shielding walls designed to withstand an earthquake.

If an irradiator were subject to a large earthquake, the potential damage of radiological significance would be to the integrity of its concrete shielding. Analyses of reinforced concrete irradiator shields designed to meet generally accepted building code requirements for reinforced concrete have shown they are inherently quite robust and resistant to damage from moderate-size earthquakes. To protect against large earthquakes, the NRC decided to include requirements that radiation shields in seismic areas be designed to retain their integrity after a large earthquake. Also, all irradiators must have an emergency procedure for earthquakes.

B. Decommissioning

The NRC considered what design requirements were needed to facilitate decommissioning of the facility. Normally, decommissioning of facilities handling sealed sources is relatively simple, because there would be no radioactive contamination present. However, contamination could be present if leakage of the sources did occur. Thus, the NRC included requirements in the rule to facilitate decommissioning. Periodic leak tests of dry-storage sources and monitoring of the pool water are required to allow early detection of the leakage before large amounts of material have leaked out. With early detection of leakage, a leaking source could be identified and isolated. The pool walls should prevent contamination from leaking out of the pool if contamination occurred. The pool must also have a liner or a surface relatively easy to decontaminate. Thus, for an irradiator built in accordance with the rule, there should be no undue difficulty in decontamination.

The subjects of financial assurance and recordkeeping for decommissioning are dealt with in another section of the regulations (10 CFR 30.35) and thus are not included in part 36.

Comments suggested that the rule contain a requirement for financial assurance of ability to pay for the cleanup of accidents. This subject is currently being considered by NRC on a generic basis for all NRC materials licensees. Therefore, that subject is not covered in this rulemaking.

C. Aircraft Crashes

The NRC considered whether there should be a prohibition against locating irradiators near airports because of risk of radiation overexposures caused by an airplane crash. The NRC has concluded that a prohibition against placing an irradiator where other types of occupied buildings could be placed is not justified on safety grounds. The radioactive sources in an irradiator would be relatively protected from damage because they are generally contained within 6-foot thick reinforced-concrete walls and are encapsulated in steel. Even if a source were damaged as a result of an airplane crash, large quantities of radioactivity are unlikely to be spread from the immediate vicinity of the source rack because the sources are not volatile. With this protection, the radiological consequences of an airplane crash at an irradiator would not substantially increase the seriousness of the accident. Therefore, NRC will allow the construction of an irradiator at any location at which local authorities would allow other occupied buildings to be built.

D. Pool Water Coolers

There was a comment that pool water coolers should be required. Pool water coolers would lower water temperatures, reduce evaporation, reduce the need for makeup water, and reduce humidity in the air of the radiation room. High humidity can cause personnel discomfort or degrade cardboard packaging of the irradiated product but does not create a health and safety problem. In addition, high water temperature decreases the effectiveness of some demineralizers making it more difficult to maintain the required pool water purity. As a practical matter, irradiators with large inventories of radioactive sources are likely to have pool coolers. However, the coolers are not necessary to protect health and safety. Therefore, the NRC saw no regulatory need to require the use of pool water coolers.

E. Noxious Gas Control

Irradiators can produce ozone in concentrations exceeding those permitted by regulations of the Occupational Safety and Health Administration (OSHA) at 29 CFR 1910.1000, "Air Contaminants." Nitrogen oxides can also be produced, although concentrations would not be expected to exceed OSHA's limits. To control these noxious gases, irradiators with large sources are typically equipped with ventilation systems to exhaust the gases before personnel entry.

OSHA regulates exposure to ozone and other noxious gases in the workplace, and the U.S. Environmental Protection Agency regulates emissions offsite. If NRC personnel note a problem with noxious gases at an irradiator during inspection, the NRC will notify OSHA of the problem under the terms of a "Memorandum of Understanding Between the Nuclear Regulatory Commission and the Occupational Safety and Health Administration; Worker Protection at NRC-Licensed Facilities" (53 FR 43590; October 31, 1988).

F. Use of HEPA Filters

A comment was made that the air exhaust ducts from the radiation room should be equipped with HEPA (high efficiency particulate absolute) filters to prevent the spread of contamination in case of a leaking source. The NRC has decided that HEPA filters are not necessary at irradiators to protect health and safety. The comment was made in the context of the leaking cesium-137 WESF source that occurred in Georgia in 1988. However, the NRC has decided that WESF sources should not be used in irradiators, and cobalt-60 is used in a far less dispersible form. In addition, in the Georgia accident there was little escape of cesium-137 from the building and no known dose to the public. Thus, the Georgia accident would support the view that HEPA filters are not necessary.

VI. Agreement State Compatibility

The rule is a matter of compatibility between the NRC and the Agreement States, thereby providing consistency between Federal and State safety requirements. This rule is assigned a level of compatibility which would allow the Agreement States to adopt additional requirements based on local concerns or experience.

VII. Finding of No Significant Environmental Impact: Availability

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in subpart A of 10 CFR part 51, that this rule is not a major Federal action significantly affecting the quality of the human environment, and therefore an environmental impact statement is not required. The action codifies in a rule the licensing requirements and policies on irradiators. The issue in this action is not whether to license or permit the operation of irradiators. This action concerns whether to codify the radiation safety requirements for irradiators in a regulation or whether to take no action and thus continue to license irradiators on a case-by-case basis. This action is directed to improving the regulatory, licensing, inspection, and enforcement framework relating to these irradiators and will not affect the quality of the human environment. The environmental assessment and finding of no significant impact on which this determination is based are available for inspection at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies are available without charge upon written request from Distribution Section, Office of Information Resources Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

VIII. Paperwork Reduction Act Statement

This final rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements were approved by the Office of Management and Budget approval number 3150–0158.

Public reporting burden for this collection of information is estimated to average 750 hours per year per licensee, including the time required reviewing instructions, searching existing data sources, gathering and maintaining the data needed and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Information and Records Management Branch (MNBB–7714), U.S. Nuclear Regulatory Commission, Washington, DC 20555; and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB–3019, (3150–0158), Office of Management and Budget, Washington, DC 20503.

IX. Regulatory Analysis

The Commission has prepared a regulatory analysis on this regulation. The analysis examines the costs and benefits of the requirements in the rule. The analysis is available for inspection in the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the analysis may be obtained without charge upon written request from: Distribution Section, Office of Administration, USNRC, Washington, DC 20555.

X. Regulatory Flexibility Certification

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule does not have a significant economic impact on a substantial number of small entities.

Currently, there are roughly 70 to 80 irradiators that are covered by the rule. Of those irradiators, there are currently about 40 irradiators in the U.S. with sources greater than 9×10^{15} becquerels (250,000 curies) up to a maximum of 1.1×10^{18} becquerels (30,000,000 curies). Several additional irradiators are either under construction or proposed for construction in Agreement States. In addition, there are irradiators with sources smaller than 9×10^{15} becquerels (250,000 curies) that would be subject to the rule. Thus, the total number of facilities affected by the rule is roughly 70 to 80.

The NRC currently defines a small business as a business having less than $3.5 million in annual receipts. Some of the licensees that are affected by this rule might be small entities. However, the actual financial impacts of the rule are quite small. A survey of irradiators performed for the previously mentioned Regulatory Analysis indicated that, with minor exceptions, all surveyed licensees are in compliance with most of the requirements of the rule. The rule contains options such that the six licensees found not to be in full compliance with the requirements could limit their incremental costs to $5,000 or less, estimated as part of the previously mentioned Regulatory Analysis. These costs are not considered significant.

Thus, the rule will not impose a significant economic impact on small entities, as defined in the Regulatory Flexibility Act of 1980, because the requirements do not substantially differ from current licensing requirements.

XI. Backfit Analysis

The NRC has determined that the backfit rule, 10 CFR 50.109, does not apply to this proposed rule and therefore that a backfit analysis is not required for this rule. The rule does not involve any provisions that would impose backfits as defined in 10 CFR 50.109(a)(1).

List of Subjects

10 CFR Part 19

Criminal penalty, Environmental protection, Nuclear materials, Nuclear power plants and reactors, Occupational safety and health, Radiation protection, Reporting and recordkeeping requirements, Sex discrimination.

10 CFR Part 20

Byproduct material, Criminal penalty, Licensed material, Nuclear materials, Nuclear power plants and reactors, Occupational safety and health, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Source material, Special nuclear material, Waste treatment and disposal.

10 CFR Part 30

Byproduct material, Criminal penalty, Government contracts, Intergovernmental relations, Isotopes, Nuclear materials, Radiation protection, Reporting and recordkeeping requirements.

10 CFR Part 36

Byproduct material, Criminal penalty, Nuclear materials, Reporting and recordkeeping requirements, Scientific equipment, Security measures.

10 CFR Part 40

Criminal penalty, Government contracts, Hazardous materials—transportation, Nuclear materials, Reporting and recordkeeping requirements, Source material, Uranium.

10 CFR Part 51

Administrative practice and procedure, Environmental impact statement, Nuclear materials, Nuclear power plants and reactors, Reporting and recordkeeping requirements.

10 CFR Part 70

Criminal penalty, Hazardous materials—transportation, Material control and accounting, Nuclear materials, Packaging and containers, Radiation protection, Reporting and recordkeeping requirements, Scientific equipment, Security measures, Special nuclear material.

10 CFR Part 170

Byproduct material, Non-payment penalty, Nuclear materials, Nuclear power plants and reactors, Source material, Special nuclear material.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, and 5 U.S.C. 552 and 553, the NRC is adopting 10 CFR part 36 and making the conforming amendments to 10 CFR parts 19, 20, 30, 40, 51, 70, and 170 as follows.

1. Part 36 is added to 10 CFR chapter I to read as follows:

PART 36—LICENSES AND RADIATION SAFETY REQUIREMENTS FOR IRRADIATORS

Subpart A—General Provisions

Sec.

36.1 Purpose and scope.
36.2 Definitions.
36.5 Interpretations.
36.8 Information collection requirements: OMB approval.

Subpart B—Specific Licensing Requirements

36.11 Application for a specific license.
36.13 Specific licenses for irradiators.
36.15 Start of construction.
36.17 Applications for exemptions.
36.19 Request for written statements.

Subpart C—Design and Performance Requirements for Irradiators

36.21 Performance criteria for sealed sources.
36.23 Access control.
36.25 Shielding.
36.27 Fire protection.
36.29 Radiation monitors.
36.31 Control of source movement.
36.33 Irradiator pools.
36.35 Source rack protection.
36.37 Power failures.
36.39 Design requirements.
36.41 Construction monitoring and acceptance testing.

Subpart D—Operation of Irradiators

36.51 Training.
36.53 Operating and emergency procedures.
36.55 Personnel monitoring.
36.57 Radiation surveys.
36.59 Detection of leaking sources.
36.61 Inspection and maintenance.
36.63 Pool water purity.
36.65 Attendance during operation.
36.67 Entering and leaving the radiation room.
36.69 Irradiation of explosive or flammable materials.

Subpart E—Records

36.81 Records and retention periods.
36.83 Reports.

Subpart F—Enforcement

36.91 Violations.
36.93 Criminal penalties.

Authority: Secs. 81, 82, 161, 182, 183, 186, 68 Stat. 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2111, 2112, 2201, 2232, 2233, 2236, 2282); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846).

Subpart A—General Provisions

§ 36.1 Purpose and scope.

(a) This part contains requirements for the issuance of a license authorizing the use of sealed sources containing radioactive materials in irradiators used to irradiate objects or materials using gamma radiation. This part also contains radiation safety requirements for operating irradiators. The requirements of this part are in addition to other requirements of this chapter. In particular, the provisions of parts 19, 20, 21, 30, 71, 170, and 171 of this chapter apply to applications and licenses subject to this part. Nothing in this part relieves the licensee from complying with other applicable Federal, State and local regulations governing the siting, zoning, land use, and building code requirements for industrial facilities.

(b) The regulations in this part apply to panoramic irradiators that have either dry or wet storage of the radioactive sealed sources and to underwater irradiators in which both the source and the product being irradiated are under water. Irradiators whose dose rates exceed 5 grays (500 rads) per hour at 1 meter from the radioactive sealed sources in air or in water, as applicable for the irradiator type, are covered by this part.

(c) The regulations in this part do not apply to self-contained dry-source-storage irradiators (those in which both the source and the area subject to irradiation are contained within a device and are not accessible by personnel), medical radiology or teletherapy, radiography (the irradiation of materials for nondestructive testing purposes), gauging, or open-field (agricultural) irradiations.

§ 36.2 Definitions.

Annually means either (1) at intervals not to exceed 1 year or (2) once per year, at about the same time each year (plus or minus 1 month).

Doubly encapsulated sealed source means a sealed source in which the radioactive material is sealed within a capsule and that capsule is sealed within another capsule.

Irradiator means a facility that uses radioactive sealed sources for the irradiation of objects or materials and in which radiation dose rates exceeding 5 grays (500 rads) per hour exist at 1 meter from the sealed radioactive sources in air or water, as applicable for the irradiator type, but does not include irradiators in which both the sealed source and the area subject to irradiation are contained within a device and are not accessible to personnel.

Irradiator operator means an individual who has successfully completed the training and testing described in § 36.51 and is authorized by the terms of the license to operate the irradiator without a supervisor present.

Panoramic dry-source-storage irradiator means an irradiator in which the irradiations occur in air in areas potentially accessible to personnel and in which the sources are stored in shields made of solid materials. The term includes beam-type dry-source-storage irradiators in which only a narrow beam of radiation is produced for performing irradiations.

Panoramic irradiator means an irradiator in which the irradiations are done in air in areas potentially accessible to personnel. The term includes beam-type irradiators.

Panoramic wet-source-storage irradiator means an irradiator in which the irradiations occur in air in areas potentially accessible to personnel and in which the sources are stored under water in a storage pool.

Pool irradiator means any irradiator at which the sources are stored or used in a pool of water including panoramic wet-source-storage irradiators and underwater irradiators.

Product conveyor system means a system for moving the product to be irradiated to, from, and within the area where irradiation takes place.

Radiation room means a shielded room in which irradiations take place. Underwater irradiators do not have radiation rooms.

Radiation safety officer means an individual with responsibility for the overall radiation safety program at the facility.

Sealed source means any byproduct material that is used as a source of radiation and is encased in a capsule designed to prevent leakage or escape of the byproduct material.

Seismic area means any area where the probability of a horizontal acceleration in rock of more than 0.3 times the acceleration of gravity in 250 years is greater than 10 percent, as designated by the U.S. Geological Survey.

Underwater irradiator means an irradiator in which the sources always remain shielded under water and humans do not have access to the sealed sources or the space subject to irradiation without entering the pool.

§ 36.5 Interpretations.

Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission, other than a written interpretation by the General Counsel, will be recognized to be binding upon the Commission.

§ 36.8 Information collection requirements: OMB approval.

(a) The Nuclear Regulatory Commission has submitted the information collection requirements contained in this part to the Office of Management and Budget (OMB) for approval as required by the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). OMB has approved the information collection requirements contained in this part under control number 3150–0158.

(b) The approved information collection requirements contained in this part appear in §§ 36.11, 36.13, 36.17, 36.19, 36.21(a)(1), 36.81, and 36.83.

(c) This part contains information collection requirements in addition to those approved under the control number specified in paragraph (a) of this section. These information collection requirements and the control numbers under which they are approved are as follows:

(1) In § 36.11, NRC Form 313 is approved under control number 3150–0120.

(2) [Reserved]

Subpart B—Specific Licensing Requirements

§ 36.11 Application for a specific license.

A person, as defined in § 30.4 of this chapter, may file an application for a specific license authorizing the use of sealed sources in an irradiator on Form NRC 313, "Application for Material License." Each application for a license, other than a license exempted from part 170 of this chapter, must be accompanied by the fee prescribed in § 170.31 of this chapter. The application and one copy must be sent to the appropriate NRC Regional Office listed in Appendix D to part 20 of this chapter.

§ 36.13 Specific licenses for irradiators.

The Commission will approve an application for a specific license for the use of licensed material in an irradiator if the applicant meets the requirements contained in this section.

(a) The applicant shall satisfy the general requirements specified in § 30.33 of this chapter and the requirements contained in this part.

(b) The application must describe the training provided to irradiator operators including—

(1) Classroom training;

(2) On-the-job or simulator training;

(3) Safety reviews;

(4) Means employed by the applicant to test each operator's understanding of the Commission's regulations and licensing requirements and the irradiator operating and emergency procedures; and

(5) Minimum training and experience of personnel who may provide training.

(c) The application must include an outline of the written operating and emergency procedures listed in § 36.53 that describes the radiation safety aspects of the procedures.

(d) The application must describe the organizational structure for managing the irradiator, specifically the radiation safety responsibilities and authorities of the radiation safety officer and those management personnel who have important radiation safety responsibilities or authorities. In particular, the application must specify who, within the management structure, has the authority to stop unsafe operations. The application must also describe the training and experience required for the position of radiation safety officer.

(e) The application must include a description of the access control systems required by § 36.23, the radiation monitors required by § 36.29, the method of detecting leaking sources required by § 36.59 including the sensitivity of the method, and a diagram of the facility that shows the locations of all required interlocks and radiation monitors.

(f) If the applicant intends to perform leak testing of dry-source-storage sealed sources, the applicant shall establish procedures for leak testing and submit a description of these procedures to the Commission. The description must include the—

(1) Instruments to be used;

(2) Methods of performing the analysis; and

(3) Pertinent experience of the individual who analyzes the samples.

(g) If licensee personnel are to load or unload sources, the applicant shall describe the qualifications and training of the personnel and the procedures to be used. If the applicant intends to contract for source loading or unloading at its facility, the loading or unloading must be done by an organization specifically authorized by the Commission or an Agreement State to load or unload irradiator sources.

(h) The applicant shall describe the inspection and maintenance checks, including the frequency of the checks required by § 36.61.

§ 36.15 Start of construction.

The applicant may not begin construction of a new irradiator prior to the submission to NRC of both an application for a license for the irradiator and the fee required by § 170.31. As used in this section, the term "construction" includes the construction of any portion of the permanent irradiator structure on the site but does not include: Engineering and design work, purchase of a site, site surveys or soil testing, site preparation, site excavation, construction of warehouse or auxiliary structures, and other similar tasks. Any activities undertaken prior to the issuance of a license are entirely at the risk of the applicant and have no bearing on the issuance of a license with respect to the requirements of the Atomic Energy Act of 1954, as amended, and rules, regulations, and orders issued under the Act.

§ 36.17 Applications for exemptions.

(a) The Commission may, upon application of any interested person or upon its own initiative, grant any exemptions from the requirements in this part that it determines are

authorized by law and will not endanger life or property or the common defense and security and are otherwise in the public interest.

(b) Any application for a license or for amendment of a license authorizing use of a teletherapy-type unit for irradiation of materials or objects may include proposed alternatives for the requirements of this part. The Commission will approve the proposed alternatives if the applicant provides adequate rationale for the proposed alternatives and demonstrates that they are likely to provide an adequate level of safety for workers and the public.

§ 36.19 Request for written statements.

(a) After the filing of the original application, the Commission may request further information necessary to enable the Commission to determine whether the application should be granted or denied.

(b) Each license is issued with the condition that the licensee will, at any time before expiration of the license, upon the Commission's request, submit written statements to enable the Commission to determine whether the license should be modified, suspended, or revoked.

Subpart C—Design and Performance Requirements for Irradiators

§ 36.21 Performance criteria for sealed sources.

(a) *Requirements.* Sealed sources installed after July 1, 1993:

(1) Must have a certificate of registration issued under 10 CFR 32.210;

(2) Must be doubly encapsulated;

(3) Must use radioactive material that is as nondispersible as practical and that is as insoluble as practical if the source is used in a wet-source-storage or wet-source-change irradiator;

(4) Must be encapsulated in a material resistant to general corrosion and to localized corrosion, such as 316L stainless steel or other material with equivalent resistance if the sources are for use in irradiator pools; and

(5) In prototype testing of the sealed source, must have been leak tested and found leak-free after each of the tests described in paragraphs (b) through (g) of this section.

(b) *Temperature.* The test source must be held at −40°C for 20 minutes, 600°C for 1 hour, and then be subjected to a thermal shock test with a temperature drop from 600°C to 20°C within 15 seconds.

(c) *Pressure.* The test source must be twice subjected for at least 5 minutes to an external pressure (absolute) of 2 million newtons per square meter.

(d) *Impact.* A 2-kilogram steel weight, 2.5 centimeters in diameter, must be dropped from a height of 1 meter onto the test source.

(e) *Vibration.* The test source must be subjected 3 times for 10 minutes each to vibrations sweeping from 25 hertz to 500 hertz with a peak amplitude of 5 times the acceleration of gravity. In addition, each test source must be vibrated for 30 minutes at each resonant frequency found.

(f) *Puncture.* A 50-gram weight and pin, 0.3-centimeter pin diameter, must be dropped from a height of 1 meter onto the test source.

(g) *Bend.* If the length of the source is more than 15 times larger than the minimum cross-sectional dimension, the test source must be subjected to a force of 2000 newtons at its center equidistant from two support cylinders, the distance between which is 10 times the minimum cross-sectional dimension of the source.

§ 36.23 Access control.

(a) Each entrance to a radiation room at a panoramic irradiator must have a door or other physical barrier to prevent inadvertent entry of personnel if the sources are not in the shielded position. Product conveyor systems may serve as barriers as long as they reliably and consistently function as a barrier. It must not be possible to move the sources out of their shielded position if the door or barrier is open. Opening the door or barrier while the sources are exposed must cause the sources to return promptly to their shielded position. The personnel entrance door or barrier must have a lock that is operated by the same key used to move the sources. The doors and barriers must not prevent any individual in the radiation room from leaving.

(b) In addition, each entrance to a radiation room at a panoramic irradiator must have an independent backup access control to detect personnel entry while the sources are exposed. Detection of entry while the sources are exposed must cause the sources to return to their fully shielded position and must also activate a visible and audible alarm to make the individual entering the room aware of the hazard. The alarm must also alert at least one other individual who is onsite of the entry. That individual shall be trained on how to respond to the alarm and prepared to promptly render or summon assistance.

(c) A radiation monitor must be provided to detect the presence of high radiation levels in the radiation room of a panoramic irradiator before personnel entry. The monitor must be integrated with personnel access door locks to prevent room access when radiation levels are high. Attempted personnel entry while the monitor measures high radiation levels, must activate the alarm described in paragraph (b) of this section. The monitor may be located in the entrance (normally referred to as the maze) but not in the direct radiation beam.

(d) Before the sources move from their shielded position in a panoramic irradiator, the source control must automatically activate conspicuous visible and audible alarms to alert people in the radiation room that the sources will be moved from their shielded position. The alarms must give individuals enough time to leave the room before the sources leave the shielded position.

(e) Each radiation room at a panoramic irradiator must have a clearly visible and readily accessible control that would allow an individual in the room to make the sources return to their fully shielded position.

(f) Each radiation room of a panoramic irradiator must contain a control that prevents the sources from moving from the shielded position unless the control has been activated and the door or barrier to the radiation room has been closed within a preset time after activation of the control.

(g) Each entrance to the radiation room of a panoramic irradiator and each entrance to the area within the personnel access barrier of an underwater irradiator must have a sign bearing the radiation symbol and the words, "Caution (or danger) radioactive material." Panoramic irradiators must also have a sign stating "High radiation area," but the sign may be removed, covered, or otherwise made inoperative when the sources are fully shielded.

(h) If the radiation room of a panoramic irradiator has roof plugs or other movable shielding, it must not be possible to operate the irradiator unless the shielding is in its proper location. This requirement may be met by interlocks that prevent operation if shielding is not placed properly or by an operating procedure requiring inspection of shielding before operating.

(i) Underwater irradiators must have a personnel access barrier around the pool which must be locked to prevent access when the irradiator is not attended. Only operators and facility management may have access to keys to the personnel access barrier. There must be an intrusion alarm to detect unauthorized entry when the personnel access barrier is locked. Activation of the intrusion alarm must alert an individual (not necessarily onsite) who

is prepared to respond or summon assistance.

§ 36.25 Shielding.

(a) The radiation dose rate in areas that are normally occupied during operation of a panoramic irradiator may not exceed 0.02 millisievert (2 millirems) per hour at any location 30 centimeters or more from the wall of the room when the sources are exposed. The dose rate must be averaged over an area not to exceed 100 square centimeters having no linear dimension greater than 20 cm. Areas where the radiation dose rate exceeds 0.02 millisievert (2 millirems) per hour must be locked, roped off, or posted.

(b) The radiation dose at 30 centimeters over the edge of the pool of a pool irradiator may not exceed 0.02 millisievert (2 millirems) per hour when the sources are in the fully shielded position.

(c) The radiation dose rate at 1 meter from the shield of a dry-source-storage panoramic irradiator when the source is shielded may not exceed 0.02 millisievert (2 millirems) per hour and at 5 centimeters from the shield may not exceed 0.2 millisievert (20 millirems) per hour.

§ 36.27 Fire protection.

(a) The radiation room at a panoramic irradiator must have heat and smoke detectors. The detectors must activate an audible alarm. The alarm must be capable of alerting a person who is prepared to summon assistance promptly. The sources must automatically become fully shielded if a fire is detected.

(b) The radiation room at a panoramic irradiator must be equipped with a fire extinguishing system capable of extinguishing a fire without the entry of personnel into the room. The system for the radiation room must have a shut-off valve to control flooding into unrestricted areas.

§ 36.29 Radiation monitors.

(a) Irradiators with automatic product conveyor systems must have a radiation monitor with an audible alarm located to detect loose radioactive sources that are carried toward the product exit. If the monitor detects a source, an alarm must sound and product conveyors must stop automatically. The alarm must be capable of alerting an individual in the facility who is prepared to summon assistance. Underwater irradiators in which the product moves within an enclosed stationary tube are exempt from the requirements of this paragraph.

(b) Underwater irradiators that are not in a shielded radiation room must have a radiation monitor over the pool to detect abnormal radiation levels. The monitor must have an audible alarm and a visible indicator at entrances to the personnel access barrier around the pool. The audible alarm may have a manual shut-off. The alarm must be capable of alerting an individual who is prepared to respond promptly.

§ 36.31 Control of source movement.

(a) The mechanism that moves the sources of a panoramic irradiator must require a key to actuate. Actuation of the mechanism must cause an audible signal to indicate that the sources are leaving the shielded position. Only one key may be in use at any time, and only operators or facility management may possess it. The key must be attached to a portable radiation survey meter by a chain or cable. The lock for source control must be designed so that the key may not be removed if the sources are in an unshielded position. The door to the radiation room must require the same key.

(b) The console of a panoramic irradiator must have a source position indicator that indicates when the sources are in the fully shielded position, when they are in transit, and when the sources are exposed.

(c) The control console of a panoramic irradiator must have a control that promptly returns the sources to the shielded position.

(d) Each control for a panoramic irradiator must be clearly marked as to its function.

§ 36.33 Irradiator pools.

(a) For licenses initially issued after July 1, 1993, irradiator pools must either:

(1) Have a water-tight stainless steel liner or a liner metallurgically compatible with other components in the pool; or

(2) Be constructed so that there is a low likelihood of substantial leakage and have a surface designed to facilitate decontamination. In either case, the licensee shall have a method to safely store the sources during repairs of the pool.

(b) For licenses initially issued after July 1, 1993, irradiator pools must have no outlets more than 0.5 meter below the normal low water level that could allow water to drain out of the pool. Pipes that have intakes more than 0.5 meter below the normal low water level and that could act as siphons must have siphon breakers to prevent the siphoning of pool water.

(c) A means must be provided to replenish water losses from the pool.

(d) A visible indicator must be provided in a clearly visible location to indicate if the pool water level is below the normal low water level or above the normal high water level.

(e) Irradiator pools must be equipped with a purification system designed to be capable of maintaining the water during normal operation at a conductivity of 20 microsiemens per centimeter or less and with a clarity so that the sources can be seen clearly.

(f) A physical barrier, such as a railing or cover, must be used around or over irradiator pools during normal operation to prevent personnel from accidentally falling into the pool. The barrier may be removed during maintenance, inspection, and service operations.

(g) If long-handled tools or poles are used in irradiator pools, the radiation dose rate on the handling areas of the tools may not exceed 0.02 millisievert (2 millirems) per hour.

§ 36.35 Source rack protection.

If the product to be irradiated moves on a product conveyor system, the source rack and the mechanism that moves the rack must be protected by a barrier or guides to prevent products and product carriers from hitting or touching the rack or mechanism.

§ 36.37 Power failures.

(a) If electrical power at a panoramic irradiator is lost for longer than 10 seconds, the sources must automatically return to the shielded position.

(b) The lock on the door of the radiation room of a panoramic irradiator may not be deactivated by a power failure.

(c) During a power failure, the area of any irradiator where sources are located may be entered only when using an operable and calibrated radiation survey meter.

§ 36.39 Design requirements.

Irradiators whose construction begins after July 1, 1993, must meet the design requirements of this section.

(a) *Shielding.* For panoramic irradiators, the licensee shall design shielding walls to meet generally accepted building code requirements for reinforced concrete and design the walls, wall penetrations, and entranceways to meet the radiation shielding requirements of § 36.25. If the irradiator will use more than 2×10^{17} becquerels (5 million curies) of activity, the licensee shall evaluate the effects of heating of the shielding walls by the irradiator sources.

(b) *Foundations.* For panoramic irradiators, the licensee shall design the

foundation, with consideration given to soil characteristics, to ensure it is adequate to support the weight of the facility shield walls.

(c) *Pool integrity.* For pool irradiators, the licensee shall design the pool to assure that it is leak resistant, that it is strong enough to bear the weight of the pool water and shipping casks, that a dropped cask would not fall on sealed sources, that all outlets or pipes meet the requirements of § 36.33(b), and that metal components are metallurgically compatible with other components in the pool.

(d) *Water handling system.* For pool irradiators, the licensee shall verify that the design of the water purification system is adequate to meet the requirements of § 36.33(e). The system must be designed so that water leaking from the system does not drain to unrestricted areas without being monitored.

(e) *Radiation monitors.* For all irradiators, the licensee shall evaluate the location and sensitivity of the monitor to detect sources carried by the product conveyor system as required by § 36.29(a). The licensee shall verify that the product conveyor is designed to stop before a source on the product conveyor would cause a radiation overexposure to any person. For pool irradiators, if the licensee uses radiation monitors to detect contamination under § 36.59(b), the licensee shall verify that the design of radiation monitoring systems to detect pool contamination includes sensitive detectors located close to where contamination is likely to concentrate.

(f) *Source rack.* For pool irradiators, the licensee shall verify that there are no crevices on the source or between the source and source holder that would promote corrosion on a critical area of the source. For panoramic irradiators, the licensee shall determine that source rack drops due to loss of power will not damage the source rack and that source rack drops due to failure of cables (or alternate means of support) will not cause loss of integrity of sealed sources. For panoramic irradiators, the licensee shall review the design of the mechanism that moves the sources to assure that the likelihood of a stuck source is low and that, if the rack sticks, a means exists to free it with minimal risk to personnel.

(g) *Access control.* For panoramic irradiators, the licensee shall verify from the design and logic diagram that the access control system will meet the requirements of § 36.23.

(h) *Fire protection.* For panoramic irradiators, the licensee shall verify that the number, location, and spacing of the smoke and heat detectors are appropriate to detect fires and that the detectors are protected from mechanical and radiation damage. The licensee shall verify that the design of the fire extinguishing system provides the necessary discharge patterns, densities, and flow characteristics for complete coverage of the radiation room and that the system is protected from mechanical and radiation damage.

(i) *Source return.* For panoramic irradiators, the licensee shall verify that the source rack will automatically return to the fully shielded position if offsite power is lost for more than 10 seconds.

(j) *Seismic.* For panoramic irradiators to be built in seismic areas, the licensee shall design the reinforced concrete radiation shields to retain their integrity in the event of an earthquake by designing to the seismic requirements of an appropriate source such as American Concrete Institute Standard ACI 318–89, "Building Code Requirements for Reinforced Concrete," Chapter 21, "Special Provisions for Seismic Design," or local building codes, if current.

(k) *Wiring.* For panoramic irradiators, the licensee shall verify that electrical wiring and electrical equipment in the radiation room are selected to minimize failures due to prolonged exposure to radiation.

§ 36.41 Construction monitoring and acceptance testing.

The requirements of this section must be met for irradiators whose construction begins after July 1, 1993. The requirements must be met prior to loading sources.

(a) *Shielding.* For panoramic irradiators, the licensee shall monitor the construction of the shielding to verify that its construction meets design specifications and generally accepted building code requirements for reinforced concrete.

(b) *Foundations.* For panoramic irradiators, the licensee shall monitor the construction of the foundations to verify that their construction meets design specifications.

(c) *Pool integrity.* For pool irradiators, the licensee shall verify that the pool meets design specifications and shall test the integrity of the pool. The licensee shall verify that outlets and pipes meet the requirements of § 36.33(b).

(d) *Water handling system.* For pool irradiators, the licensee shall verify that the water purification system, the conductivity meter, and the water level indicators operate properly.

(e) *Radiation monitors.* For all irradiators, the licensee shall verify the proper operation of the monitor to detect sources carried on the product conveyor system and the related alarms and interlocks required by § 36.29(a). For pool irradiators, the licensee shall verify the proper operation of the radiation monitors and the related alarm if used to meet § 36.59(b). For underwater irradiators, the licensee shall verify the proper operation of the over-the-pool monitor, alarms, and interlocks required by § 36.29(b).

(f) *Source rack.* For panoramic irradiators, the licensee shall test the movement of the source racks for proper operation prior to source loading; testing must include source rack lowering due to simulated loss of power. For all irradiators with product conveyor systems, the licensee shall observe and test the operation of the conveyor system to assure that the requirements in § 36.35 are met for protection of the source rack and the mechanism that moves the rack; testing must include tests of any limit switches and interlocks used to protect the source rack and mechanism that moves the rack from moving product carriers.

(g) *Access control.* For panoramic irradiators, the licensee shall test the completed access control system to assure that it functions as designed and that all alarms, controls, and interlocks work properly.

(h) *Fire protection.* For panoramic irradiators, the licensee shall test the ability of the heat and smoke detectors to detect a fire, to activate alarms, and to cause the source rack to automatically become fully shielded. The licensee shall test the operability of the fire extinguishing system.

(i) *Source return.* For panoramic irradiators, the licensee shall demonstrate that the source racks can be returned to their fully shielded positions without offsite power.

(j) *Computer systems.* For panoramic irradiators that use a computer system to control the access control system, the licensee shall verify that the access control system will operate properly if offsite power is lost and shall verify that the computer has security features that prevent an irradiator operator from commanding the computer to override the access control system when it is required to be operable.

(k) *Wiring.* For panoramic irradiators, the licensee shall verify that the electrical wiring and electrical equipment that were installed meet the design specifications.

Subpart D—Operation of Irradiators

§ 36.51 Training.

(a) Before an individual is permitted to operate an irradiator without a supervisor present, the individual must be instructed in:

(1) The fundamentals of radiation protection applied to irradiators (including the differences between external radiation and radioactive contamination, units of radiation dose, NRC dose limits, why large radiation doses must be avoided, how shielding and access controls prevent large doses, how an irradiator is designed to prevent contamination, the proper use of survey meters and personnel dosimeters, other radiation safety features of an irradiator, and the basic function of the irradiator);

(2) The requirements of parts 19 and 36 of NRC regulations that are relevant to the irradiator;

(3) The operation of the irradiator;

(4) Those operating and emergency procedures listed in § 36.53 that the individual is responsible for performing; and

(5) Case histories of accidents or problems involving irradiators.

(b) Before an individual is permitted to operate an irradiator without a supervisor present, the individual shall pass a written test on the instruction received consisting primarily of questions based on the licensee's operating and emergency procedures that the individual is responsible for performing and other operations necessary to safely operate the irradiator without supervision.

(c) Before an individual is permitted to operate an irradiator without a supervisor present, the individual must have received on-the-job training or simulator training in the use of the irradiator as described in the license application. The individual shall also demonstrate the ability to perform those portions of the operating and emergency procedures that he or she is to perform.

(d) The licensee shall conduct safety reviews for irradiator operators at least annually. The licensee shall give each operator a brief written test on the information. Each safety review must include, to the extent appropriate, each of the following—

(1) Changes in operating and emergency procedures since the last review, if any;

(2) Changes in regulations and license conditions since the last review, if any;

(3) Reports on recent accidents, mistakes, or problems that have occurred at irradiators, if any;

(4) Relevant results of inspections of operator safety performance;

(5) Relevant results of the facility's inspection and maintenance checks; and

(6) A drill to practice an emergency or abnormal event procedure.

(e) The licensee shall evaluate the safety performance of each irradiator operator at least annually to ensure that regulations, license conditions, and operating and emergency procedures are followed. The licensee shall discuss the results of the evaluation with the operator and shall instruct the operator on how to correct any mistakes or deficiencies observed.

(f) Individuals who will be permitted unescorted access to the radiation room of the irradiator or the area around the pool of an underwater irradiator, but who have not received the training required for operators and the radiation safety officer, shall be instructed and tested in any precautions they should take to avoid radiation exposure, any procedures or parts of procedures listed in § 36.53 that they are expected to perform or comply with, and their proper response to alarms required in this part. Tests may be oral.

(g) Individuals who must be prepared to respond to alarms required by § 36.23(b), § 36.23(i), § 36.27(a), § 36.29(a), § 36.29(b), and § 36.59(b) shall be trained and tested on how to respond. Each individual shall be retested at least once a year. Tests may be oral.

§ 36.53 Operating and emergency procedures.

(a) The licensee shall have and follow written operating procedures for—

(1) Operation of the irradiator, including entering and leaving the radiation room;

(2) Use of personnel dosimeters;

(3) Surveying the shielding of panoramic irradiators;

(4) Monitoring pool water for contamination while the water is in the pool and before release of pool water to unrestricted areas;

(5) Leak testing of sources;

(6) Inspection and maintenance checks required by § 36.61;

(7) Loading, unloading, and repositioning sources, if the operations will be performed by the licensee; and

(8) Inspection of movable shielding required by § 36.23(h), if applicable.

(b) The licensee shall have and follow emergency or abnormal event procedures, appropriate for the irradiator type, for—

(1) Sources stuck in the unshielded position;

(2) Personnel overexposures;

(3) A radiation alarm from the product exit portal monitor or pool monitor;

(4) Detection of leaking sources, pool contamination, or alarm caused by contamination of pool water;

(5) A low or high water level indicator, an abnormal water loss, or leakage from the source storage pool;

(6) A prolonged loss of electrical power;

(7) A fire alarm or explosion in the radiation room;

(8) An alarm indicating unauthorized entry into the radiation room, area around pool, or another alarmed area;

(9) Natural phenomena, including an earthquake, a tornado, flooding, or other phenomena as appropriate for the geographical location of the facility; and

(10) The jamming of automatic conveyor systems.

(c) The licensee may revise operating and emergency procedures without Commission approval only if all of the following conditions are met:

(1) The revisions do not reduce the safety of the facility,

(2) The revisions are consistent with the outline or summary of procedures submitted with the license application,

(3) The revisions have been reviewed and approved by the radiation safety officer, and

(4) The users or operators are instructed and tested on the revised procedures before they are put into use.

§ 36.55 Personnel monitoring.

(a) Irradiator operators shall wear either a film badge or a thermoluminescent dosimeter (TLD) while operating a panoramic irradiator or while in the area around the pool of an underwater irradiator. The film badge or TLD processor must be accredited by the National Voluntary Laboratory Accreditation Program for high energy photons in the normal and accident dose ranges (see 10 CFR 20.1501(c)). Each film badge or TLD must be assigned to and worn by only one individual. Film badges must be processed at least monthly, and TLDs must be processed at least quarterly.

(b) Other individuals who enter the radiation room of a panoramic irradiator shall wear a dosimeter, which may be a pocket dosimeter. For groups of visitors, only two people who enter the radiation room are required to wear dosimeters. If pocket dosimeters are used to meet the requirements of this paragraph, a check of their response to radiation must be done at least annually. Acceptable dosimeters must read within plus or minus 30 percent of the true radiation dose.

§ 36.57 Radiation surveys.

(a) A radiation survey of the area outside the shielding of the radiation

room of a panoramic irradiator must be conducted with the sources in the exposed position before the facility starts to operate. A radiation survey of the area above the pool of pool irradiators must be conducted after the sources are loaded but before the facility starts to operate. Additional radiation surveys of the shielding must be performed at intervals not to exceed 3 years and before resuming operation after addition of new sources or any modification to the radiation room shielding or structure that might increase dose rates.

(b) If the radiation levels specified in § 36.25 are exceeded, the facility must be modified to comply with the requirements in § 36.25.

(c) Portable radiation survey meters must be calibrated at least annually to an accuracy of ±20 percent for the gamma energy of the sources in use. The calibration must be done at two points on each scale or, for digital instruments, at one point per decade over the range that will be used. Portable radiation survey meters must be of a type that does not saturate and read zero at high radiation dose rates.

(d) Water from the irradiator pool, other potentially contaminated liquids, and sediments from pool vacuuming must be monitored for radioactive contamination before release to unrestricted areas. Radioactive concentrations must not exceed those specified in 10 CFR part 20, Table 2, Column 2 or Table 3 of Appendix B, "Annual Limits on Intake (ALIs) and Derived Air Concentrations (DACs) of Radionuclides for Occupational Exposure; Effluent Concentrations; Concentrations for Release to Sewerage."

(e) Before releasing resins for unrestricted use, they must be monitored before release in an area with a background level less than 0.5 microsievert (0.05 millirem) per hour. The resins may be released only if the survey does not detect radiation levels above background radiation levels. The survey meter used must be capable of detecting radiation levels of 0.5 microsievert (0.05 millirem) per hour.

§ 36.59 Detection of leaking sources.

(a) Each dry-source-storage sealed source must be tested for leakage at intervals not to exceed 6 months using a leak test kit or method approved by the Commission or an Agreement State. In the absence of a certificate from a transferor that a test has been made within the 6 months before the transfer, the sealed source may not be used until tested. The test must be capable of detecting the presence of 200 becquerels (0.005 microcurie) of radioactive material and must be performed by a person approved by the Commission or an Agreement State to perform the test.

(b) For pool irradiators, sources may not be put into the pool unless the licensee tests the sources for leaks or has a certificate from a transferor that leak test has been done within the 6 months before the transfer. Water from the pool must be checked for contamination each day the irradiator operates. The check may be done either by using a radiation monitor on a pool water circulating system or by analysis of a sample of pool water. If a check for contamination is done by analysis of a sample of pool water, the results of the analysis must be available within 24 hours. If the licensee uses a radiation monitor on a pool water circulating system, the detection of above normal radiation levels must activate an alarm. The alarm set-point must be set as low as practical, but high enough to avoid false alarms. The licensee may reset the alarm set-point to a higher level if necessary to operate the pool water purification system to clean up contamination in the pool if specifically provided for in written emergency procedures.

(c) If a leaking source is detected, the licensee shall arrange to remove the leaking source from service and have it decontaminated, repaired, or disposed of by an NRC or Agreement State licensee that is authorized to perform these functions. The licensee shall promptly check its personnel, equipment, facilities, and irradiated product for radioactive contamination. No product may be shipped until the product has been checked and found free of contamination. If a product has been shipped that may have been inadvertently contaminated, the licensee shall arrange to locate and survey that product for contamination. If any personnel are found to be contaminated, decontamination must be performed promptly. If contaminated equipment, facilities, or products are found, the licensee shall arrange to have them decontaminated or disposed of by an NRC or Agreement State licensee that is authorized to perform these functions. If a pool is contaminated, the licensee shall arrange to clean the pool until the contamination levels do not exceed the appropriate concentration in Table 2, Column 2, Appendix B to §§ 20.1001 to 20.2401 of part 20. (See 10 CFR 30.50 for reporting requirements.)

§ 36.61 Inspection and maintenance.

(a) The licensee shall perform inspection and maintenance checks that include, as a minimum, each of the following at the frequency specified in the license or license application:

(1) Operability of each aspect of the access control system required by § 36.23.

(2) Functioning of the source position indicator required by § 36.31(b).

(3) Operability of the radiation monitor for radioactive contamination in pool water required by § 36.59(b) using a radiation check source, if applicable.

(4) Operability of the over-pool radiation monitor at underwater irradiators as required by § 36.29(b).

(5) Operability of the product exit monitor required by § 36.29(a).

(6) Operability of the emergency source return control required by § 36.31(c).

(7) Leak-tightness of systems through which pool water circulates (visual inspection).

(8) Operability of the heat and smoke detectors and extinguisher system required by § 36.27 (but without turning extinguishers on).

(9) Operability of the means of pool water replenishment required by § 36.33(c).

(10) Operability of the indicators of high and low pool water levels required by § 36.33(d).

(11) Operability of the intrusion alarm required by § 36.23(i), if applicable.

(12) Functioning and wear of the system, mechanisms, and cables used to raise and lower sources.

(13) Condition of the barrier to prevent products from hitting the sources or source mechanism as required by § 36.35.

(14) Amount of water added to the pool to determine if the pool is leaking.

(15) Electrical wiring on required safety systems for radiation damage.

(16) Pool water conductivity measurements and analysis as required by § 36.63(b).

(b) Malfunctions and defects found during inspection and maintenance checks must be repaired without undue delay.

§ 36.63 Pool water purity.

(a) Pool water purification system must be run sufficiently to maintain the conductivity of the pool water below 20 microsiemens per centimeter under normal circumstances. If pool water conductivity rises above 20 microsiemens per centimeter, the licensee shall take prompt actions to lower the pool water conductivity and shall take corrective actions to prevent future recurrences.

(b) The licensee shall measure the pool water conductivity frequently enough, but no less than weekly, to

assure that the conductivity remains below 20 microsiemens per centimeter. Conductivity meters must be calibrated at least annually.

§ 36.65 Attendance during operation.

(a) Both an irradiator operator and at least one other individual, who is trained on how to respond and prepared to promptly render or summon assistance if the access control alarm sounds, shall be present onsite:

(1) Whenever the irradiator is operated using an automatic product conveyor system; and

(2) Whenever the product is moved into or out of the radiation room when the irradiator is operated in a batch mode.

(b) At a panoramic irradiator at which static irradiations (no movement of the product) are occurring, a person who has received the training on how to respond to alarms described in § 36.51(g) must be onsite.

(c) At an underwater irradiator, an irradiator operator must be present at the facility whenever the product is moved into or out of the pool. Individuals who move the product into or out of the pool of an underwater irradiator need not be qualified as irradiator operators; however, they must have received the training described in § 36.51 (f) and (g). Static irradiations may be performed without a person present at the facility.

§ 36.67 Entering and leaving the radiation room.

(a) Upon first entering the radiation room of a panoramic irradiator after an irradiation, the irradiator operator shall use a survey meter to determine that the source has returned to its fully shielded position. The operator shall check the functioning of the survey meter with a radiation check source prior to entry.

(b) Before exiting from and locking the door to the radiation room of a panoramic irradiator prior to a planned irradiation, the irradiator operator shall:

(1) Visually inspect the entire radiation room to verify that no one else is in it; and

(2) Activate a control in the radiation room that permits the sources to be moved from the shielded position only if the door to the radiation room is locked within a preset time after setting the control.

(c) During a power failure, the area around the pool of an underwater irradiator may not be entered without using an operable and calibrated radiation survey meter unless the over-the-pool monitor required by § 36.29(b) is operating with backup power.

§ 36.69 Irradiation of explosive or flammable materials.

(a) Irradiation of explosive material is prohibited unless the licensee has received prior written authorization from the Commission. Authorization will not be granted unless the licensee can demonstrate that detonation of the explosive would not rupture the sealed sources, injure personnel, damage safety systems, or cause radiation overexposures of personnel.

(b) Irradiation of more than small quantities of flammable material (flash point below 140 °F) is prohibited in panoramic irradiators unless the licensee has received prior written authorization from the Commission. Authorization will not be granted unless the licensee can demonstrate that a fire in the radiation room could be controlled without damage to sealed sources or safety systems and without radiation overexposures of personnel.

Subpart E—Records

§ 36.81 Records and retention periods.

The licensee shall maintain the following records at the irradiator for the periods specified.

(a) A copy of the license, license conditions, documents incorporated into a license by reference, and amendments thereto until superseded by new documents or until the Commission terminates the license for documents not superseded.

(b) Records of each individual's training, tests, and safety reviews provided to meet the requirements of § 36.51(a), (b), (c), (d), (f), and (g) until 3 years after the individual terminates work.

(c) Records of the annual evaluations of the safety performance of irradiator operators required by § 36.51(e) for 3 years after the evaluation.

(d) A copy of the current operating and emergency procedures required by § 36.53 until superseded or the Commission terminates the license. Records of the radiation safety officer's review and approval of changes in procedures as required by § 36.53(c)(3) retained for 3 years from the date of the change.

(e) Film badge and TLD results required by § 36.55 until the Commission terminates the license.

(f) Records of radiation surveys required by § 36.57 for 3 years from the date of the survey.

(g) Records of radiation survey meter calibrations required by § 36.57 and pool water conductivity meter calibrations required by § 36.63(b) until 3 years from the date of calibration.

(h) Records of the results of leak tests required by § 36.59(a) and the results of contamination checks required by § 36.59(b) for 3 years from the date of each test.

(i) Records of inspection and maintenance checks required by § 36.61 for 3 years.

(j) Records of major malfunctions, significant defects, operating difficulties or irregularities, and major operating problems that involve required radiation safety equipment for 3 years after repairs are completed.

(k) Records of the receipt, transfer and disposal, of all licensed sealed sources as required by § 30.51 and § 30.41.

(l) Records on the design checks required by § 36.39 and the construction control checks as required by § 36.41 until the license is terminated. The records must be signed and dated. The title or qualification of the person signing must be included.

(m) Records related to decommissioning of the irradiator as required by § 30.35(g).

§ 36.83 Reports.

(a) In addition to the reporting requirements in other parts of NRC regulations, the licensee shall report the following events if not reported under other parts of NRC regulations:

(1) Source stuck in an unshielded position.

(2) Any fire or explosion in a radiation room.

(3) Damage to the source racks.

(4) Failure of the cable or drive mechanism used to move the source racks.

(5) Inoperability of the access control system.

(6) Detection of radiation source by the product exit monitor.

(7) Detection of radioactive contamination attributable to licensed radioactive material.

(8) Structural damage to the pool liner or walls.

(9) Abnormal water loss or leakage from the source storage pool.

(10) Pool water conductivity exceeding 100 microsiemens per centimeter.

(b) The report must include a telephone report within 24 hours as described in § 30.50(c)(1), and a written report within 30 days as described in § 30.50(c)(2).

Subpart F—Enforcement

§ 36.91 Violations.

(a) The Commission may obtain an injunction or other court order to prevent a violation of the provisions of—

(1) The Atomic Energy Act of 1954, as amended;

(2) Title II of the Energy Reorganization Act of 1974, as amended; or

(3) A regulation or order issued pursuant to those Acts.

(b) The Commission may obtain a court order for the payment of a civil penalty imposed under section 234 of the Atomic Energy Act:

(1) For violations of—

(i) Sections 53, 57, 62, 63, 81, 82, 101, 103, 104, 107, or 109 of the Atomic Energy Act of 1954, as amended;

(ii) Section 206 of the Energy Reorganization Act;

(iii) Any rule, regulation, or order issued pursuant to the sections specified in paragraph (b)(1)(i) of this section;

(iv) Any term, condition, or limitation of any license issued under the sections specified in paragraph (b)(1)(i) of this section.

(2) For any violation for which a license may be revoked under section 186 of the Atomic Energy Act of 1954, as amended.

§ 36.93 Criminal penalties.

(a) Section 223 of the Atomic Energy Act of 1954, as amended, provides for criminal sanctions for willful violation of, attempted violation of, or conspiracy to violate, any regulation issued under sections 161b, 161i, or 161o of the Act. For purposes of section 223, all the regulations in part 36 are issued under one or more of sections 161b, 161i, or 161o, except for the sections listed in paragraph (b) of this section.

(b) The regulations in part 36 that are not issued under Sections 161b, 161i, or 161o for the purposes of section 223 are as follows: §§ 36.1, 36.2, 36.5, 36.8, 36.11, 36.13, 36.17, 36.19, 36.91, and 36.93.

PART 19—NOTICES, INSTRUCTIONS, AND REPORTS TO WORKERS; INSPECTIONS AND INVESTIGATIONS

2. The authority citation for part 19 continues to read, in part, as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); Sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841)* * *.

§ 19.2 [Amended]

3. Section 19.2 is amended by changing "35" to "36."

§ 19.3 [Amended]

4. In § 19.3 the definition *License* is amended by changing "35" to "36" in the first sentence.

PART 20—STANDARDS FOR PROTECTION AGAINST RADIATION

5. The authority citation for part 20 continues to read, in part, as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841) * * *.

§ 20.2 [Amended]

6. Section 20.2 is amended by changing "35" to "36."

§ 20.3 [Amended]

7. Section 20.3(a)(9) is amended by changing "35" to "36."

§ 20.203 [Amended]

8. In § 20.203, paragraphs (c)(6) and (c)(7) are removed.

§ 20.1002 [Amended]

9. Section 20.1002 is amended by changing "35" to "36."

§ 20.1003 [Amended]

10. In 20.1003, the definition of *license* is amended by changing "35" to "36."

§ 20.1603 [Removed]

11. Section 20.1603 is removed.

§ 20.2109 [Removed]

12. Section 20.2109 is removed.

PART 30—RULES OF GENERAL APPLICABILITY TO DOMESTIC LICENSING OF BYPRODUCT MATERIAL

13. The authority citation for part 30 continues to read, in part, as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); Sec. 201, 88 Stat. 1242 as amended (42 U.S.C. 5841) * * *.

§ 30.4 [Amended]

14. In § 30.4, the definition of *License*, is amended by changing "35" to "36."

§ 30.5 [Amended]

15. Section 30.5 is amended by changing "35" to "36."

§ 30.6 [Amended]

16. In § 30.6, paragraphs (a) introductory text and (b)(1) introductory text are amended by changing "35" to "36."

§ 30.11 [Amended]

17. In § 30.11, paragraph (a) is amended by changing "35" to "36."

§ 30.13 [Amended]

18. Section 30.13 is amended by changing "35" to "36."

§ 30.14 [Amended]

19. In § 30.14, paragraph (a) is amended by changing "35" to "36," and paragraph (c) is amended by adding ", 36" after "33, 34."

§ 30.15 [Amended]

20. In § 30.15, the introductory text of paragraph (a) is amended by changing "35" to "36."

§ 30.16 [Amended]

21. Section 30.16 is amended by changing "35" to "36."

§ 30.18 [Amended]

22. In § 30.18, paragraph (a) is amended by adding ", 36" after "30 through 34."

§ 30.19 [Amended]

23. In § 30.19, paragraph (a) is amended by changing "35" to "36."

§ 30.20 [Amended]

24. In § 30.20, paragraph (a) is amended by changing "35" to "36."

§ 30.31 [Amended]

25. Section 30.31 is amended by changing "35" to "36."

§ 30.33 [Amended]

26. Section 30.33, paragraph (a)(4) is amended by changing "35" to "36."

§ 30.34 [Amended]

27. Section 30.34, paragraphs (a) and (b) are amended by changing "35" to "36"; paragraph (c) is amended by changing "35" to "36" in the first and the second sentences; paragraphs (d) and (e) introductory text are amended by changing "35" to "36."

§ 30.39 [Amended]

28. Section 30.39 is amended by changing "35" to "36."

§ 30.51 [Amended]

29. In § 30.51, paragraphs (a) introductory text, (b), and (c)(1) are amended by changing "35" to "36 and 39" and paragraph (c)(2) is amended by changing "35" to "36" in all three locations.

§ 30.53 [Amended]

30. The introductory text of § 30.53 is amended by changing "35" to "36."

PART 40—DOMESTIC LICENSING OF SOURCE MATERIAL

31. The authority citation for part 40 continues to read, in part, as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); Sec. 201, 88 Stat. 1242 as amended (42 U.S.C. 5841)* * *.

§ 40.5 [Amended]

32. In § 40.5, paragraph (b)(1) is amended by changing "35" to "36" in the first sentence.

PART 51—ENVIRONMENTAL PROTECTION REGULATIONS FOR DOMESTIC LICENSING AND RELATED REGULATORY FUNCTIONS

33. The authority citation for part 51 continues to read, as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); secs. 201 as amended, 202, 88 Stat. 1242, as amended, 1244 (42 U.S.C. 5841, 5842).

§ 51.22 [Amended]

34. In § 51.22, paragraphs (c)(3), (c)(10) and (c)(14) are amended by adding "36," after "34, 35."

§ 51.60 [Amended]

35. In § 51.60, paragraph (a) is amended by adding "36," after "34, 35."

§ 51.66 [Amended]

36. In § 51.66, paragraph (a) is amended by adding "36," after "34, 35."

§ 51.68 [Amended]

37. Section 51.68 is amended by adding "36," after "34, 35,".

PART 70—DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

38. The authority citation for part 70 continues to read, in part, as follows:

Authority: Sec. 161, 68 Stat. 948, as amended (42 U.S.C. 2201); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841) * * *.

§ 70.5 [Amended]

39. In § 70.5, paragraph (b)(1) introductory text is amended by changing "35" to "36."

§ 70.20a [Amended]

40. In § 70.20a, paragraph (b) is amended by changing "35" to "36."

PART 170—FEES FOR FACILITIES, MATERIALS, IMPORT AND EXPORT LICENSES, AND OTHER REGULATORY SERVICES UNDER THE ATOMIC ENERGY ACT OF 1954, AS AMENDED

41. The authority citation for part 170 continues to read, as follows:

Authority: 31 U.S.C. 9701, 96 Stat. 1051; sec. 301, Pub. L. 92–314, 86 Stat. 222 (42 U.S.C. 2201w); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).

§ 170.2 [Amended]

42. In § 170.2, paragraph (a) is amended by changing "35" to "36."

Dated at Rockville, Maryland, this 28th day of January, 1992.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,

Secretary of the Commission.

[FR Doc. 93–2493 Filed 2–8–93; 8:45 am]

BILLING CODE 7590–01–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. 92–CE–62–AD; Amendment 39–8496; AD 93–02–13]

Airworthiness Directives; Piper Aircraft Corporation PA–31 Series Airplanes

AGENCY: Federal Aviation Administration, DOT.

ACTION: Final rule.

SUMMARY: This amendment supersedes Airworthiness Directive (AD) 92–26–02, which currently requires inspecting the engine baffle seals on Piper Aircraft Corporation (Piper) PA–31 series airplanes, and, if found improperly positioned, either reinforcing the baffle seals or installing thicker baffle material. The notice of proposed rulemaking (NPRM) that preceded AD 92–26–02 proposed repetitive inspections of these baffle seals. However, the final rule of this AD inadvertently omitted the repetitive inspection requirement for baffle seals found properly positioned. This action incorporates this repetitive inspection requirement as well as maintaining the actions of the current AD. The actions specified by this AD are intended to prevent improper sealing of the baffle seals to the engine cowling, which could result in high engine operating temperatures.

DATES: Effective March 15, 1993.

The incorporation by reference of certain publications listed in the regulations was previously approved by the Director of the Federal Register as of January 22, 1992.

ADDRESSES: Service information that applies to this AD may be obtained from the Piper Aircraft Corporation, 2926 Piper Drive, Vero Beach, Florida 32960. This information may also be examined at the Federal Aviation Administration (FAA), Central Region, Office of the Assistant Chief Counsel, room 1558, 601 E. 12th Street, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

FOR FURTHER INFORMATION CONTACT: Ms. Juanita Craft-Lloyd, Aerospace Engineer, Propulsion Branch, Atlanta Aircraft Certification Office, 1669 Phoenix Parkway, suite 210C, Atlanta, Georgia 30349; Telephone (404) 991–3810; Facsimile (404) 991–3606.

SUPPLEMENTARY INFORMATION: On November 24, 1992, the FAA issued AD 92–26–02, Amendment 39–8429 (57 FR 57096, December 3, 1992), which applies to certain Piper PA–31 series airplanes. As written, this action currently requires inspecting the engine baffle seals to ensure they are positioned properly; and if found improperly positioned, (1) either reinforcing the baffle seals in accordance with Piper Service Bulletin (SB) No. 693, dated July 28, 1980; or installing thicker baffle material in accordance with Piper Kit 764 093 as referenced in Piper Service Letter No. 875, dated May 11, 1981, or an FAA-approved equivalent; and (2) reinspecting at certain intervals. AD 92–26–02 superseded AD 80–20–04, Amendment 39–3925 (45 FR 64168, September 29, 1980).

The FAA's intent, as proposed in the notice of proposed rulemaking (NPRM) that preceded AD 92–26–02, was to require repetitive inspections of these baffle seals regardless of whether the baffle seals were found improperly positioned. However, this repetitive inspection requirement was inadvertently omitted from the final rule. The FAA has determined that further AD action should be taken to include this requirement.

Since an unsafe condition has been identified that is likely to exist or develop in other Piper PA–31 series airplanes of the same type design, this action supersedes AD 92–26–02 with a new AD that (1) maintains the inspection, reinforcement, and installation requirements of AD 92–26–02; and (2) incorporates the requirement of repetitively inspecting the baffle seals even if positioned properly.

This action supersedes a previous action to correct an error in a final rule by including a repetitive inspection requirement of the baffle seals, which was already proposed in an NPRM. Since this action does not impose any additional burden (financial or otherwise) upon the public other than that proposed in the NPRM that preceded AD 92–26–02 and there were no comments as a result of that NPRM regarding the repetitive inspection requirement, it is found that notice and public procedure are hereon unnecessary.

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

For the reasons discussed above, I certify that this action (1) is not a "major

rule" under Executive Order 12291; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A copy of the final evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption **ADDRESSES**.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends 14 CFR part 39 of the Federal Aviation Regulations as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. App. 1354(a), 1421 and 1423; 49 U.S.C. 106(g); and 14 CFR 11.89.

§ 39.13 [Amended]

2. Section 39.13 is amended by removing AD 92–26–02, Amendment 39–8429 (57 FR 57096, December 3, 1992), and by adding the following new airworthiness directive:

93–02–13 Piper Aircraft Corporation: Amendment 39–8496; Docket 92–CE–62–AD. Supersedes AD 92–26–02; Amendment 39–8429.

Applicability: Model PA–31, PA–31–300, and PA–31–325 airplanes (serial numbers 31–2 through 31–8012089), and Model PA–31–350 airplanes (serial numbers 31–5001 through 31–8052199), certificated in any category.

Compliance: Required initially within the next 50 hours time-in-service (TIS) after the effective date of this AD, unless already accomplished (compliance with AD 80–20–04, Amendment 39–3925, or AD 92–26–02, Amendment 39–8429), and thereafter as indicated.

To prevent improper sealing of the baffle seals to the engine cowling, which could result in high engine operating temperatures, accomplish the following:

(a) Visually inspect the engine baffle seals for proper positioning by using a light and looking in air inlets and access doors to ensure that forward seals and lower aft seals are all facing forward and not blown back.

(b) If baffle seals are improperly positioned (blown back), prior to further flight, accomplish one of the following:

(1) Reinforce the seals in accordance with the instructions in Piper Service Bulletin No. 693, dated July 28, 1980, and reinspect the engine baffle seals as specified in paragraph (a) of this AD at intervals not to exceed 50 hours TIS.

(2) Install thicker baffle seals in accordance with Piper Kit 764 093 as referenced in Piper Service Letter 875, dated May 11, 1981, or an FAA-approved equivalent, unless already accomplished, and reinspect the engine baffle seals as specified in paragraph (a) of this AD at intervals not to exceed 100 hours TIS.

Note 1: The accomplishment of the baffle seals reinforcement or installation in accordance with paragraph (b)(1) or (b)(2), respectively, does not eliminate the repetitive inspection requirement of this AD.

(c) If baffle seals are properly positioned (not blown back), within the next 50 hours TIS, accomplish one of the following:

(1) Reinspect the engine baffle seals as specified in paragraph (a) of this AD, and continue to reinspect thereafter at intervals not to exceed 50 hours TIS; or

(2) Install thicker baffle seals in accordance with Piper Kit 764 093 as referenced in Piper Service Letter 875, dated May 11, 1981, or an FAA-approved equivalent, unless already accomplished, and reinspect the engine baffle seals as specified in paragraph (a) of this AD at intervals not to exceed 100 hours TIS.

(d) The inspections required by this AD may be performed by the owner/operator holding at least a private pilot certificate as authorized by FAR 43.7, and must be entered into the aircraft records showing compliance with this AD in accordance with FAR 43.11.

(e) Special flight permits may be issued in accordance with FAR 21.197 and 21.199 to operate the airplane to a location where the requirements of this AD can be accomplished.

(f) An alternative method of compliance or adjustment of the initial or repetitive compliance times that provides an equivalent level of safety may be approved by the Manager, Atlanta Aircraft Certification Office, 1669 Phoenix Parkway, Suite 210C, Atlanta, Georgia 30349. The request shall be forwarded through an appropriate FAA Maintenance Inspector, who may add comments and then send it to the Manager, Atlanta Aircraft Certification Office.

Note 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Atlanta Aircraft Certification Office.

(g) The reinforcement required by this AD shall be done in accordance with Piper Service Bulletin No. 693, dated July 28, 1980. The installation required by this AD shall be done in accordance with Piper Kit 764 093 as referenced in Piper Service Letter No. 875, dated May 11, 1981. This incorporation by reference was previously approved on January 22, 1992, by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from the Piper Aircraft Corporation, 2926 Piper Drive, Vero Beach, Florida 32960. Copies may be inspected at the FAA, Central Region, Office of the Assistant Chief Counsel, room 1558, 601 E. 12th Street, Kansas City, Missouri, or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(h) This amendment (39–8496) supersedes AD 92–26–02, Amendment 39–8429.

(i) This amendment (39–8496) becomes effective on March 15, 1993.

Issued in Kansas City, Missouri, on February 1, 1993.

Barry D. Clements,

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 93–3021 Filed 2–8–93; 8:45 am]

BILLING CODE 4910–13–M

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14 CFR Part 71

[Airspace Docket No. 90–AWA–11]

Establishment of the Bangor International Airport Airport Radar Service Area; ME

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: This amendment establishes an Airport Radar Service Area (ARSA) at the Bangor International Airport, Bangor, ME. Bangor International Airport is a public airport with an operating control tower serviced by a Level II Radar Approach Control Facility. Establishment of this ARSA will require that pilots maintain two-way radio communication with air traffic control (ATC) while in the ARSA. Additionally, aircraft operating within or up to 10,000 feet mean sea level (MSL) directly over the ARSA must be equipped with an altitude encoding (Mode C) transponder absent any exemption or waiver. Implementation of ARSA procedures at the affected location promotes the efficient control of air traffic and reduces the risk of midair collision in terminal areas.

DATES: Effective date: 0901 u.t.c., April 1, 1993.

Comments must be received on or before April 5, 1993.

ADDRESSES: Send comments on the final rule in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket [AGC-10], Airspace Docket No. 90–AWA–11, 800 Independence Avenue, SW., Washington, DC 20591.

The official docket may be examined in the Rules Docket, Office of the Chief Counsel, room 916, 800 Independence Avenue, SW., Washington, DC, weekdays, except Federal holidays, between 8:30 a.m. and 5 p.m.

An informal docket may also be examined during normal business hours

at the office of the Regional Air Traffic Division, 12 New England Executive Park, Burlington, MA 01803.

FOR FURTHER INFORMATION CONTACT: Patricia P. Crawford, Airspace and Obstruction Evaluation Branch (ATP-240), Airspace-Rules and Aeronautical Information Division, Air Traffic Rules and Procedures Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone: (202) 267-9255.

SUPPLEMENTARY INFORMATION:

Comments Invited

The FAA is inviting comments to this final rule because the rule differs in one minor aspect from what was proposed. Specifically, in the original notice of proposed rulemaking, the FAA proposed to exclude the Brewer Airport from the Bangor ARSA surface area. The comments should be limited to the inclusion of the Brewer Airport in the ARSA surface area.

History

On April 22, 1982, the National Airspace Review (NAR) plan was published in the **Federal Register** (47 FR 17448). The plan encompassed a review of airspace use and procedural aspects of the ATC system. Among the main objectives of the NAR was the improvement of the ATC system by increasing efficiency and reducing complexity. In its review of terminal airspace, NAR Task Group 1-2 concluded that Terminal Radar Service Areas (TRSA's) should be replaced. Four types of airspace configurations were considered as candidates for replacement of TRSA's. Of the four, Model B airspace, since redesignated "ARSA," was recommended by a consensus of the NAR Task Group.

The FAA published NAR Recommendation 1-2.2.1, "Replace Terminal Radar Service Areas with Model B Airspace and Service" in Notice 83-9 (48 FR 34286; July 28, 1983), proposing the establishment of ARSA's at the Robert Mueller Municipal Airport, Austin, TX, and the Port of Columbus International Airport, Columbus, OH. ARSA's were designated at these two airports on a temporary basis by SFAR No. 45 (48 FR 50038; October 28, 1983) to provide an operational confirmation of the ARSA concept for potential application on a national basis.

Following a confirmation period of more than a year, the FAA adopted the NAR recommendation and, on February 27, 1985, issued a final rule (50 FR 9252; March 6, 1985) defining an ARSA and establishing air traffic rules for operation within such an area. Concurrently, by separate rulemaking action, ARSA's were permanently established at the Austin, TX; Columbus, OH; and the Baltimore/Washington International Airports (50 FR 9250; March 6, 1985). The FAA has stated that future notices would propose ARSA's for other airports at which TRSA procedures are in effect.

Additionally, the NAR Task Group recommended that the FAA develop quantitative criteria for establishing ARSA's at locations other than those already in the TRSA replacement program. The task group recommended that these criteria include traffic mix, traffic flow and density, airport configuration, geographical features, collision-risk assessment, and ATC capabilities to provide service to users. These criteria have been developed and are published via the FAA directives system. The FAA has established ARSA's at 120 locations under a paced implementation plan to replace TRSA's.

On February 14, 1990, the FAA held an informal airspace meeting for local users to discuss the possible establishment of an ARSA at Bangor. On February 19, 1991, the FAA proposed to designate an ARSA at Bangor International Airport, ME, (56 FR 6584). Interested parties were invited to participate in this rulemaking proceeding by submitting comments on the proposal to the FAA. Eight written comments were received.

Discussion of Comments

The Air Transport Association of America (ATA) and the Air Line Pilots Association (ALPA) concurred with the ARSA as proposed. ALPA expressed concern for pilots navigating in the area because the proposed ARSA's configuration was centered on the geographic position of the airport. ALPA suggested that the physical location of the Bangor VHF omnidirectional range/tactical air navigation (VORTAC) complicates navigation around and through this airspace. The Bangor VORTAC is located 2.8 miles northwest of the airport. ALPA recommended that the VORTAC be relocated to the airport to improve navigation and to better define the lateral boundaries of the ARSA. The FAA has no immediate plans to relocate the Bangor VORTAC, but will continue to monitor the situation to determine if such action would be warranted.

Several commenters suggested that establishing an ARSA at Bangor International Airport is not necessary. These commenters questioned the benefits of replacing the TRSA with an ARSA. They expressed the opinion that the amount of traffic operating to and from the Bangor Airport was too small to support or justify establishing an ARSA.

The ARSA program is designed to keep ATC informed of all aircraft within the ARSA airspace; therefore, participation is mandatory. This requirement differs from the operation of the TRSA program which is based on pilot's voluntary participation. In addition to the basic radar services, the ARSA's services will include: (1) Sequencing of all aircraft to the primary airport; (2) standard instrument flight rules (IFR) services to IFR aircraft; (3) separation, traffic advisories, and safety alerts between IFR and visual flight rules (VFR) aircraft; and (4) mandatory traffic advisories and safety alerts between VFR aircraft. By contrast, the services provided in a TRSA are basic radar, sequencing, and separation (Stage III Service), if pilots volunteer to participate in this program.

The minimum criteria to establish an ARSA are an airport with an operational airport traffic control tower served by a radar approach control, and one of the following: (1) 75,000 annual instrument operations count at the primary airport; (2) 100,000 annual instrument operations count at the primary and secondary airports in the terminal area hub; or (3) 250,000 annual enplaned passengers at the primary airport. Bangor International Airport reported 72,432 annual instrument operations at the primary airport in fiscal year 1991. The enplaned passenger count was reported as 1,144,584 for the calendar year 1991. Prior to initiating this rulemaking action, the FAA fully considered all nonrulemaking alternatives which provide for an acceptable level of safety. A thorough analysis of the terminal area, adjacent airspace, and IFR as compared to VFR traffic flow was conducted to determine the potential benefits of establishing the ARSA. The results of the FAA's evaluation supported the decision to establish the ARSA.

Several commenters suggested that establishing an ARSA at Bangor International Airport would probably cause several private airports to close, have a negative impact on general aviation (GA) business, and impede access to satellite airports such as Brewer and Lucky Landing. The FAA believes that this action will not have a negative impact on the GA business in the Bangor area because of the ARSA design. The Bangor ARSA is designed to accommodate aviation activity at these airports and to assure pilots adequate

access to them. Although the lateral boundary of the Bangor ARSA encompasses the primary airport and the Brewer Airport within the surface area, the Lucky Landing Airport is outside of the surface area and beneath 1,500-foot shelf. While the Brewer Airport was not excluded, the FAA believes that the impact of the airport being within the ARSA surface area will be mitigated by the few locally based aircraft operators being exempted from certain costly equipment requirements such as a Mode C transponder. Such exemptions would be defined in a Letter of Agreement between the Bangor Air Traffic Control Tower and locally based aircraft operators.

Two commenters support a climb/descent corridor concept in lieu of the ARSA for Bangor. The standard configuration for an ARSA normally consists of the airspace from the surface to 4,000 feet within a 5-mile radius of the airport and from 1,200 feet to 4,000 feet within a 10-mile radius of the airport. To implement the climb/descent corridors concept in an ARSA environment would substantially increase the amount of "regulatory" airspace beyond the ARSA's standard 10-mile radius. The primary concern in any airspace action is to provide the highest degree of safety while preserving the most efficient use of the available terminal airspace. Because climb/descent corridors would unduly increase the "regulatory" airspace, this solution would not make the most efficient use of the available terminal airspace.

All comments were fully considered before developing the final design contained in this rule. The FAA believes that the final ARSA design best meets ATC and user requirements and promotes the safe and efficient use of airspace.

The Rule

This amendment to part 71 of the Federal Aviation Regulations (14 CFR part 71) establishes an ARSA at Bangor International Airport, ME. Bangor International Airport is a public airport with an operating control tower serviced by a Level II Radar Approach Control Facility. Establishment of this ARSA requires that pilots maintain two-way radio communication with ATC while in the ARSA. It will also require that aircraft within the ARSA be equipped with Mode C transponder, absent an exemption or waiver. Implementation of ARSA procedures at the affected location will promote the efficient control of air traffic and reduce the risk of midair collision in terminal areas.

The coordinates in the proposal were North American Datum 27; however, these coordinates have been updated to North American Datum 83. Airport radar service areas are published in § 71.501 of FAA Order 7400.7A dated November 2, 1992, and effective November 27, 1992, which is incorporated by reference in 14 CFR 71.1. The ARSA listed in this document will be published subsequently in the Order.

Additionally, to maintain congruency with the ARSA surface area, the Bangor, ME, Control Zone is also being changed with this final rule. Since ARSA's are more restrictive than control zones, changing of the control zone is inconsequential, and the public would not be particularly interested in this change; therefore, the FAA is adopting this modification of the control zone without prior notice and public process. Moreover, control zones will cease to exist effective September 16, 1993. Control zones are published in § 71.171 of FAA Order 7400.7A dated November 2, 1992, and effective November 27, 1992, which is incorporated by reference in 14 CFR 71.1.

The rule is as originally proposed except for the inclusion of the Brewer Airport within the ARSA surface area and minor editorial changes. Brewer Airport was proposed to be excluded in accordance with the guidance given, during the national airspace review conducted in conjunction with the Airspace Reclassification Program, to the FAA Regional Project Teams to exclude satellite airports from control zones and ARSA's to the maximum extent practicable. However, one parameter or condition associated with the exclusion was that aircraft operations being conducted under instrument flight rules (IFR) could not be adversely impacted. During the review and rulemaking process, the changes to the Bangor Control Zone were resized and the airspace around the Brewer Airport was excluded from the surface area of the control zone and the proposed ARSA. The potential impact of the exclusion of the Brewer Airport was recognized during the final review process associated with the publication of the Halifax Sectional Aeronautical Chart scheduled for April 1, 1993. This exclusion could adversely affect IFR traffic at Bangor International Airport, the primary airport for which the airspace is designed and regulated.

Specifically, the runway orientation at Brewer Airport is 01/19 and approach end of Runway 19 is located 2.8 nautical miles southeast of the Bangor International Airport and directly on the final approach course to Runway 33. If Brewer were to continue to be excluded from the Bangor Control Zone and ARSA, it would allow aircraft operating in and out of Brewer, below 700 feet mean sea level, to operate with as little as one statute mile flight visibility and clear of clouds instead of the more stringent three miles of flight visibility and 500 feet below, 1,000 feet above, and 2,000 feet horizontally from clouds appropriate for VFR operations within proximity to concentrated IFR operations. Additionally, the exclusion would allow aircraft operations without any communications with the Bangor Air Traffic Control Tower (ATCT). The Brewer runways and the proximity to Bangor International IFR arrivals to Runway 33 or IFR departures from Runway 15 pose the potential for a significant compromise to aviation safety, especially during the spring and summer months when the transient aircraft activity at Brewer increases. Compounding the situation is the fact that Bangor International serves as a weather and refueling alternate for trans-Atlantic arrivals to the United States.

Therefore, the FAA has decided to resolve the potential safety problem by eliminating the exclusion and making Brewer Airport part of the Bangor Control Zone and ARSA surface area. Correspondingly, the legal description of the airspace is being changed with this final rule. Although the final rule is not identical to the original proposal, the FAA does not view the change to include Brewer Airport within the ARSA surface area as sufficiently substantial to require the issuance of an amended proposal prior to adopting a final rule. Moreover, the anticipated increase in traffic at Bangor as the summer season approaches dictates that, in the interest of safety, the ARSA be established without further delay. Nevertheless, since this action differs from what was originally proposed, the FAA is soliciting additional comments and will review any comments received in conjunction with the action to include Brewer Airport within the ARSA surface area to determine if any further amendment is appropriate.

Regulatory Evaluation Summary

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

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

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

Costs

The FAA has determined that establishing the Bangor ARSA will impose a one-time FAA administrative cost of $500 (discounted, 1990 dollars). For the aviation community (namely, aircraft operators and fixed based operators), the final rule will impose only negligible costs. The potential costs of the Bangor ARSA are discussed below.

1. *Potential FAA Administrative Costs (air traffic controller staffing, controller training, and facility equipment costs).*

For the Bangor ARSA (and the ARSA program in general), the FAA does not expect to incur any additional costs for ATC staffing, training, or facility equipment. The FAA is confident that it can handle any additional traffic that will participate in radar services at the ARSA with personnel at the current authorized staffing level.

The FAA expects to be able to train its controller force at Bangor in ARSA procedures during regularly scheduled briefing sessions. Thus, no additional training costs are expected. Minor modifications of the computer software used to operate radar equipment may be necessary. Previously adopted plans to replace or modify older equipment may be rescheduled to accommodate the ARSA program. However, no significant additional equipment requirements are anticipated. By implementing the ARSA, modification of terminal radar procedures at Bangor will make more efficient use of existing resources.

2. *Other Potential FAA Administrative Costs (revision of charts, notification of the public, and pilot education).*

When ARSA's are established, sectional charts need revision to incorporate the new ARSA airspace boundaries. The FAA revises the sectional charts every six months whether a new ARSA is established or not. Changes of airspace designation depictions are made routinely during charting cycles, and can be considered an ordinary operating cost. Therefore, the FAA does not expect to incur any additional charting costs as a result of the Bangor ARSA. Pilots will not incur any additional costs obtaining a revised sectional chart depicting the Bangor ARSA because they are already required to use the most current version.

The FAA holds an informal public meeting at each proposed ARSA location. These meetings provide pilots with the best opportunity to learn how an ARSA works and how it will affect local operations. The expenses associated with these public meetings are incurred regardless of whether an ARSA is ultimately established. Thus, they are more appropriately considered routine FAA costs. However, any subsequent public information costs related to the Bangor ARSA will be strictly attributed to this rule. The FAA will distribute a Letter to Airmen to all pilots residing within 50 miles of the Bangor ARSA and issue an Advisory Circular that will explain the operation and airspace configuration of the ARSA. The combined Letter to Airmen and Advisory Circular will cost approximately $500 (discounted). Any further public information dissemination will be nominal.

FAA district offices throughout the country conduct aviation safety seminars on a regular basis. These seminars are regularly provided by the FAA to discuss a variety of aviation safety issues, including operations within ARSA's, and do not involve additional costs. Also, no significant costs are expected as a result of the user meetings that will be held following implementation of the ARSA. The FAA customarily organizes these meetings to get reactions from users on local ARSA operations. The meetings are held at public or other facilities free of charge or at a nominal cost. Because local FAA facility personnel conduct these meetings, no travel, per diem, or overtime costs are incurred for regional or headquarters personnel.

3. *Potential Costs to the Aviation Community (circumnavigation, delays, and radio communications equipment).*

The FAA anticipates that some pilots who currently transit the terminal area without establishing radio communications or participating in Stage III services may choose to circumnavigate the Bangor ARSA. However, the FAA contends that these operators could circumnavigate the ARSA without significantly deviating from their regular flight path. They could also remain clear of the ARSA by flying above the ceiling (4,200 feet MSL) or under the various floors (which range from 700 to 2,000 feet MSL). The FAA estimates that this rule will have a negligible, if any, cost impact on nonparticipating GA aircraft operators because of the small deviations from current flight paths that these operators would make.

The FAA recognizes that delays might develop at Bangor following the initial establishment of the ARSA. The additional traffic that ATC will handle due to the mandatory pilot participation in radar services within the ARSA could result in minor delays to aircraft operations. However, these potential delays are typically transitional in nature. The FAA contends that any potential delay problems will be more than offset by the increased flexibility afforded controllers in handling traffic as a result of ARSA separation standards. This has been the experience at the older ARSA's and at the newer ones. The FAA expects a smooth transition process which has characterized the establishment of most ARSA sites to date.

The FAA assumes that aircraft operating in the vicinity of the Bangor ARSA already have two-way radio communications capability and, therefore, the radio requirement is not expected to impose any additional costs. Nevertheless, the FAA has made an effort to minimize any potential radio installation costs by providing cutouts along the floor of the ARSA. In addition, procedural agreements between ATC and affected satellite airports could avoid imposing radio installation costs on operators at these airports.

Because participation in the ARSA radar services is mandatory, airports located within the 5-nautical-mile core might lose customers to airports outside of the core. The FAA endeavors to exclude satellite airports located within the core of an ARSA where safety would not be substantially compromised. This

avoids any adverse impact on their operations and simplifies ATC coordination responsibilities between the primary and those satellite airports. In some cases, the same purposes were achieved through Letters of Agreement between ATC and the affected airports by establishing special procedures for aircraft operators. In this manner, the FAA expects to eliminate virtually any adverse impact on the operations of small satellite airports that could result from the ARSA program. Similarly, the FAA expects to eliminate potential adverse impacts on existing flight training practice areas, as well as soaring, ballooning, parachuting, ultralight, and banner towing activities. It will do this through local agreements between ATC facilities and the affected organizations that will set forth special procedures to accommodate these activities. The FAA utilizes such arrangements extensively in implementing ARSA's. Because, in the case of Brewer, the runway orientation and proximity of the two airports does not allow for exclusion, the FAA anticipates that any impact on users of Brewer will be mitigated through letters of agreement with ATC as safety allows.

4. *Mode C and Traffic Alert and Collision Avoidance System (TCAS) Rules.*

The Bangor ARSA will be subject to Phase II of the Mode C Rule (14 CFR 91.215), which went into effect for ARSA's on December 30, 1990. The Mode C Rule states that all aircraft, unless exempt, must be equipped with an operable transponder with altitude encoding capability when operating in and above an ARSA. The Mode C Rule affects all aircraft operating in and up to 10,000 feet MSL above an ARSA within the upward extension of its lateral confines. The requirement also applies to any ARSA (or Class C airspace effective September 16, 1993) designated in the future.

Some aircraft operators may have to acquire or upgrade to a Mode C transponder as a result of establishing the Bangor ARSA. However, the cost of acquiring a Mode C transponder for all GA aircraft in the U.S. was accounted for by the Mode C Rule (55 FR 50302; December 5, 1990). The Mode C Rule assumed a worst-case scenario that all operators of GA aircraft without a Mode C transponder will acquire such equipment. The FAA contends that GA operators will acquire Mode C transponders to avoid having to circumnavigate the increasing amount of airspace that requires Mode C transponders. Thus, any Mode C acquisition costs, as a result of the establishment of the Bangor ARSA or any other ARSA, have already been attributed entirely to the Mode C Rule.

The FAA has also adopted regulations requiring certain aircraft operators to install a traffic alert collision avoidance system (TCAS), which alerts air carriers to the presence of other aircraft from the signal emitted by Mode C transponders. TCAS issues traffic advisories that indicate the position of other aircraft in the proximity; later generation TCAS equipment also provides conflict resolution advisories as to what evasive actions are not appropriate for avoiding potential midair collisions. The TCAS Rule (54 FR 940, January 30, 1989) will not contribute to the potential costs of the Bangor ARSA, but it will contribute to the potential safety benefits which are discussed below.

Benefits

The potential benefits of the Bangor ARSA will be enhanced aviation safety (in terms of a lowered risk of midair collisions) and improved operational efficiency (in terms of higher air traffic controller productivity with existing resources). These potential benefits are difficult to quantify. Thus, such benefits have been analyzed in qualitative terms, as explained in the following sections.

The National Airspace Review (NAR) Task Group (1982) found that airspace users, especially GA users, encountered significant problems with terminal radar services. Different levels of radar service offered within terminal areas caused confusion, and users were not always certain of what restrictions and privileges applied. The standardization and simplification of operating procedures provided by ARSA's are expected to alleviate many of these problems. As both pilots and controllers become more familiar with ARSA operating procedures, all IFR and VFR traffic is expected to move as efficiently and expeditiously as it did under Stage III (TRSA) service. These benefits of the ARSA program cannot be specifically attributed to individual airports, but rather will result from the overall improvements realized in terminal area ATC procedures as ARSA's are implemented throughout the country. Establishment of the Bangor ARSA will contribute to these overall improvements.

The Bangor ARSA will generate potential safety benefits in the form of reducing the risk of midair collisions due to increased positive control of airspace around Bangor. Based on factors that indicate an increased probability of a midair collision at Bangor, the FAA is establishing an ARSA there to prevent an incident. These factors are the increased volume of aircraft operations an passenger enplanements.

Another factor is increased complexity of aircraft operations at Bangor. Complexity refers to air traffic conditions resulting from a mix of controlled and uncontrolled aircraft that vary widely in speed and maneuverability. As this mix increases, so does the potential for a midair collision.

The ARSA program has the potential for reducing the risk of a midair collision by reducing the number of near-midair collisions (NMAC's). In a study of NMAC data, the FAA's Office of Aviation Safety (ASF) found that approximately 15 percent of reported NMAC's occurred in TRSA airspace. This study found that about half of all NMAC's occurred in the 1,000 to 5,000 feet altitude range, which is closely comparable to the altitudes where pilot participation will be mandatory in the ARSA. This study also found that over 85 percent of NMAC's occurred in VFR conditions when visibility was 5 miles or greater. Finally, the study found that the largest number of NMAC reports are associated with IFR operations under radar control conflicting with VFR traffic during VFR flight conditions below 12,500 feet. The mandatory participation requirements of the ARSA and the radar services provided by ATC to VFR as well as IFR pilots will help alleviate such conflicts.

A NAR Task Group study conducted by Engineering & Economic Research, Inc., reviewed NMAC data of Austin and Columbus during the 1978 to 1984 period. The study found that the presence of the ARSA reduced the probability of NMAC occurrence by 38 percent at Austin and 33 percent at Columbus. Another FAA study estimated that the potential for NMAC's could be reduced by about 44 percent through establishing an ARSA. Since near midair and actual midair collisions result from similar causal factors, a reduction in NMAC's as a result of the ARSA program suggests a reduction in actual midair collisions as well.

A 1984 study of the ARSA confirmation sites by the FAA's Office of Aviation Policy and Plans included a detailed analysis to determine if replacing a TRSA with an ARSA might reduce the risk of a midair collision. The collision risk analysis was based upon the experience at Columbus, which provided recorded radar data through Automated Radar Terminal System ARTS III–A extraction. The study focused on conditions of fairly heavy VFR activity in the terminal radar area since the ARSA affects procedures used to handle VFR traffic. The analysis

examined the intersections of flight paths before and after the ARSA was installed because the replacement of a TRSA with an ARSA might alter the routes of travel, particularly for aircraft that did not previously participate in the TRSA. The flight path analysis focused on the areas immediately around, under, and over the ARSA, and ascertained that installation of the ARSA did not compress traffic. The study concluded that the mandatory participation requirement for all aircraft operating within the ARSA resulted in a 75 percent reduction in midair collision risk.

The FAA reviewed National Transportation Safety Board (NTSB) midair collision records for the period of January 1978 and October 1984. This review indicated that the establishment of an ARSA, in place of a TRSA, could greatly reduce the risk of midair collisions. Because the circumstances observed at the Columbus test site may not be the same at other TRSA locations, the 75 percent reduction in midair collision risk measured there may not be achieved at the ARSA sites. Therefore, the FAA estimates that the implementation of the ARSA program will reduce the risk of midair collision by only 50 percent at TRSA locations. Establishing ARSA's at congested airports currently providing Stage II radar service will also reduce midair collision risk.

A reduction of midair collisions by 50 percent could result in the prevention of one midair collision nationally every one to two years. The quantifiable benefits of preventing a midair collision can range from less than $150,000, resulting from the prevention of a minor, non-fatal accident between GA aircraft, to $250 million or more, resulting from the prevention of a midair collision involving a passenger jet airplane. Establishment of the Bangor ARSA will contribute to this improvement in aviation safety.

The benefit of a reduction in the risk of midair collisions from establishing an ARSA cannot be attributed entirely to the ARSA program. An indeterminant amount of the benefits must be credited to the interaction of the ARSA (and the ARSA program in general) with the Mode C Rule, which in turn interacts with the TCAS Rule. This is because the Bangor ARSA benefits, as well as benefits from other designated airspace actions that require Mode C transponders, cannot be separated from the benefits of the Mode C and TCAS Rules. The terminal control area (TCA) and ARSA programs (including the Bangor ARSA), plus the Mode C and TCAS Rules, share benefits and costs totaling $2.1 billion and $843.1 million respectively.

Comparison of Costs and Benefits

The Bangor ARSA will impose a cost of $500 on the agency. When this cost estimate of $500 is added to the total cost of the ARSA and TCA programs and the Mode C Rule and TCAS Rule, the costs will still be less than their total potential safety benefits. This rule will also generate benefits in the form of enhanced operational efficiency. In addition, this rule will not impose any appreciable cost on the aviation community. Thus, the FAA believes that this rule will be cost-beneficial.

International Trade Impact Analysis

The rule will only affect U.S. terminal airspace operating procedures at and in the vicinity of Bangor, ME. The rule will not create a competitive trade advantage or disadvantage for foreign firms in the sale of either foreign aviation products or services in the United States. In addition, domestic firms will not incur a competitive trade advantage or disadvantage in either the sale of United States aviation products or services in foreign countries.

Regulatory Flexibility Determination

The Regulatory Flexibility Act of 1980 (RFA) was enacted by Congress to ensure that small entities are not unnecessarily and disproportionately burdened by government regulations. Small entities are independently owned and operated small businesses and small not-for-profit organizations. The RFA requires agencies to review rules that may have "a significant economic impact on a substantial number of small entities."

Under FAA Order 2100.14A, entitled Regulatory Flexibility Criteria and Guidance, a rule has "significant economic impact" when the annualized net compliance cost to an entity, adjusted for inflation, is greater than or equal to the threshold cost level for that entity. A "substantial number" of small entities means not fewer than eleven and more than one-third of all small entities subject to a proposed or existing rule.

For the purpose of this evaluation, the small entities that will be potentially affected by the rule are fixed-base operators, flight schools, agricultural operators, and other small aviation businesses located at Bangor International Airport and the two satellite airports in or bordering the 5-nautical-mile ARSA inner core. The mandatory participation within the ARSA for aircraft sequencing and separation along with unique conditions around Bangor could potentially impose certain costs on users. Some of the users and activities that may be affected are local fixed-base operators and airport operators, flight training, crop dusting, soaring, ballooning, parachuting, ultralight, and banner towing operators. However, the FAA, to the extent practicable, will employ exclusions, cutouts, and special procedures to alleviate any adverse impacts. The FAA will also develop special procedures to accommodate these activities through local agreements between ATC and the affected organizations. For these reasons, the FAA does not expect any such adverse impacts to occur as a result of this ARSA. The FAA expects that any delay problems that may initially develop following implementation of the ARSA will be transitory, and therefore no lasting adverse impact should result.

The FAA has determined that this rule will not result in a significant economic impact on a substantial number of small entities. Therefore, a regulatory flexibility analysis is not required under the terms of the RFA.

Federalism Implications

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

Conclusion

For the reasons discussed under "Regulatory Evaluation," the FAA has determined that this regulation (1) is not a "major rule" under Executive Order 12291; and (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979). It is also certified that this rule does not require preparation of a Regulatory Flexibility Analysis under the RFA.

List of Subjects in 14 CFR Part 71

Airport radar service areas, Aviation safety, Control zones, Incorporation by reference.

Adoption of the Amendment

In consideration of the foregoing, the Federal Aviation Administration amends CFR part 71 as follows:

PART 71—[AMENDED]

1. The authority citation for 14 CFR part 71 continues to read as follows:

Authority: 49 U.S.C. app. 1348(a), 1354(a), 1510; E.O. 10854, 24 FR 9565, 3 CFR, 1959–1963 Comp., p. 389; 49 U.S.C. 106(g); 14 CFR 11.69.

§71.1 [Amended]

2. The incorporation by reference in 14 CFR 71.1 of the Federal Aviation Administration Order 7400.7A, Compilation of Regulations, dated November 2, 1992, and effective November 27, 1992, is amended as follows:

Section 71.171 Designation of Control Zones

* * * * *

ANE ME CZ Bangor, ME [Revised]
Bangor International Airport
(lat. 44°48'27" N., long. 68°49'41" W.)
Bangor VORTAC
(lat. 44°50'31" N., long. 68°52'26" W.)

That airspace extending upward from the surface to and including 4,200 feet MSL within a 5-mile radius of Bangor International Airport; and that airspace extending upward from the surface within 1.5 miles each side of the Bangor VORTAC 135° radial extending from the 5-mile radius to 9 miles southeast of the VORTAC; and that airspace within 3.1 miles each side of the VORTAC 318° radial extending from the 5-mile radius to 7.2 miles northwest of the VORTAC.

* * * * *

Section 71.501 Designation of Airport Radar Service Areas

* * * * *

ANE ME ARS Bangor, ME [New]
Bangor International Airport
(lat. 44°48'27" N., long. 68°49'41" W.)
Bangor VORTAC
(lat. 44°50'31" N., long. 68°52'26" W.)

That airspace extending upward from the surface to and including 4,200 feet MSL within a 5-mile radius of Bangor International Airport; and that airspace extending upward from 2,000 feet MSL to and including 4,200 feet MSL within a 10-mile radius of the airport from the 111° radial of the Bangor VORTAC clockwise to the 232° radial of the VORTAC; and that airspace extending upward from 1,500 feet MSL to and including 4,200 feet MSL within a 10-mile radius of the airport from the 232° radial of the VORTAC clockwise to the 111° radial of the VORTAC. This airport radar service area is effective during the specific days and hours of operation of the Bangor Tower and Approach Control Facility as established in advance by a Notice to Airmen. The effective dates and times will thereafter be continuously published in the Airport/Facility Directory.

* * * * *

Issued in Washington, DC, on February 1, 1993.

Harold W. Becker,

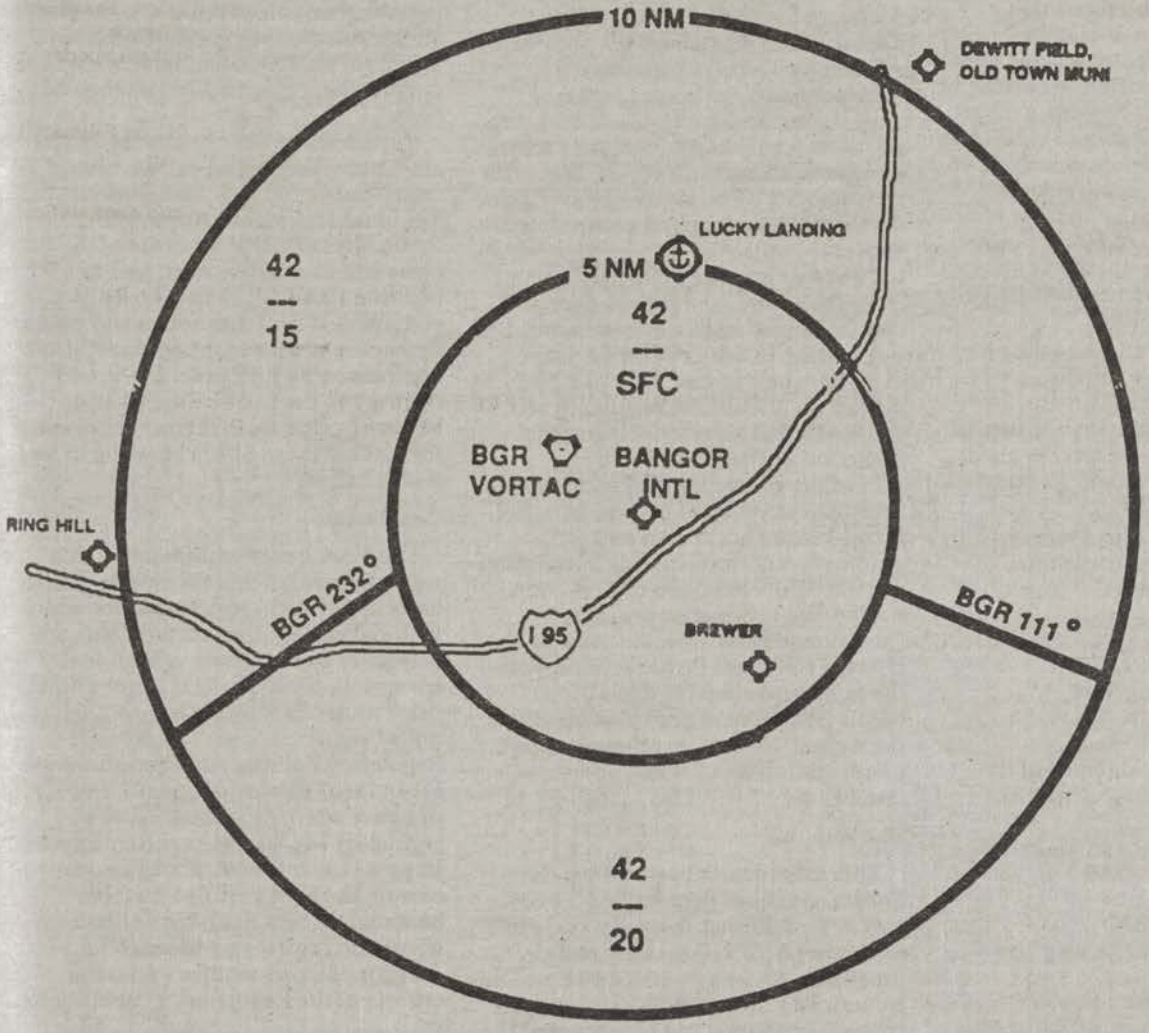
Manager, Airspace-Rules and Aeronautical Information Division.

BILLING CODE 4910-13-M

BANGOR, MAINE
AIRPORT RADAR SERVICE AREA

BANGOR INTERNATIONAL AIRPORT
FIELD ELEVATION - 192 FEET

(Not to be used for navigation)



Graphic prepared by the
FEDERAL AVIATION ADMINISTRATION
Cartographic Standards Section
(ATP - 230)

[FR Doc. 93–2927 Filed 2–8–93; 8:45 am]
BILLING CODE 4910–13–C

14 CFR Part 97

[Docket No. 27128; Amdt. No. 1531]

Standard Instrument Approach Procedures; Miscellaneous Amendments

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: This amendment establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs) for operations at certain airports. These regulatory actions are needed because of changes occurring in the National Airspace System, such as the commissioning of new navigational facilities, addition of new obstacles, or changes in air traffic requirements. These changes are designed to provide safe and efficient use of the navigable airspace and to promote safe flight operations under instrument flight rules at the affected airports.

DATES: *Effective:* An effective date for each SIAP is specified in the amendatory provisions.

Incorporation by reference-approved by the Director of the Federal Register on December 31, 1980, and reapproved as of January 1, 1982.

ADDRESSES: Availability of matter incorporated by reference in the amendment is as follows:

For Examination—

1. FAA Rules Docket, FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591;
2. The FAA Regional Office of the region in which affected airport is located; or
3. The Flight Inspection Field Office which originated the SIAP.

For Purchase—

Individual SIAP copies may be obtained from:

1. FAA Public Inquiry Center (APA–200), FAA Headquarters Building, 800 Independence Avenue, SW., Washington, DC 20591; or
2. The FAA Regional Office of the region in which the affected airport is located.

By Subscription—

Copies of all SIAPs, mailed once every 2 weeks, are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

FOR FURTHER INFORMATION CONTACT: Paul J. Best, Flight Procedures Standards Branch (AFS–420), Technical Programs Division, Flight Standards Service, Federal Aviation Administration, 800 Independence Avenue, SW., Washington, DC 20591; telephone (202) 267–8277.

SUPPLEMENTARY INFORMATION: This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or revokes Standard Instrument Approach Procedures (SIAPs). The complete regulatory description on each SIAP is contained in the appropriate FAA Form 8260 and the National Flight Data Center (FDC)/Permanent (P) Notices to Airmen (NOTAM) which are incorporated by reference in the amendment under 5 U.S.C. 552(a), 1 CFR part 51, and § 97.20 of the Federal Aviations Regulations (FAR). Materials incorporated by reference are available for examination or purchase as stated above.

The large number of SIAPs, their complex nature, and the need for a special format make their verbatim publication in the **Federal Register** expensive and impractical. Further, airmen do not use the regulatory text of the SIAPs, but refer to their graphic depiction of charts printed by publishers of aeronautical materials. Thus, the advantages of incorporation by reference are realized and publication of the complete description of each SIAP contained in FAA form documents is unnecessary. The Provisions of this amendment state the affected CFR (and FAR) sections, with the types and effective dates of the SIAPs. This amendment also identifies the airport, its location, the procedure identification and the amendment number.

The Rule

This amendment to part 97 of the Federal Aviation Regulations (14 CFR part 97) establishes, amends, suspends, or revokes SIAPs. For safety and timeliness of change considerations, this amendment incorporates only specific changes contained in the content of the following FDC/P NOTAM for each SIAP. The SIAP information in some previously designated FDC/Temporary (FDC/T) NOTAMs is of such duration as to be permanent. With conversion to FDC/P NOTAMs, the respective FDC/T NOTAMs have been cancelled. The FDC/P NOTAMs for the SIAPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Approach Procedures (TERPs). In developing these chart changes to SIAPs by FDC/P NOTAMs, the TERPs criteria were applied to only these specific conditions existing at the affected airports.

This amendment to part 97 contains separate SIAPs which have compliance dates stated as effective dates based on related changes in the National Airspace System or the application of new or revised criteria. All SIAP amendments in this rule have been previously issued by the FAA in a National Flight Data Center (FDC) Notice to Airmen (NOTAM) as an emergency action of immediate flight safety relating directly to published aeronautical charts. The circumstances which created the need for all these SIAP amendments requires making them effective in less than 30 days.

Further, the SIAPs contained in this amendment are based on the criteria contained in the U.S. Standard for Terminal Instrument Approach Procedures (TERPs). Because of the close and immediate relationship between these SIAPs and safety in air commerce, I find that notice and public procedure before adopting these SIAPs are unnecessary, impracticable, and contrary to the public interest and, where applicable, that good cause exists for making these SIAPs effective in less than 30 days.

Conclusion

The FAA has determined that this regulation only involves an established body of technical regulations for which frequent and routine amendments are necessary to keep them operationally current. It, therefore—(1) is not a "major rule" under Executive Order 12291; is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034; February 26, 1979); and (3) does not warrant preparation of a regulatory evaluation as the anticipated impact is so minimal. For the same reason, the FAA certifies that this amendment will not have a significant economic impact on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 97

Approaches, Standard instrument, Incorporation by reference.

Issued in Washington, DC on January 29, 1993.

Thomas C. Accardi,

Director, Flight Standards Service.

Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me, part 97 of the Federal Aviation Regulations (14 CFR part 97) is amended by establishing, amending, suspending, or revoking Standard Instrument Approach

Procedures, effective at 0901 UTC on the dates specified, as follows:

PART 97—STANDARD INSTRUMENT APPROACH PROCEDURES

1. The authority citation for part 97 continues to read as follows:

Authority: 49 U.S.C. App. 1348, 1354(a), 1421 and 1510; 49 U.S.C. 106(g) (revised Pub. L. 97–449, January 12, 1983); and 14 CFR 11.49 (b)(2).

2. Part 97 is amended to read as follows:

§§ 97.23, 97.25, 97.27, 97.29, 97.31, 97.33 and 97.35 [Amended]

By amending: § 97.23 VOR, VOR/DME, VOR or TACAN, and VOR/DME or TACAN; § 97.25 LOC, LOC/DME, LDA, LDA/DME, SDF, SDF/DME; § 97.27 NDB, NDB/DME; § 97.29 ILS, ILS/DME, ISMLS, MLS, MLS/DME, MLS/RNAV; § 97.31 RADAR SIAPs; § 97.33 RNAV SIAPs; and § 97.35 COPTER SIAPs, identified as follows:

NFDC TRANSMITTAL LETTER

Effective	State	City	Airport	FDC No.	SIAP
01/12/93	NY	Poughkeepsie	Dutchess County	FDC 3/0201	VOR/DME Rwy 6 Amdt 5. This Correct NOTAM In TL–93–03.
01/14/93	MN	Worthington	Worthington Muni	FDC 3/0194	VOR Rwy 11 Amdt 1.
01/14/93	MN	Worthington	Worthington Muni	FDC 3/0195	VOR Rwy 17 Amdt 8.
01/14/93	MN	Worthington	Worthington Muni	FDC 3/0196	VOR Rwy 35 Amdt 4.
01/14/93	MN	Worthington	Worthington Muni	FDC 3/0197	VOR/DME Rwy 29 Amdt 2.
01/14/93	MO	Dexter	Dexter Muni	FDC 3/0203	NDB Rwy 36 Orig.
01/15/93	AL	Anniston	Anniston Metropolitan	FDC 3/0228	ILS Rwy 5 Amdt 1A.
01/15/93	ME	Auburn-Lewiston	Auburn-Lewiston Muni	FDC 3/0230	ILS Rwy 4 Amdt 7.
01/19/93	OK	Cushing	Cushing Muni	FDC 3/0264	NDB Rwy 35 Amdt 3.
01/19/93	OK	Elk City	Elk City Muni	FDC 3/0266	RNAV Rwy 17 Amdt 2.
01/19/93	OK	Frederick	Frederick Muni	FDC 3/0258	NDB Rwy 35L Amdt 1.
01/19/93	OK	Gage	Gage	FDC 3/0259	VOR–A Amdt 9.
01/19/93	OK	Madill	Madill Muni	FDC 3/0260	VOR/DME–A Amdt 2.
01/19/93	OK	Medford	Medford Muni	FDC 3/0261	NDB Rwy 17 Amdt 1.
01/19/93	OK	Muskogee	David Field	FDC 3/0265	VOR Rwy 31 Amdt 2.
01/19/93	OK	Norman	University of Oklahoma Westheimer Airpark.	FDC 3/0262	LOC Rwy 3 Amdt 3.
01/19/93	OK	Norman	University of Oklahoma Westheimer Airpark.	FDC 3/0268	NDB Rwy 3 Amdt 5.
01/19/93	OK	Oklahoma City	Sundance Airpark	FDC 3/0269	VOR Rwy 17 Orig.
01/19/93	OK	Oklahoma City	Sundance Airpark	FDC 3/0270	RNAV Rwy 35 Orig.
01/21/93	AL	Dothan	Dothan	FDC 3/0305	VOR Rwy 13 Amdt 3.
01/21/93	AL	Dothan	Dothan	FDC 3/0306	LOC BC Rwy 13 Amdt 6.
01/21/93	AL	Dothan	Dothan	FDC 3/0307	ILS Rwy 31 Amdt 7.
01/21/93	OK	Norman	University of Oklahoma Westheimer Airpark.	FDC 3/0296	RNAV Rwy 3 Orig.
01/22/93	TX	Orange	Orange County	FDC 3/0318	VOR/DME Rwy 21 Amdt 1.
01/25/93	LA	New Orleans	New Orleans Intl/Moisant Field	FDC 3/0338	ILS Rwy 10 Cat III Orig.
01/26/93	MN	Albert Lea	Albert Lea Muni	FDC 3/0353	VOR Rwy 16 Amdt 9A.
01/26/93	MN	Albert Lea	Albert Lea Muni	FDC 3/0355	VOR/DME Rwy 34 Amdt 2A.
01/26/93	MN	Fairmont	Fairmont Muni	FDC 3/0356	VOR Rwy 31 Amdt 7.
01/26/93	MN	Fairmont	Fairmont Muni	FDC 3/0357	VOR/DME Rwy 13 Amdt 1.
01/26/93	MN	Fairmont	Fairmont Muni	FDC 3/0358	VOR/DME Rwy 31 Amdt 1.
01/26/93	MN	Fairmont	Fairmont Muni	FDC 3/0359	VOR Rwy 13 Amdt 4.
01/26/93	MN	Faribault	Faribault Muni	FDC 3/0349	VOR–A Amdt 3.
01/26/93	MN	Faribault	Faribault Muni	FDC 3/0351	VOR/DME RNAV Rwy 12 Amdt 3.
01/26/93	MN	Jackson	Jackson Muni	FDC 3/0350	NDB Rwy 13 Amdt 7.
01/26/93	MN	Springfield	Springfield Muni	FDC 3/0348	VOR/DME Rwy 13 Amdt 2.
01/26/93	MN	Waseca	Waseca Muni	FDC 3/0346	NDB Rwy 15 Amdt 3.
01/26/93	MN	Windom	Windom Muni	FDC 3/0360	NDB Rwy 17 Amdt 4.
01/26/93	MN	Winona	Winona Muni-Max Conrad Field	FDC 3/0352	VOR–A Amdt 11.
01/26/93	MN	Winona	Winona Muni-Max Conrad Field	FDC 3/0354	VOR Rwy 29 Amdt 14A.
01/27/93	CA	Santa Ana	John Wayne-Orange County	FDC 3/0373	NDB Rwy 19R Orig.
01/27/93	CA	Santa Ana	John Wayne-Orange County	FDC 3/0374	LOC BC Rwy 1L Amdt 10.
01/27/93	CA	Santa Ana	John Wayne-Orange County	FDC 3/0375	LDA Rwy 19R Amdt 1.
01/27/93	MN	Waseca	Waseca Muni	FDC 3/0380	VOR–A Amdt 3.

[FR Doc. 93–2922 Filed 2–8–93; 8:45 am]
BILLING CODE 4910–13–M

DEPARTMENT OF THE TREASURY

Internal Revenue Service

26 CFR Part 1

[T.D. 8430]

RIN 1545–AQ07

Procedure for Monitoring Compliance With Low-Income Housing Credit Requirements; Correction

AGENCY: Internal Revenue Service,

ACTION: Correction to final regulations.

SUMMARY: This document contains corrections to Treasury Decision 8430, which was published in the **Federal Register** for Wednesday, September 2, 1992 (57 FR 40118). The final regulations relate to the requirement that State allocation plans provide a procedure for State and local housing credit agencies to monitor for compliance with the requirements of section 42 of the Internal Revenue Code.

EFFECTIVE DATE: June 30, 1993.