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RULEMAKING ISSUE

November 23, 1992

(NEGATIVE CONSENT)

SECY-92-394

For: The Commissioners

From: James M. Taylor
Executive Director for Operations

Subject: Timeliness In Decommissioning Of Materials Facilities.

Purpose: To obtain Commission approval of a notice of proposed rulemaking.

Background: On February 19, 1992, the staff provided a draft proposed rule on timeliness in decommissioning nuclear materials facilities to the Commission for consideration for approval for public comment (SECY-92-057). On June 5, 1992, the Commission issued an SRM approving the rulemaking with comments and directed the staff to submit the final package for Commission review in a negative consent format prior to publication.

Discussion: The enclosed rulemaking has been revised to incorporate changes directed by the Commission's SRM. In addition, the rule has been redrafted to clarify and simplify requirements as follows:

- (1) Licensees would be required to initiate decommissioning when notifying the Commission of cessation of principal activities (unless a decommissioning plan is required). This clarifies the timing of initiation of decommissioning;

NOTE: TO BE MADE PUBLICLY AVAILABLE
WHEN THE FINAL SRM IS MADE
AVAILABLE

Contact:
Paul Kovach, RES
301-492-3729

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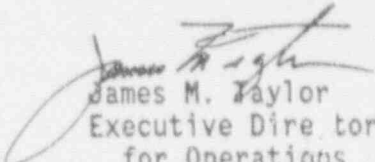
- (2) The requirement to perform a radiological survey is specified as a final step in decommissioning. This clarifies the timing of the final radiological survey prior to license termination;
- (3) A description of site conditions would be required as part of the decommissioning plan, which codifies existing practice; and
- (4) Sections 72.42 and 72.54 have been revised to reflect the protocol in Parts 30, 40, and 70.

Coordination: This paper has been coordinated with the Office of the General Counsel which has no legal objection.

Recommendations: Note that unless otherwise directed by the Commission, 10 days after the date of this paper:

- (1) The proposed rule (Enclosure 1) will be published in the Federal Register and will allow 75 days for public comment.
- (2) A Regulatory Analysis (Enclosure 3) will be available in the Public Document Room.
- (3) A public announcement (Enclosure 4) will be issued when the proposed rule is filed with the Office of the Federal Register for publication.
- (4) Congressional committees will be notified of this rulemaking by letter (Enclosure 5).
- (5) This proposed rule contains information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). These requirements will be submitted to the Office of Management and Budget for approval.
- (6) Copies of the Federal Register notice of proposed rulemaking will be distributed to all affected licensees and other interested parties.
- (7) An environmental assessment and finding of no significant impact has been prepared and is available in the NRC Public Document Room.

- (8) The Chief Counsel of Advocacy of the Small Business Administration will be informed of the certification and the reasons for it as required by the Regulatory Flexibility Act.


James M. Taylor
Executive Director
for Operations

Enclosures:

1. Proposed Federal Register Notice
2. Responses to SRM
3. Regulatory Analysis
4. Draft Public Announcement
5. Draft Congressional Letters
6. Draft Environmental Assessment

SECY NOTE: In the absence of instructions to the contrary, SECY will notify the staff on Wednesday, December 9, 1992, that the Commission, by negative consent, assents to the action proposed in this paper.

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ENCLOSURE 1

PROPOSED FEDERAL REGISTER NOTICE

NUCLEAR REGULATORY COMMISSION
10 CFR Parts 30, 40, 70, and 72
RIN 3150-AD85

Timeliness in Decommissioning of Materials Facilities

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to amend its regulations to require timely decontamination and decommissioning by nuclear material licensees. These amendments would establish specific time periods for decommissioning unused portions of operating nuclear materials facilities and for decommissioning the entire site upon termination of operations. The NRC is also proposing to amend the regulations to require that licensees provide a description of the conditions of the site as part of the information to be submitted in support of decommissioning plans. The proposed rule is intended to reduce the potential risk to public health and the environment from radioactive material at such facilities after licensed activities have ceased.

DATES: Comment period expires (75 days after date of publication in the Federal Register). Comments received after this date will be considered if it is practical to do so, but consideration can only be assured if comments are received on or before this date.

ADDRESSES: Mail written comments to: Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

Deliver comments between 7:45 am and 4:15 pm on Federal workdays to: 11555 Rockville Pike, Rockville, Maryland.

Copies of the regulatory analysis, the environmental assessment and finding of no significant environmental impact, the supporting statement submitted to OMB, and comments received may be examined at: the NRC Public Document Room at 2120 L Street NW. (Lower Level), Washington, DC.

FOR FURTHER INFORMATION CONTACT: Paul J. Kovach, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3729.

SUPPLEMENTARY INFORMATION:

Background

Over the past several years, the Nuclear Regulatory Commission (NRC) has identified over 40 nuclear material sites that warrant special attention by the Commission. The sites have buildings, former waste disposal areas, large piles of tailings, ground water, and soil contaminated with low levels of uranium or thorium (source material) or other radionuclides. Consequently, they present varying degrees of radiological hazard, cleanup complexity, and cost. At some sites, licensees are financially and technically capable of completing cleanup in a reasonable timeframe, whereas at other sites, the licensee or responsible party is unable or unwilling to perform cleanup. In

addition, the sites are currently in various stages of decommissioning. At some sites, licensees have initiated decommissioning, whereas at other sites, decommissioning has not yet been planned or initiated.

In 1990, the NRC implemented the Site Decommissioning Management Plan (SDMP) to identify and resolve issues associated with the timely cleanup of these sites. The SDMP does not include mere routine decommissioning cases. The SDMP has been effective in ensuring coordination and resolution of some of the policy and regulatory issues affecting site decommissioning. Progress on actual site remediation, however, continues to be slow. The limited progress to date prompted the Commission to direct the NRC staff to initiate actions to accelerate the cleanup of SDMP sites. The staff developed, and on April 3, 1992, the Commission approved, an Action Plan to describe NRC's case-by-case approach for accelerating remediation of sites listed in the SDMP.

These SDMP contaminated sites are symptomatic of the need for definitive NRC regulations which specify acceptable time periods for decommissioning nuclear material facilities when the licensed activities have ceased. If decommissioning is delayed for long periods following cessation of operations, there is a risk that safety practices at the inactive facility or the inactive portion of the operating facility may become lax as key personnel relocate and management interest wanes. In addition, bankruptcy, corporate takeover, or other unforeseen changes in the company's financial status may complicate and perhaps further delay decommissioning.

The issuance of a rule to establish timeliness criteria for decommissioning nuclear materials licensee facilities would avoid future problems resulting from delayed actions on cleanup of contaminated inactive

facilities, and minimize the difficulties associated with a case-by-case approach to requiring timely decontamination and decommissioning.

Discussion

The lack of definitive criteria as to when licensees shall commence and complete decommissioning their facilities has resulted in instances where the Commission has had to issue orders to establish schedules for timely decommissioning. Because timeliness in decommissioning is a generic issue, the Commission is proposing to amend its regulations to clearly delineate the licensee's responsibility for timely decommissioning. The proposed rule would provide the needed regulatory basis for compelling decommissioning in a timely manner. In addition, the proposed rule would place a limit on the time permitted to decontaminate and decommission and place the burden of proof directly on the licensee to demonstrate that a longer period of time is required for completing decommissioning.

In developing details of these proposed requirements, the NRC considered whether to impose them on all licensees, or to limit the requirements only to those licensees who, because of the size of their operations, had greater potential for needing significant cleanup before their sites could be fully decommissioned -- i.e., those licensees covered by the financial assurance requirements for decommissioning in 10 CFR 30.35, 40.36, 70.25, and 72.30. Limiting the application of these requirements would affect fewer licensees (approximately 1,650 versus 24,000 NRC and Agreement State licensees), whereas applying the proposed rule to all licensees would have the advantage of ensuring that dormant areas with significant levels of contamination will be

decommissioned, regardless of the size or extent of the licensee's operations. The Commission has determined that the provisions of the rule should extend to all 10 CFR Parts 30, 40, 70, and 72 licensees.

The proposed rule would establish specific requirements for: (1) timely decommissioning of the entire site at the end of all licensed activity at the site, thereby allowing license termination and release of the site for unrestricted use (i.e., "end-of-license" decommissioning); and (2) timely decommissioning of separate buildings and outdoor areas where licensed activities have ceased while licensed activities continue to be conducted at other site locations (i.e., "end-of-use" decommissioning). Licenses would be amended to exclude decommissioned buildings or outdoor areas as authorized places of use following satisfactory completion of end-of-use decommissioning.

The proposed rule would define principal activities as those activities that are essential to achieving the purpose for which the license was issued or amended. Principal activities are commonly listed or described in the license under the Authorized Use heading. Principal activities are defined in the regulation to prevent licensees from avoiding end-of-use decommissioning requirements by using passive activities. For example, a licensee could not store licensed radioactive material in an otherwise unused building to avoid end-of-use decommissioning, unless storage was a principal activity for that building as a part of ongoing operations.

The proposed rulemaking clarifies the regulations to address license termination, expiration, revocation, denial of renewal, and their relationship to each other. In general, a license "expires" when: (1) the expiration date stated in the license is reached [unless the licensee has appropriately filed for renewal], (2) the Commission revokes the license, or (3) the Commission

formally denies an application to renew the license. The current rules provide that a license continues in effect until a final Commission determination has been made on the renewal application. The current rules do not specifically address continued authority and responsibility with respect to materials possessed under the license until the license is terminated by the Commission. "Expiration" of a license, whether voluntary or involuntary, refers to the end of a licensee's authorization to perform licensed activities under the Atomic Energy Act of 1954, as amended, with the exception of a licensee's continuing authorization to perform licensed activities incident to and necessary for site decontamination and decommissioning. Licensees with expired licenses must then decommission pursuant to the time limits and other requirements stated in the regulations. The rule would make clear that the decommissioning and timeliness criteria apply to all licensees for whom the authorization to perform licensed activities has expired, regardless of whether the expiration was voluntary or involuntary. When the Commission has determined that decommissioning has been completed in a satisfactory manner, the Commission will relieve the licensee of license obligations by terminating the license. All licenses remain in effect until formally terminated by the Commission.

The proposed rule would require licensees to submit notification of the existence of inactive buildings or outdoor areas but would not require them to provide notification of the existence of inactive parts of buildings, such as rooms or laboratories. To include parts of buildings in the regulation was seen as a cumbersome regulatory requirement both for licensees and the NRC without sufficient resultant benefit. In addition to notification, licensees would be required to initiate decommissioning or, within 12 months, submit a

decommissioning plan for Commission approval. Decontamination or decommissioning of internal building areas is covered under the normal inspection and licensing process. If the cleanup involved routine procedures used by the licensee, they would be handled under the licensee's existing license or radiation safety program. If the cleanup involved procedures not employed routinely by the licensee, NRC could request additional information regarding the cleanup.

The time requirements for completing decommissioning consist of time periods both for initiating the decommissioning process and for subsequently completing decommissioning activities. In determining the appropriate time requirement for initiating decommissioning, the NRC staff considered the health and safety benefits to be obtained by allowing short-lived isotopes to decay before beginning decommissioning operations, and also the licensee's need to make business decisions concerning future use of inactive buildings or outdoor areas. In determining the appropriate time requirements for the completion of subsequent decommissioning activities, the NRC staff considered the time needed to plan and safely carry out decommissioning operations based on previous experience.

With regard to initiation of the decommissioning process, the background information developed for the rulemaking on general requirements for decommissioning (53 FR 24018; June 27, 1988) included an evaluation of decommissioning planning and preparation requirements for the wide variety of different sized operations licensed under 10 CFR Parts 30, 40, and 70. That evaluation indicated that, in general for materials license facilities, further benefits derived from radiological decay are not likely to be gained by delaying decommissioning beyond approximately 3 years from the date that

operations cease. With respect to making business decisions on further use of inactive facilities, the Commission considers a period of approximately 24 months to be reasonable. This would permit licensees sufficient time to make decisions concerning future use of an inactive facility, while accommodating periods of inactivity due to normal operations, testing, or routine business cycles.

Based on the 24-month time period considered reasonable for making business decisions, and considering that the incremental benefits due to radioactive decay between the second and third years of inactivity are small, the Commission considers a period of approximately 24 months to be a reasonable time period to permit a building or outdoor area to remain inactive without undergoing decommissioning. Therefore, the proposed rule would stipulate that licensees must notify NRC if they have buildings or outdoor areas where no principal activities have been conducted for 24 months. Notification would also be required when the license has expired or when the licensee has decided to permanently cease principal activities and begin the formal process leading to license termination. The proposed rule would allow licensees 60 days to provide notification. The proposed rule would require licensees not required to submit decommissioning plans to begin decommissioning within the 60-day period provided for notification unless the Commission has granted a delay or postponement. Licensees required to submit decommissioning plans would be required to submit final decommissioning plans within 12 months following notification to cease principal activities. The timetables for required decommissioning activities are discussed below.

The Commission recognizes that licensees may not wish to decommission the site or separate buildings or outdoor areas when submitting the

notification described above; thus, the rule would permit licensees to make a request and justify delay or postponement. Licensees would be required to submit the request with justification 30 days prior to the time notification would have been required as described above. In practical terms, this would mean: (1) 30 days prior to the license expiration date, or (2) 30 days following the decision to permanently cease principal activities at the site or in separate buildings or outdoor areas, or (3) 30 days following the end of the 24-month time period of inactivity for the site or in separate buildings or outdoor areas.

With regard to subsequent completion of decommissioning activities, licensees who are not required by license condition or existing regulatory requirements to submit a decommissioning plan would be permitted a maximum of 18 months to complete decommissioning. Licensees who are required to submit a decommissioning plan would be permitted 12 months to prepare and submit the plan and a maximum of 18 months to complete decommissioning following NRC approval of the plan.

The proposed regulations will permit licensees to request the Commission to consider extending the 18-month time limit for decommissioning. The Commission will consider site-specific factors on a case-by-case basis. Factors that the Commission may consider to be appropriate include:

- (1) Availability of waste disposal facilities, (2) Reductions in dose or waste volume due to radioactive decay, (3) Technical feasibility of decommissioning, (4) Regulatory requirements of other government agencies, (5) Lawsuits, (6) Ground-water treatment activities, (7) Monitored natural ground-water restoration, or (8) Other factors that could result in more environmental harm than deferred clean-up or that are beyond the control of the licensee.

Based on the time periods discussed above, the NRC estimates that licensees who are not required to submit decommissioning plans should complete their decommissioning activities in approximately 44 months or less after cessation of operations (i.e., 24 months of inactivity, 60 days for notification, and 18 months to complete decommissioning). Licensees who are required to submit decommissioning plans would be expected to complete their decommissioning activities in approximately 56 months or less (i.e., 24 months of inactivity, 60 days for notification, 12 months to submit a decommissioning plan, and 18 months to complete decommissioning). Commission review and approval of decommissioning plans (estimated to be 6 months or less) would be in addition to the 56-month total.

Uranium recovery licensees consist of conventional mills, commercial and research and development in-situ facilities, ore buying stations, and heap-leach facilities. These sites may contain processing facilities and waste disposal areas. The sites, other than the waste disposal areas, will be decommissioned and released for unrestricted use. The waste disposal areas are reclaimed and, when the specific license is terminated, licensed for long-term care under the general license in § 40.28.

The current requirements for decommissioning and reclamation of these sites are contained in Appendix A to 10 CFR Part 40. In particular, Criterion 9 of Appendix A requires that there must be a Commission-approved plan for:

(1) Decontamination and decommissioning of mill buildings and the milling site to levels which allow unrestricted use of these areas after decommissioning, and

(2) The reclamation of tailings and waste disposal areas in accordance with technical criteria presented in Section I of Appendix A.

The effect of the proposed rule would be to require the uranium recovery licensees to notify the Commission within 60 days when they have permanently ceased operations or have not conducted operations for 24 months (§ 40.42(d)) and to submit a decommissioning plan within 12 months of this notification or license expiration. The provisions in the proposed § 40.42(g) on the content of a decommissioning plan are consistent with the intent of the decommissioning plan required in Criterion 9 of Appendix A to 10 CFR Part 40. Some uranium recovery licensees may require additional time to conduct final decommissioning and site survey in order to support the reclamation of waste disposal areas.

Because waste disposal areas are not released for unrestricted use and Criterion 9 of Appendix A to 10 CFR Part 40 and Subpart T of 40 CFR Part 61 specifically require the submittal and approval of a timely reclamation plan, the provisions in the proposed rule in § 40.42(f) for the content of a plan and § 40.42(g) for the timing of completion of the plan do not apply to the reclamation plan for the waste disposal areas at uranium recovery facilities. Section 40.42(k) presents the exemption for the waste disposal areas at uranium recovery facilities.

To coordinate decommissioning of uranium recovery facilities and reclamation of disposal areas, the Commission may need to extend the date for completion of the decommissioning plan and final radiological survey until the reclamation of the disposal area has been completed. Typically, the reclamation of a disposal area may require several years of drying, several construction seasons, and a period of stability monitoring prior to the

licensee proposing to terminate the license. Requests for delay in completion of the final aspects of the decommissioning plan can be accommodated through the provisions in proposed § 40.42(h).

The Commission recognizes the fluctuation that has occurred in the uranium industry. The proposed regulation would allow the Commission to extend the 24-month period of inactivity if the Commission determined, based on a request by the licensee, that this relief is not detrimental to the public health and safety and is otherwise in the public interest.

This proposed rule would also clarify requirements for radiological surveys performed as part of the license termination process. This proposed rule would clarify that licensees need only submit the final survey showing that the site or area is suitable for release for unrestricted use after decommissioning has been completed. The Commission has recognized that existing requirements may be construed to require two surveys. However, the Commission must be aware of the conditions of the site in order to adequately review and approve a decommissioning plan. Therefore, a new item has been added to the content of a proposed decommissioning plan which requires a description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan. This may be a preliminary radiation survey or other types of documentation which characterize the conditions of the site.

The existing regulations (72.42(b)) require that applications for renewal of ISFSI and MRS licenses be filed at least 2 years prior to expiration of the existing license. This rulemaking would require licensees to notify the Commission (at least 2 years prior to license expiration) if an application for renewal will not be filed. The notification requirement,

coupled with the 12-month time period for preparation of the final decommissioning plan, is equivalent to the current requirement in § 72.54(a) for submittal of a plan 1 year before expiration of the license. The requirement also has the effect of clearly documenting the licensee's decision on the future of the site 2 years before license termination.

This proposed rule would implement the Commission's directive on metrication that was established on October 7, 1992 (57 FR 46202). Reports of radiation exposure and exposure rates, dose and dose rates are now given using SI units, with special units in parentheses.

This proposed rule does not define radiological criteria for release for unrestricted use. The NRC intends to establish these levels in an enhanced participatory rulemaking that will be noticed in the Federal Register. Pending promulgation of the new radiological criteria, licensees are expected to comply with current criteria and practices as described in the NRC Action Plan Ensuring Timely Decommissioning of SDMP Sites (57 FR 13389; April 16, 1992). Further information on acceptable criteria may be obtained through the NRC regional or headquarters offices.

In keeping with the Commission's April 11, 1991, directive to the NRC staff concerning cooperation with the Agreement States, the NRC staff discussed its plans for this rulemaking with the Agreement States. The discussion was held at two open meetings in Wichita, Kansas, on May 14, 1991. These meetings were held to provide information and discussion in conjunction with the annual meeting of the Conference of Radiation Control Program Directors, Inc. During the meetings, the questions and comments that were raised focused upon the following:

(1) What licensee types should be covered and whether all facilities should be covered or only those with significant (but unspecified levels at that time) contamination;

(2) The time period that should be allowed for decommissioning and the options for extending the time period; and

(3) Other procedural questions such as the need for a residual radioactivity rule, related guidance on timeliness, enforcement, etc.

The staff has considered the comments made at the meetings. The content of the proposed rule and the Discussion section of this Supplementary Information address the concerns raised at the meetings.

The NRC recommends that the rule be made a Division 2 matter of compatibility. Under this level of compatibility, the Agreement States would be expected to adopt a timeliness in decommissioning rule but would be permitted flexibility to apply more stringent requirements if deemed appropriate by the State.

Although a total of about 24,000 licensees (including both NRC and approximately 16,000 Agreement State licensees) would be affected by this rulemaking, minimal impact is expected upon the 19,700 NRC or Agreement State licensees using only sealed sources or sources with short half-lived material.

Enforcement

The Commission intends to modify Enforcement Policy in 10 CFR Part 2, Appendix C, Supplement 6, such that failure to provide notification or decommission facilities in accordance with this proposed rule would be

considered a severity level 3 violation. This may subject licensees to civil penalties, including daily civil penalties, for such violations.

Request for Comment

Comments are invited on the proposed regulatory text in 10 CFR 30.36. The paragraphs in the existing regulations that would be revised to establish these criteria and timetables are found in §§ 30.36(a) - (e), and 30.37(a); the sections in the proposed rule being added to establish these criteria and timetables are 30.36(g), (h), (i), and (j). Sections 30.36(d) and 30.37(b) have been deleted. A definition of principal activities has been added to § 30.4.

The text in the existing regulation in §§ 30.36(c)(2)(i)(A)-(D), (c)(2)(iii)(A), (c)(2)(iii)(C), (c)(2)(iii)(D), and 30.36(f)(1)-(3) is unchanged (although renumbered). The text of these paragraphs is included as part of the codified text for clarity, completeness of presentation, and ease of amendment. However, comments are not requested on the provisions of these paragraphs nor will such comments be considered as part of this proposed rulemaking.

Similar amendments are being made to § 40.42, § 70.38 and 72.42. Specifically, comments are invited on the proposed regulatory text for these parts. The paragraphs in the existing regulations that would be revised to establish these criteria and timetables are §§ 40.42(a) - (e), and 40.43(a). The section being added to establish these criteria and timetables are 40.42(g), (h), (i), (j), and (k). Sections 40.42(d) and 40.43(b) have been deleted. A definition of principal activities has been added to § 40.4.

The text in §§ 40.42(c)(2)(i)(A)-(D); (c)(2)(iii)(A), (c)(2)(iii)(C), (c)(2)(iii)(D), and 40.42(f)(1)-(3) is unchanged (although renumbered). The text of these paragraphs is included as part of the codified text for clarity, completeness of presentation, and ease of amendment. However, comments are not requested on the provisions of these paragraphs nor will such comments be considered as part of this proposed rulemaking.

Similarly, with regard to § 70.38, comments are invited on the amended regulatory text. The paragraphs that would be revised to establish these criteria and timetables are found in §§ 70.38(a) - (e) and (f)(5). The sections being added to establish these criteria and timetables are 70.38(g), (h), (i), and (j). Sections 70.33(b) and 70.38(d) have been deleted. A definition of principal activities has been added to § 70.4.

The text in §§ 70.38(c)(2)(i)(A)-(D), 70.38(c)(iii)(A), (c)(iii)(C)-(E), and 70.38(f)(1)-(3) is unchanged (although renumbered). The text of these paragraphs is included as part of the codified text for clarity, completeness of presentation, and ease of amendment. However, comments are not requested on the provisions of these paragraphs nor will such comments be considered as part of this proposed rulemaking.

Similarly, with regard to Part 72, comments are invited on the amended regulatory text which establishes criteria and timetables for decommissioning of independent storage and high level waste facilities. The paragraphs that would be revised to establish these criteria and timetables are found in § 72.54(a) - (c). The sections being added to establish these criteria and timetables are 72.54(f)(1), (f)(2), and 72.54 (h) - (i). A definition of principal activities would be added to § 72.3. The text in § 72.54(b)(2) - (c) is unchanged (although renumbered). The text of these paragraphs is

included as part of the codified text for clarity, completeness of presentation, and ease of amendment. However, comments are not requested on the provisions of these paragraphs nor will such comments be considered as part of this proposed rulemaking.

With regard to the timetable established in 10 CFR 30.36(b), 40.42(b), 70.38(b) and 72.54(a) for providing NRC with notification that facilities have been inactive for 24 months, as well as the requirement that justifications for delaying or postponing initiation of the decommissioning process be filed 23 months after cessation of operations, the Commission specifically requests comments as to whether these time periods provide an adequate balancing of reduction in exposure levels due to decay and the time needed to make business decisions regarding inactive buildings or outdoor areas on a licensee's site.

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, if adopted, would not be a major Federal action significantly affecting the quality of the human environment, and therefore, an environmental impact statement is not required. The proposed action would establish specific requirements for timely decommissioning of nuclear materials facilities. The proposed action is directed to improving the regulatory, licensing, inspection, and enforcement framework relating to these facilities and does not change the underlying fundamental requirement to decommission facilities to levels acceptable for unrestricted use. Thus, this proposed action will not adversely 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 may be obtained from: Mr. P. J. Kovach, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 492-3729.

Paperwork Reduction Act Statement

This proposed rule amends information collection requirements that are subject to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). This rule has been submitted to the Office of Management and Budget for review and approval of the paperwork requirements.

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing 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 (3150-0009, 3150-0017, 3150-0020, and 3150-0132), Office of Management and Budget, Washington, DC 20503.

Regulatory Analysis

The NRC has prepared a draft regulatory analysis on this proposed regulation. The analysis examines the costs and benefits of the alternatives considered by the NRC. The draft regulatory analysis is available for inspection at the NRC Public Document Room, 2120 L Street NW. (Lower Level), Washington, DC. Single copies of the draft analysis may be obtained from Mr. P. J. Kovach, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone: (301) 492-3729.

The NRC requests public comment on the draft regulatory analysis. Comments on the draft analysis may be submitted to the NRC as indicated under the ADDRESSES heading.

Regulatory Flexibility Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule will not, if promulgated, have a significant economic impact on a substantial number of small entities. The proposed rule would impose requirements for timely decommissioning of a site. Although the proposed rule would include all 24,000 licensees regulated by the NRC and the Agreement States, decommissioning efforts for licensees that possess and use only materials with short half-lives or materials only in sealed sources are simple and require only that enough time be permitted to either allow short-lived materials to decay or to enable them to properly dispose of their sealed sources. Therefore, the impact of the rule on these licensees should not be significant. The net cost to the remaining licensees,

estimated to number 4300, is expected to be small based on an analysis of the costs of decommissioning, including waste disposal. The analysis indicates that in nearly all cases, the cost of decommissioning (which includes the costs of waste disposal) would increase if decommissioning is delayed. Complete details of the cost analysis are contained in Section 6.2 of the Regulatory Analysis which can be obtained in the manner noted above. At realistic discount rates, for less than 50 licensees the calculated costs of delaying decommissioning may be lower than for decommissioning in a timely manner. However, these licensees are not likely to be small entities and, in addition, there actually may be significant costs of cleanup of secondary contamination if decommissioning is delayed.

Although the above discussion indicates that there is not a significant impact on a substantial number of small entities, the NRC is seeking comments and suggested modifications because of the widely differing conditions under which materials licensees operate.

Any entity subject to this regulation which determines that, because of its size, it is likely to bear a disproportionate adverse economic impact should notify the Commission of this in a comment that indicates the following:

- (1) The licensee's size and how the proposed regulation would result in a significant economic burden upon the licensee as compared to the economic burden on a larger licensee.

- (2) How the proposed regulations could be modified to take into account the licensee's differing needs or capabilities.

(3) The benefits that would accrue, or the detriments that would be avoided, if the proposed regulations were modified as suggested by the licensee.

(4) How the proposed regulation, as modified, would more closely equalize the impact of NRC regulations or create more equal access to the benefits of Federal programs as opposed to providing special advantages to any individual or group.

(5) How the proposed regulation, as modified, would still adequately protect public health and safety.

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 proposed rule because these amendments do not involve any provisions which would impose backfits as defined in 10 CFR 50.109(a)(1).

List of Subjects in Parts 30, 40, 70, and 72

Part 30 - Byproduct material, Criminal penalty, Government contracts, Intergovernmental relations, Isotopes, Nuclear materials, Radiation protection, Reporting and recordkeeping requirements.

Part 40 - Criminal penalty, Government contracts, Hazardous materials-transportation, Nuclear materials, Reporting and recordkeeping requirements, Source material, and Uranium.

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.

Part 72 - Independent storage of spent fuel and high level waste, Manpower training programs, Nuclear materials, Occupational safety and health, Reporting and recordkeeping requirements, Security measures, and Spent fuel.

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. 553, the NRC is proposing to adopt the following amendments to 10 CFR Parts 30, 40, 70, and 72.

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

1. The authority citation for Part 30 is revised to read as follows:

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).

Section 30.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 30.34(b) also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 30.61 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

2. In section 30.4 a definition of the term principal activities is added to read as follows:

§ 30.4 Definitions.

* * * * *

Principal activities means activities authorized by the license which are essential to achieving the purpose(s) for which the license was issued or amended, excluding storage during which no licensed material is accessed for use or disposal and excluding activities incidental to decontamination or decommissioning.

* * * * *

3. Section 30.36 is revised to read as follows:

§ 30.36 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

(a) Each specific license expires at the end of the day on the expiration date stated in the license except when a licensee has filed an application for renewal pursuant to § 30.37 not less than 30 days prior to the expiration date stated in the existing license. When an application for renewal has been filed at least 30 days prior to the expiration date stated in the existing license, the existing license expires at the end of the day on which the Commission makes a final determination to deny the renewal

application or, if the determination states an expiration date, the expiration date stated in the determination.

(b) Each specific license revoked by the Commission expires at the end of the day on the date of the Commission's final determination to revoke the license, or on the expiration date stated in the determination, or as otherwise provided by Commission Order.

(c) Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of residual byproduct material present as contamination until the Commission notifies the licensee in writing that the license is terminated. During this time, the licensee shall--

(1) Limit actions involving byproduct material to those related to decommissioning; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Commission notifies the licensee in writing that the license is terminated.

(d) Within 60 days of the occurrence of any of the following, consistent with the administrative directions in § 30.6, each licensee shall provide notification to the Commission in writing and either begin decommissioning its site, or any separate building or outdoor area that contains residual radioactivity, such that the building or outdoor area is unsuitable for release for unrestricted use, or submit within 12 months of notification a decommissioning plan, if required by paragraph (f)(1) of this section, and begin decommissioning upon approval of that plan if--

(1) The license has expired pursuant to paragraph (a) or (b) of this section; or

(2) The licensee has decided to permanently cease principal activities, as defined in this part, at the entire site or in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release for unrestricted use; or

(3) No principal activities under the license have been conducted for a period of 24 months; or

(4) No principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release for unrestricted use.

(e) The Commission may grant a request to delay or postpone initiation of the decommissioning process if the Commission determines that such relief is not detrimental to the public health and safety and is otherwise in the public interest. Such requests shall be submitted no later than 30 days prior to notification pursuant to paragraph (d) of this section. The schedule for decommissioning set forth in paragraph (d) of this section shall not commence until the Commission has made a determination on the request.

(f)(1) A decommissioning plan shall be submitted if required by license condition or if the procedures and activities necessary to carry out decommissioning of the site or separate building or outdoor area have not been previously approved by the Commission and these procedures could increase potential health and safety impacts to workers or to the public, such as in any of the following cases:

(i) Procedures would involve techniques not applied routinely during cleanup or maintenance operations;

(ii) Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation;

(iii) Procedures could result in significantly greater airborne concentrations of radioactive materials than are present during operation; or

(iv) Procedures could result in significantly greater releases of radioactive material to the environment than those associated with operation.

(2) The Commission may approve an alternate schedule for submittal of a decommissioning plan required pursuant to paragraph (d) of this section, if the Commission determines that the alternative schedule is necessary to the effective conduct of decommissioning operations and presents no undue risk from radiation to the public health and safety and is otherwise in the public interest.

(3) Procedures such as those listed in paragraph (f)(1) of this section with potential health and safety impacts may not be carried out prior to approval of the decommissioning plan.

(4) The proposed decommissioning plan for the site or separate building or outdoor area must include:

(i) A description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan;

(ii) A description of planned decommissioning activities;

(iii) A description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning;

(iv) A description of the planned final radiation survey; and

(v) An updated detailed cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and plan

for assuring the availability of adequate funds for completion of decommissioning.

(vi) For decommissioning plans calling for completion of decommissioning later than 18 months after plan approval, the plan shall include a justification for the delay based on the criteria in paragraph (h) of this section.

(5) The proposed decommissioning plan will be approved by the Commission if the information therein demonstrates that the decommissioning will be completed as soon as practicable and that the health and safety of workers and the public will be adequately protected.

(g)(1) Except as provided in paragraph (h) of this section, licensees shall complete decommissioning of the site or separate building or outdoor area as soon as practicable but no later than 18 months following initiation of decommissioning.

(2) Except as provided in paragraph (h) of this section, when decommissioning involves the entire site, the licensee shall request license termination as soon as practicable but no later than 18 months following initiation of decommissioning.

(h) The Commission may approve a request for an alternative schedule for completion of decommissioning of the site or separate building or outdoor area, and license termination if appropriate, if the Commission determines that the alternative is warranted by consideration of the following:

(1) Whether it is technically feasible to complete decommissioning within the allotted 18-month period;

(2) Whether sufficient waste disposal capacity is available to allow completion of decommissioning within the allotted 18-month period;

(3) Whether a significant volume reduction in wastes requiring disposal will be achieved by allowing short-lived radionuclides to decay;

(4) Whether a significant reduction in radiation exposure to workers can be achieved by allowing short-lived radionuclides to decay; and

(5) Other site-specific factors which the Commission may consider appropriate on a case-by-case basis, such as the regulatory requirements of other government agencies, lawsuits, ground-water treatment activities, monitored natural ground-water restoration, actions that could result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

(i) As the final step in decommissioning, the licensee shall--

(1) Certify the disposition of all licensed material, including accumulated wastes, by submitting a completed Form NRC-314 or equivalent information; and

(2) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates that the premises are suitable for release for unrestricted use in some other manner. The licensee shall, as appropriate--

(i) Report levels of radiation in units of micro gray (microrads) per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces, and report levels of radioactivity, including alpha, in units of mega becquerels (disintegrations per minute or microcuries) per 100 square centimeters removable and fixed for surfaces, mega becquerels (microcuries) per milliliter for water, and becquerels (picocuries) per gram for solids such as soils or concrete; and

(ii) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(j) Specific licenses, including expired licenses, will be terminated by written notice to the licensee when the Commission determines that:

(1) Byproduct material has been properly disposed;

(2) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and

(3)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release for unrestricted use.

4. Section 30.37 is revised to read as follows:

§ 30.37 Application for renewal of licenses.

(a) Application for renewal of a specific license shall be filed on Form NRC-313 and in accordance with § 30.32.

(b) (Reserved)

PART 40 - DOMESTIC LICENSING OF SOURCE MATERIAL

5. The authority citation for Part 40 is revised to read as follows:

AUTHORITY: Secs. 62, 63, 64, 65, 81, 161, 182, 183, 186, 68 Stat. 932, 933, 935, 948, 953, 954, 955, as amended, secs. 11e(2), 83, 84, Pub. L 95-604,

92 Stat. 3033, as amended, 3039, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2014(e)(2), 2092, 2093, 2094, 2095, 2111, 2113, 2114, 2201, 2232, 2233, 2236, 2282); secs. 274, Pub. L. 86-373, 73 Stat. 688 (42 U.S.C. 2021); secs. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841, 5842, 5846); sec. 275, 92 Stat. 3021, as amended by Pub. L. 97-415, 96 Stat. 2067 (42 U.S.C. 2022).

Section 40.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 40.31(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 40.46 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 40.71 also issued under sec. 187, 68 Stat. 955 (42 U.S.C. 2237).

6. In Section 40.4 a definition of the term principal activities is added to read as follows:

§ 40.4 Definitions.

* * * * *

Principal activities means activities authorized by the license which are essential to achieving the purpose(s) for which the license was issued or amended, excluding storage during which no licensed material is accessed for use or disposal and excluding activities incidental to decontamination or decommissioning.

* * * * *

7. Section 40.42 is revised to read as follows:

§ 40.42 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

(a) Each specific license expires at the end of the day on the expiration date stated in the license except when a licensee has filed an application for renewal pursuant to § 40.43 not less than 30 days prior to expiration of the existing license. When an application for renewal has been filed, the existing license expires at the end of the day on which the Commission makes a final determination to deny the renewal application or, if the determination states an expiration date, the expiration date stated in the determination.

(b) Each specific license revoked by the Commission expires at the end of the day on the date of the Commission's final determination to revoke the license, or on the expiration date stated in the determination, or as otherwise provided by Commission Order.

(c) Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of residual source material present as contamination until the Commission notifies the licensee in writing that the license is terminated. During this time, the licensee shall--

(1) Limit actions involving source material to those related to decommissioning; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Commission notifies the licensee in writing that the license is terminated.

(d) Within 60 days of the occurrence of any of the following, consistent with the administrative directions in § 40.5, each licensee shall provide notification to the Commission in writing and either begin decommissioning its site, or any separate building or outdoor area that contains residual radioactivity, such that the building or outdoor area is unsuitable for release for unrestricted use, or submit within 12 months of notification a decommissioning plan, if required by paragraph (f)(1) of this section, and begin decommissioning upon approval of that plan if--

(1) The license has expired pursuant to paragraph (a) or (b) of this section; or

(2) The licensee has decided to permanently cease principal activities, as defined in this part, at the entire site or in any separate building or outdoor area; or

(3) No principal activities under the license have been conducted for a period of 24 months; or

(4) No principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release for unrestricted use.

(e) The Commission may grant a request to delay or postpone initiation of the decommissioning process if the Commission determines that such relief is not detrimental to the public health and safety and is otherwise in the public interest. Such requests shall be submitted no later than 30 days prior

to notification pursuant to paragraph (d) of this section. The schedule for decommissioning set forth in paragraph (d) of this section shall not commence until the Commission has made a determination on the request.

(f)(1) A decommissioning plan shall be submitted if required by license condition or if the procedures and activities necessary to carry out decommissioning of the site or separate building or outdoor area have not been previously approved by the Commission and these procedures could increase potential health and safety impacts to workers or to the public, such as in any of the following cases:

(i) Procedures would involve techniques not applied routinely during cleanup or maintenance operations;

(ii) Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation;

(iii) Procedures could result in significantly greater airborne concentrations of radioactive materials than are present during operation; or

(iv) Procedures could result in significantly greater releases of radioactive material to the environment than those associated with operation.

(2) The Commission may approve an alternate schedule for submittal of a decommissioning plan required pursuant to paragraph (d) of this section, if the Commission determines that the alternative schedule is necessary to the effective conduct of decommissioning operations and presents no undue risk from radiation to the public health and safety and is otherwise in the public interest.

(3) Procedures such as those listed in paragraph (f)(1) of this section with potential health and safety impacts may not be carried out prior to

approval of the decommissioning plan.

(4) The proposed decommissioning plan for the site or separate building or outdoor area must include:

(i) A description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan;

(ii) A description of planned decommissioning activities;

(iii) A description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning;

(iv) A description of the planned final radiation survey; and

(v) An updated detailed cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and plan for assuring the availability of adequate funds for completion of decommissioning.

(vi) For decommissioning plans calling for completion of decommissioning later than 18 months after plan approval, a justification for the delay based on the criteria in paragraph (h) of this section.

(5) The proposed decommissioning plan will be approved by the Commission if the information therein demonstrates that the decommissioning will be completed as soon as practicable and that the health and safety of workers and the public will be adequately protected.

(g)(1) Except as provided in paragraph (h) of this section, licensees shall complete decommissioning of the site or separate building or outdoor area as soon as practicable but no later than 18 months following initiation of decommissioning.

(2) Except as provided in paragraph (h) of this section, when decommissioning involves the entire site, the licensee shall request license

termination as soon as practicable but no later than 18 months following initiation of decommissioning.

(h) The Commission may approve a request for an alternate schedule for completion of decommissioning of the site or separate building or outdoor area, and license termination if appropriate, if the Commission determines that the alternative is warranted by consideration of the following:

(1) Whether it is technically feasible to complete decommissioning within the allotted 18-month period;

(2) Whether sufficient waste disposal capacity is available to allow completion of decommissioning within the allotted 18-month period;

(3) Whether a significant volume reduction in wastes requiring disposal will be achieved by allowing short-lived radionuclides to decay;

(4) Whether a significant reduction in radiation exposure to workers can be achieved by allowing short-lived radionuclides to decay; and

(5) Other site-specific factors which the Commission may consider appropriate on a case-by-case basis, such as the regulatory requirements of other government agencies, lawsuits, ground-water treatment activities, monitored natural ground-water restoration, actions that could result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

(i) As the final step in decommissioning, the licensee shall--

(1) Certify the disposition of all licensed material, including accumulated wastes, by submitting a completed Form NRC-314 or equivalent information; and

(2) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey,

unless the licensee demonstrates that the premises are suitable for release for unrestricted use in some other manner. The licensee shall, as appropriate--

(i) Report levels of radiation in units of micro gray (microrads) per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces, and report levels of radioactivity, including alpha, in units of mega becquerels (disintegrations per minute or microcuries) per 100 square centimeters removable and fixed for surfaces, mega becquerels (microcuries) per milliliter for water, and becquerels (picocuries) per gram for solids such as soils or concrete; and

(ii) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(j) Specific licenses, including expired licenses, will be terminated by written notice to the licensee when the Commission determines that:

(1) Source material has been properly disposed;

(2) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and

(3)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release for unrestricted use.

(k) Specific licenses for uranium milling are exempt from the content requirements in paragraph (f) of this section and the timing of completion

requirement in paragraph (g) of this section for the reclamation plans submitted under Criterion 9 of Appendix A to this Part.

8. Section 40.43 is revised to read as follows:

§ 40.43 Renewal of licenses.

(a) Application for renewal of a specific license shall be filed on Form NRC-313 and in accordance with § 40.31 of this section.

(b) (Reserved)

PART 70 - DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

9. The authority citation for Part 70 is revised to read as follows:

AUTHORITY: Secs. 51, 53, 161, 182, 183, 68 Stat. 929, 930, 948, 953, 954, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2201, 2232, 2233, 2282); secs. 201, as amended, 202, 204, 206, 88 Stat. 1242, as amended, 1244, 1245, 1246 (42 U.S.C. 5841, 5842, 5845, 5846).

Sections 70.1(c) and 70.20a(b) also issued under secs. 135, 141, Pub. L. 97-425, 96 Stat. 2232, 2242 (42 U.S.C. 10155, 10161). Section 70.7 also issued under Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851). Section 70.21(g) also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 70.31 also issued under sec. 57d, Pub. L. 93-377, 88 Stat. 475 (42 U.S.C. 2077). Sections 70.36 and 70.44 also issued under sec. 184, 68 Stat. 954, as amended (42 U.S.C. 2234). Section 70.61 also issued under secs. 186, 187, 68

Stat. 955 (42 U.S.C. 2236, 2237). Section 70.62 also issued under sec. 108, 68 Stat. 939, as amended (42 U.S.C. 2138).

10. In Section 70.4 a definition of the term principal activities is added to read as follows:

§ 70.4 Definitions.

* * * * *

Principal activities means activities authorized by the license which are essential to achieving the purpose(s) for which the license was issued or amended, excluding storage during which no licensed material is accessed for use or disposal and excluding activities incidental to decontamination or decommissioning.

* * * * *

§ 70.33 [Amended]

11. Section 70.33 is revised by removing and reserving paragraph (b).

12. Section 70.38 is revised to read as follows:

§ 70.38 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

(a) Each specific license expires at the end of the day on the expiration date stated in the license except when a licensee has filed an

application for renewal pursuant to § 70.33 not less than 30 days prior to expiration of the existing license. When an application for renewal has been filed, the existing license expires at the end of the day on which the Commission makes a final determination to deny the renewal application or, if the determination states an expiration date, the expiration date stated in the determination.

(b) Each specific license revoked by the Commission expires at the end of the day on the date of the Commission's final determination to revoke the license, or on the expiration date stated in the determination, or as otherwise provided by Commission Order.

(c) Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of residual special nuclear material present as contamination until the Commission notifies the licensee in writing that the license is terminated. During this time, the licensee shall--

(1) Limit actions involving special nuclear material to those related to decommissioning; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Commission notifies the licensee in writing that the license is terminated.

(d) Within 60 days of the occurrence of any of the following, consistent with the administrative directions in § 70.5, each licensee shall provide notification to the Commission in writing and either begin decommissioning its site, or any separate building or outdoor area that contains residual radioactivity, such that the building or outdoor area is unsuitable for release for unrestricted use, or submit within 12 months of

notification a decommissioning plan, if required by paragraph (f)(1) of this section, and begin decommissioning upon approval of that plan if:

(1) The license has expired pursuant to paragraph (a) or (b) of this section; or

(2) The licensee has decided to permanently cease principal activities, as defined in this part, at the entire site or in any separate building or outdoor area; or

(3) No principal activities under the license have been conducted for a period of 24 months; or

(4) No principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release for unrestricted use.

(e) The Commission may grant a request to delay or postpone initiation of the decommissioning process if the Commission determines that such relief is not detrimental to the public health and safety and is otherwise in the public interest. Such requests shall be submitted no later than 30 days prior to notification pursuant to paragraph (d) of this section. The schedule for decommissioning set forth in paragraph (d) of this section shall not commence until the Commission has made a determination on the request.

(f)(1) A decommissioning plan shall be submitted if required by license condition or if the procedures and activities necessary to carry out decommissioning of the site or separate building or outdoor area have not been previously approved by the Commission and these procedures could increase potential health and safety impacts to workers or to the public, such as in any of the following cases:

(i) Procedures would involve techniques not applied routinely during cleanup or maintenance operations;

(ii) Workers would be entering areas not normally occupied where surface contamination and radiation levels are significantly higher than routinely encountered during operation;

(iii) Procedures could result in significantly greater airborne concentrations of radioactive materials than are present during operation; or

(iv) Procedures could result in significantly greater releases of radioactive material to the environment than those associated with operation.

(2) The Commission may approve an alternate schedule for submittal of a decommissioning plan required pursuant to paragraph (d) of this section, if the Commission determines that the alternative schedule is necessary to the effective conduct of decommissioning operations and presents no undue risk from radiation to the public health and safety and is otherwise in the public interest.

(3) Procedures such as those listed in paragraph (f)(1) of this section with potential health and safety impacts may not be carried out prior to approval of the decommissioning plan.

(4) The proposed decommissioning plan for the site or separate building or outdoor area must include--

(i) A description of the conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan;

(ii) A description of planned decommissioning activities;

(iii) A description of methods used to ensure protection of workers and the environment against radiation hazards during decommissioning;

(iv) A description of the planned final radiation survey; and

(v) An updated detailed cost estimate for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and plan for assuring the availability of adequate funds for completion of decommissioning.

(vi) A description of the physical security plan and material control and accounting plan provisions in place during decommissioning.

(vii) For decommissioning plans calling for completion of decommissioning later than 18 months after plan approval, a justification for the delay based on the criteria in paragraph (h) of this section.

(5) The proposed decommissioning plan will be approved by the Commission if the information therein demonstrates that the decommissioning will be completed as soon as practical and that the health and safety of workers and the public will be adequately protected.

(g)(1) Except as provided in paragraph (h) of this section, licensees shall complete decommissioning of the site or separate building or outdoor area as soon as practicable but no later than 18 months following initiation of decommissioning.

(2) Except as provided in paragraph (h) of this section, when decommissioning involves the entire site, the licensee shall request license termination as soon as practicable but no later than 18 months following initiation of decommissioning.

(h) The Commission may approve a request for an alternate schedule for completion of decommissioning of the site or separate building or outdoor area, and license termination if appropriate, if the Commission determines that the alternative is warranted by consideration of the following:

(1) Whether it is technically feasible to complete decommissioning within the allotted 18-month period;

(2) Whether sufficient waste disposal capacity is available to allow completion of decommissioning within the allotted 18-month period;

(3) Whether a significant volume reduction in wastes requiring disposal will be achieved by allowing short-lived radionuclides to decay;

(4) Whether a significant reduction in radiation exposure to workers can be achieved by allowing short-lived radionuclides to decay; and

(5) Other site-specific factors which the Commission may consider appropriate on a case-by-case basis, such as regulatory requirements of other government agencies, lawsuits, ground-water treatment activities, monitored natural ground-water restoration, actions that could result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

(i) As the final step in decommissioning, the licensee shall--

(1) Certify the disposition of all licensed material, including accumulated wastes, by submitting a completed Form NRC-314 or equivalent information; and

(2) Conduct a radiation survey of the premises where the licensed activities were carried out and submit a report of the results of this survey, unless the licensee demonstrates that the premises are suitable for release for unrestricted use in some other manner. The licensee shall, as appropriate--

(i) Report levels of radiation in units of micro gray (microrads) per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces, and report levels of radioactivity, including alpha, in

units of mega becquerels (disintegrations per minute or microcuries) per 100 square centimeters removable and fixed for surfaces, mega becquerels (microcuries) per milliliter for water, and becquerels (picocuries) per gram for solids such as soils or concrete; and

(ii) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(j) Specific licenses, including expired licenses, will be terminated by written notice to the licensee when the Commission determines that:

(1) Special nuclear material has been properly disposed;

(2) Reasonable effort has been made to eliminate residual radioactive contamination, if present; and

(3)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release for unrestricted use.

PART 72--LICENSING REQUIREMENTS FOR THE INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

13. The authority citation for Part 72 is revised to read as follows:

AUTHORITY: Secs. 51, 53, 57, 62, 63, 65, 69, 81, 161, 182, 183, 184, 186, 187, 189, 68 Stat. 929, 930, 932, 933, 934, 935, 948, 953, 954, 955, as amended, sec. 234, 83 Stat. 444, as amended (42 U.S.C. 2071, 2073, 2077, 2092, 2093, 2095, 2099, 2111, 2201, 2232, 2233, 2234, 2236, 2237, 2238, 2282); sec. 274, Pub. L. 86-373, 73 Stat. 688, as amended (42 U.S.C. 2021); sec. 201, as amended, 202, 206, 88 Stat. 1242, as amended, 1244, 1246 (42 U.S.C. 5841,

5842, 5846); Pub. L. 95-601, sec. 10, 92 Stat. 2951 (42 U.S.C. 5851); sec. 102 Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332). Secs. 131, 132, 133, 135, 137, 141, Pub. L. 97-425, 96 Stat. 2229, 2230, 2232, 2241, sec. 148, Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10151, 10152, 10153, 10155, 10157, 10161, 10168).

Section 72.44(g) also issued under secs. 142(b) and 148(c), (d), Pub. L. 100-203, 101 Stat. 1330-232, 1330-236 (42 U.S.C. 10162(b), 10168(c), (d)). Section 72.46 also issued under sec. 189, 68 Stat. 955 (42 U.S.C. 2239); sec. 134, Pub. L. 97-425, 96 Stat. 2230 (42 U.S.C. 10154). Section 72.96(d) also issued under sec. 145(g), Pub. L. 100-203, 101 Stat. 1330-235 (42 U.S.C. 10165(g)). Subpart J also issued under secs. 2(2), 2(15), 2(19), 117(a), 141(h), Pub. L. 97-425, 96 Stat. 2202, 2203, 2204, 2222, 2244, (42 U.S.C. 10101, 10137(a), 10161(h)). Subparts K and L are also issued under sec. 133, 98 Stat. 2230 (42 U.S.C. 10153) and Sec. 218(a) 96 Stat. 2252 (42 U.S.C. 10198).

14. In § 72.3, a definition of the term principal activities is added to read as follows:

§ 72.3 Definitions.

* * * * *

Principal activities, as used in this part, means activities authorized by the license which are essential to achieving the purpose(s) for which the license was issued or amended, excluding activities incidental to decontamination or decommissioning.

* * * * *

§ 72.42 Duration of license; renewal.

* * * * *

15. In § 72.42, a new paragraph (d) is added to read as follows:

(d) Each licensee shall notify the Commission in writing at least 2 years prior to expiration of its existing license if an application for renewal will not be filed pursuant to this section.

16. Section 72.54 is revised to read as follows:

§ 72.54 Expiration and termination of licenses and decommissioning of sites and separate buildings or outdoor areas.

(a) Each specific license expires at the end of the day on the expiration date stated in the license except when a licensee has filed an application for renewal pursuant to § 72.42 not less than 24 months prior to expiration of the existing license. When an application for renewal has been filed at least 24 months prior to the expiration date stated in the existing license, the existing license expires at the end of the day on which the Commission makes a final determination to deny the renewal application or, if the determination states an expiration date, the expiration date stated in the determination.

(b) Each specific license revoked by the Commission expires at the end of the day on the date of the Commission's final determination to revoke the license or on the expiration date stated in the determination or as otherwise provided by Commission Order.

(c) Each specific license continues in effect, beyond the expiration date if necessary, with respect to possession of licensed material present as residual radioactivity until the Commission notifies the licensee in writing that the license is terminated. During this time, the licensee shall--

(1) Limit actions involving spent fuel or other licensed material to those related to decommissioning; and

(2) Continue to control entry to restricted areas until they are suitable for release for unrestricted use and the Commission notifies the licensee in writing that the license is terminated.

(d) As required by § 72.42(d), or within 60 days of the occurrence of any of the following, consistent with the administrative directions in § 72.4, each licensee shall notify the Commission in writing, and submit within 12 months of notification, a final decommissioning plan and begin decommissioning upon approval of the plan if--

(1) The licensee has decided to permanently cease principal activities, as defined in this part, at the entire site or any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release for unrestricted use; or

(2) No principal activities under the license have been conducted for a period of 24 months; or

(3) No principal activities have been conducted for a period of 24 months in any separate building or outdoor area that contains residual radioactivity such that the building or outdoor area is unsuitable for release for unrestricted use.

(e)(1) The Commission may grant a request to delay or postpone initiation of the decommissioning process if the Commission determines that

such relief is not detrimental to the public health and safety and is otherwise in the public interest. Such requests shall be submitted no later than 30 days prior to notification pursuant to paragraph (d) of this section. The schedule for decommissioning set forth in paragraph (d) of this section shall not commence until the Commission has made a determination on the request.

(2) The Commission may approve an alternate schedule for submittal of the final decommissioning plan required pursuant to paragraph (d) of this section if the Commission determines that the alternate schedule is necessary to the effective conduct of decommissioning operations and presents no undue risk from radiation to the public health and safety, and is otherwise to the public interest.

(f) The proposed final decommissioning plan must include --

(1) A description of the current conditions of the site or separate building or outdoor area sufficient to evaluate the acceptability of the plan;

(2) The choice of the alternative for decommissioning with a description of the activities involved;

(3) A description of controls and limits on procedures and equipment to protect occupational and public health and safety;

(4) A description of the planned final radiation survey; and

(5) An updated detailed cost estimate for the chosen alternative for decommissioning, comparison of that estimate with present funds set aside for decommissioning, and plan for assuring the availability of adequate funds for completion of decommissioning including means for adjusting cost estimates and associated funding levels over any storage or surveillance period; and

(6) A description of technical specifications and quality assurance provisions in place during decommissioning.

(g) For final decommissioning plans in which the major dismantlement activities are delayed by first placing the ISFSI or MRS in storage, planning for these delayed activities may be less detailed. Updated detailed plans must be submitted and approved prior to the start of such activities.

(h) If the final decommissioning plan demonstrates that the decommissioning will be completed as soon as practicable, performed in accordance with the regulations in this chapter, and will not be inimical to the common defense and security or to the health and safety of the public, and after notice to interested persons, the Commission will approve the plan subject to such conditions and limitations as it deems appropriate and necessary and issue an order authorizing decommissioning.

(i)(1) Except as provided in paragraph (j) of this section, each licensee shall complete decommissioning of the site or separate building or outdoor area as soon as practicable but no later than 18 months following approval of the final decommissioning plan by the Commission.

(2) Except as provided in paragraph (j) of this section, when decommissioning involves the entire site, each licensee shall request license termination as soon as practicable but no later than 18 months following approval of the final decommissioning plan by the Commission.

(j) The Commission may approve a request for an alternate schedule for completion of decommissioning of the site or separate building or outdoor area, and license termination if appropriate, if the Commission determines that the alternate schedule is warranted by consideration of the following:

(1) Whether it is technically feasible to complete decommissioning within the allotted 18-month period;

(2) Whether sufficient waste disposal capacity is available to allow completion of decommissioning within the allotted 18-month period;

(3) Whether a significant volume reduction in wastes requiring disposal will be achieved by allowing short-lived radionuclides to decay;

(4) Whether a significant reduction in radiation exposure to workers can be achieved by allowing short-lived radionuclides to decay; and

(5) Other site-specific factors which the Commission may consider appropriate on a case-by-case basis, such as regulatory requirements of other government agencies, lawsuits, ground-water treatment activities, monitored natural ground-water restoration, actions that could result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

(k) As the final step in decommissioning, the licensee shall--

(1) Certify the disposition of all licensed material, including accumulated wastes, by submitting a completed Form NRC-314 or equivalent information; and

(2) Conduct a final radiation survey of the premises where the licensed activities were conducted and submit a report of the results of this survey, unless the licensee demonstrates that the premises are suitable for release for unrestricted use in some other manner. The licensee shall, as appropriate--

(i) Report levels of radiation in units of micro gray (microrads) per hour of beta and gamma radiation at one centimeter and gamma radiation at one meter from surfaces, and report levels of radioactivity, including alpha, in

units of mega becquerels (disintegrations per minute or microcuries) per 100 square centimeters removable and fixed for surfaces, mega becquerels (microcuries) per milliliter for water, and becquerels (picocuries) per gram for solids such as soils or concrete; and

(ii) Specify the survey instrument(s) used and certify that each instrument is properly calibrated and tested.

(1) Specific licenses, including expired licenses, will be terminated by written notice to the licensee when the Commission determines that --

(1) The decommissioning has been performed in accordance with the approved final decommissioning plan and the order authorizing decommissioning; and

(2)(i) A radiation survey has been performed which demonstrates that the premises are suitable for release for unrestricted use; or

(ii) Other information submitted by the licensee is sufficient to demonstrate that the premises are suitable for release for unrestricted use.

17. In § 72.86, paragraph (b), is revised to read as follows:

(b) The regulations in Part 72 that are not issued under Sections 161b, 161i, or 161o for the purposes of Section 223 are as follows: §§ 72.1, 72.2, 72.3, 72.4, 72.5, 72.7, 72.8, 72.9, 72.16, 72.18, 72.20, 72.22, 72.24, 72.26, 72.28, 72.32, 72.34, 72.40, 72.46, 72.56, 72.58, 72.60, 72.62, 72.84, 72.86, 72.90, 72.96, 72.108, 72.120, 72.122, 72.124, 72.126, 72.128, 72.130, 72.182,

72.194, 72.200, 72.202, 72.204, 72.206, 72.210, 72.214, 72.220, 72.230,
72.236, 72.238, and 72.240.

Dated at Rockville, Maryland, this _____ day of _____, 1992.

For the Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

ENCLOSURE 2
RESPONSES TO SRM

ENCLOSURE 2

Responses To SRM

SRM 1. The first two stipulations under 30.36(b)(1), items (i) and (ii), are not amenable to accurate determination and are probably not enforceable. These items should be separated out into another paragraph and reworded to clearly describe what is required in a legally enforceable manner. This should be coordinated with OGC.

Response: Item (b)(1)(i) [now (d)(1)] has been reworded to pertain to license expiration; item (b)(1)(ii) [now (d)(2)] now reflects permanent cessation of principal activities.

SRM 2. The description of the time period for request submittal under § 30.36(b)(2) should be made clearer.

Response: The requirement has been changed to 30 days prior to notification pursuant to paragraph (d).

SRM 3. Paragraph 30.36(a)(2) refers to "revoke the license" while § 30.36(a)(1) and (e) refer to "termination of the license." The use of these terms is confusing. The staff appears to be trying to clarify the regulations to address the legal status of the activities when termination, expiration, revocation, and denials of renewals are involved. The preamble to the Federal Register Notice (FRN) and other documents should be revised to address this issue so as to clarify and accurately characterize the status and provide the basis for the associated proposed rule changes.

Response: A discussion has been added to the Statement of Considerations and the rule has been redrafted to clarify this issue in Sections 30.36(a)-(c).

SRM 4. The modifications in items 1, 2, and 3, above, should also be applied to similar sections in Parts 40 and 70.

Response: This has been done for Parts 40, 70, and also 72, as appropriate.

SRM 5. Sections 40.42(f) and (g) do not apply to licensees who are permanently disposing of 11e.(2) material because they are subject to other requirements in Appendix A to Part 40. A brief discussion of the separate reclamation requirements for these licensees should be included in the FRN. Also, the applicability to all types of uranium recovery facilities should be addressed in the FRN.

Response: A discussion has been added to the Statement of Considerations and paragraph (k) has been added to proposed Part 40.42 referencing Appendix A to Part 40.

SRM 6. The proposed rule should provide for additional flexibility to consider extending the 18-month period to complete actual decommissioning actions. A new item (5) should be added to 10 CFR 30.36(h), 40.42(h), and 70.38(h) and a new item (v) added to 72.54(d)(2) as follows:

Other site-specific factors which the Commission may consider appropriate on a case-by-case basis such as the regulatory requirements of other government agencies, lawsuits, ground-water treatment activities, monitored natural ground-water restoration, actions that could result in more environmental harm than deferred cleanup, and other factors beyond the control of the licensee.

Response: This has been done.

SRM 7. The rulemaking package should be updated to include and be consistent with recent positions and language approved by the Commission--in particular, the April 3, 1992, Action Plan for SDMP sites and the EDO's April 9, 1992, testimony before the Senate Committee on Government Affairs. The discussion of residual criteria also needs to reflect the participatory rulemaking process as approved by the SRM dated April 15, 1992. See, for example, the comments on pages 2 and 8 of the draft FRN in the attachment.

Response: These changes and all changes on the annotated copy of the FRN have been made.

SRM 8. The FRN preamble should address the basis for the differences between the proposed changes to 10 CFR Part 72 and the other Parts. For example, it is not obvious from the proposed changes to Part 72 that decommissioning of separate areas or buildings is included.

Response: Part 72 has been redrafted to reflect the protocol in Parts 30, 40, and 70.

SRM 9. The staff should review the provisions of the existing rules included in the FRN and the proposed changes to ensure that additional changes are not needed or desirable to reflect the addition of decommissioning of separate areas and buildings. For example, the license will not be terminated if licensed activity will continue. The attachment points out some changes which serve to illustrate this problem, but additional changes and accompanying explanation may need to be added to the FRN. The Request For Comment section will need to be examined to ensure it

reflects existing proposed changes and new changes that are added in response to this SRM.

Response: Changes annotated in the attachment have been made; additional discussion has been added in the FRN; clarification has been added in the redrafted rule.

ENCLOSURE 3
REGULATORY ANALYSIS

REGULATORY ANALYSIS

Amendments to 10 CFR Parts 30, 40, 70, and 72
Specifying Timeliness Criteria for
Completion of Decommissioning

October 1992

REGULATORY ANALYSIS

Amendments to 10 CFR Parts 30, 40, 70, and 72 Specifying Timeliness Criteria for Completion of Decommissioning

1. STATEMENT OF PROBLEM

The Nuclear Regulatory Commission (NRC) has identified over 40 nuclear material licensee facilities which have significant levels of radioactive contamination such that the sites require special attention. Although most of these sites are governed by active NRC licenses, licensed operations at some site have ceased. These contaminated sites are symptomatic of the need for definitive NRC regulations which specify acceptable time periods for decommissioning nuclear material facilities when licensed activities have ceased.

If decontamination and decommissioning of a facility is delayed for long periods following termination of operations, there is a risk that safety practices at the inactive facility may become lax as key personnel find jobs elsewhere and management interest in the facility wanes, or that bankruptcy, corporate takeover, or other unforeseen changes may complicate and perhaps further delay decommissioning of the facility. The need for rulemaking establishing criteria and timetables for decommissioning arises as a means to avoid future problems resulting from contaminated inactive facilities and to minimize the difficulties associated with a case-by-case approach to requiring timely decontamination and decommissioning. Case-by-case reviews of decommissioning can result in a lack of uniformity of cleanup and inefficiency on the part of licensees and the NRC in the regulatory process leading to license termination.

2. ALTERNATIVES

In developing a proposed solution to the problem of lack of definitive timeliness requirements alternative regulatory approaches were first considered. Then alternatives relating to the technical issues of the types of licensees to which the criteria should apply, and the appropriate time periods to be imposed were addressed.

2.1 Regulatory Alternatives

The alternatives considered in determining the type of regulatory action to be taken are: 1) no action; 2) amendment of licenses; 3) use of regulatory guides; and, 4) amendment of regulations.

2.1.1 No Action

The lack of specificity as to when licensees shall commence and complete decommissioning of their facilities has resulted in a few instances where the Commission has had to resort to issuing Orders to force licensees to decommission. Further, the lack of a firm regulatory basis for such Orders makes them potentially subject to costly and protracted litigation. During

the period that decommissioning is delayed, the public could be subject to unnecessary risk. For these reasons, the alternative of no action is judged to be not viable.

2.1.2 Amendment of licenses

Amendment of licenses is an alternative available to cover the time period allowed to complete decommissioning of facilities. In fact, this alternative is already being used and requires specific actions for each license. With approximately 24,000 facilities, including those in the Agreement States, holding materials licenses, issuance of license amendments for every licensee would result in repetitive efforts and inefficient use of Commission and licensee staff time. It also could result in inconsistent application of policy.

2.1.3 Use of Regulatory Guides

As noted in Subsection 2.1.1, the lack of a firm regulatory basis for requiring decommissioning within a specific time increases difficulties associated with a case-by-case approach. While regulatory guides could be developed regarding appropriate schedules for the myriad of facilities that are materials licensees, regulatory guides do not have the force of regulation in compelling licensees to take desired action.

2.1.4 Amendment of Regulations

This alternative provides the most forceful means to compel licensees to promptly decontaminate and decommission their facilities. While an acceptable schedule defining timeliness for decontamination and decommissioning could be set forth in a regulatory guide, to be effective the guide would need to reference a specific requirement in the Commission's regulations for timely decontamination and decommissioning. Moreover, since the majority of material licensees are not required to submit decommissioning plans, the staff has no direct means other than in individual inspections to confirm that decontamination is being accomplished in a timely manner by the majority of licensees. For this reason, the staff believes that codifying a schedule for timeliness provides the best assurance that licensees will act in a timely manner.

2.2 Alternative Application of the Timeliness Criteria to Different Types of Licensees

When considering the types of licensees that should be covered by the requirements, the staff considered the alternatives of imposing timeliness requirements on all licensees and imposing requirements only on those types of licensees which because of their particular operations have the potential for needing significant cleanup before their sites could be released for unrestricted use.

Option	Type of Timeliness Requirements	Licensees Affected
1	End-of-License	Licensees with significant potential for contamination ¹
2	End-of-License	All
3	End-of-License End-of-Use	Licensees with significant potential for contamination ¹
4	End-of-License End-of-Use	All Licensees with significant potential for contamination ¹
5	End-of-License End-of-Use	All

¹ Requirements would apply only to those licensees covered by financial assurance requirements for decommissioning in 10 CFR Parts 30.35, 40.36, 70.25, and 72.18.

2.2.1 Option 1: End-of-License Timeliness Criteria for Licensees with Significant Potential for Contamination

This option would entail the development of timeliness criteria for end-of-license decontamination and decommissioning for only those licensees who by nature of their licensed activity have a possibility of significant contamination (NRC88a, NRC88b). These are the licensees to whom the decommissioning financial assurance requirements of 10 CFR Parts 30, 40, 70 or 72 apply. It is estimated that approximately 1,650 licensees (including those in Agreement States) would be covered by the rule.

2.2.2 Option 2: End-of-License Timeliness Criteria for All Licensees

Under this option timeliness criteria for end-of-license decontamination and decommissioning would apply for all licensees. It is estimated that approximately 24,000 licensees (including those in Agreement States) would be covered by the rule.

2.2.3 Option 3: End-of-License and End-of-Use Timeliness Criteria for Licensees with Significant Potential for Contamination

This option would entail the development of timeliness criteria for end-of-license and decommissioning as well as end-of-use would apply only to those licensees who by nature of their licensed activity have a possibility of significant contamination. Again, It is estimated that approximately 1,650 licensees (including those in Agreement States) would be covered by the rulemaking.

2.2.4 Option 4: End-of-License Timeliness Criteria for All Licensees and End-of-Use Timeliness Criteria for Licensees with Significant Potential for Contamination

Under this option timeliness criteria for end-of-license decontamination and decommissioning would apply to all licensees, but timeliness criteria for end-of-use decommissioning would apply only to those licensees who by nature of their licensed activities have a possibility of significant contamination.

2.2.5 Option 5: End-of-License and End-of-Use Timeliness Criteria for All Licensees

Under this option timeliness criteria for end-of-license and end-of-use decontamination and decommissioning would apply for all licensees.

Option 5, which imposes end-of-license and end-of-use timeliness criteria on all licensees, has been selected as the preferred option in order to maximize the benefits of the rulemaking (see Section 3.1.2).

2.3 Determining the Appropriate Time Period for Accomplishing Decommissioning

The time requirements for completing decommissioning consist of time periods both for initiating the decommissioning process and for subsequently completing decommissioning activities. In determining an appropriate requirement for initiating decontamination and decommissioning, the factor considered were the following: (1) the benefit in terms of reduced worker dose and reduced volume of decontamination wastes produced which may be realized by delaying decontamination to await decay of short-lived radionuclides; (2) the licensee's need to make business decisions concerning future use of an inactive building because at cessation of operations at all or a part of a facility, it may not be apparent to the licensee that no future operations would be taking place. Hence, licensees need some measure of time to decide the future of their facility; (3) there may be an economic benefit to delay in decontamination and decommissioning in terms of present value decontamination and decommissioning costs. In determine the appropriate time requirements for the completion of subsequent decommissioning activities, the time needed to plan and safely carry out decommissioning operations was also considered.

Delaying initiation of decommissioning to allow short-lived radioisotopes to decay results in benefits in terms of reduced worker exposure and lesser quantities of radioactive wastes to be disposed of. However, the background information developed for the rulemaking on general requirements for decommissioning at materials facilities, (53 FR 24018), indicated that further benefits derived from radioactive decay are not likely to be gained by delaying decontamination and decommissioning beyond approximately 3 years from the data that operations cease (NRC88a).

The appropriate time period to allow for businesses to consider the future use of an inactive facility is more problematic. The staff considers a period of approximately 24 months (with an additional two months allowed to inform the NRC) to be reasonable. This would permit licensees a sufficient period of time to evaluate the economic prospects for future operations and to make

decision concerning future use of an inactive facility, while accommodating periods of inactivity due to normal operations, testing, or routine business cycles.

With regard to the opportunity costs of prompt versus delayed decontamination and decommissioning, the staff does not believe that the savings a licensee might gain in delaying action is significant with respect to the increased assurance of proper decontamination and decommissioning and the reduced risk of spreading contamination that accrue from limiting action by the licensees (see Section 3.2.1.2).

Based on the 24-month time period considered reasonable for making business decisions, and considering that the incremental benefits due to radioactive decay between the second and third year of inactivity are small, and considering costs of decommissioning, a period of approximately 24 months is considered to be a reasonable time period to permit a building or outdoor area to remain inactive without undergoing decommissioning. An extension of the 24-month period would be allowed if justification for such an extension is submitted and found acceptable.

With regard to completion of decommissioning activities following the 24-month period of inactivity (and 2 month notification period), a period of 18 months to actually perform and complete the required decommissioning is reasonable. For licenses who are required by current regulations to submit decommissioning plans, an additional period of 12 months to develop and submit decommissioning plans is reasonable. These periods are considered reasonable in that they allow sufficient time to plan, prepare, and carry out decommissioning in a manner which protects public health and safety, while completing decommissioning in a timely manner. There are provisions for variance in these time periods where the scope of decommissioning activities require protracted activities. The effects of lesser and greater time periods are addressed in Section 3.1.3.

3. CONSEQUENCES

The consequences of the proposed timeliness rulemaking include potential benefits to public health and safety and the environment, and to the administrative and regulatory effectiveness of the NRC, the regulatory authorities in the Agreement States, and the affected licensees. Potential impacts of the rulemaking include possible additional costs to affected licensees. The following sections provide analyses of the principal benefits and costs of alternative timeliness criteria.

The analyses in Section 3.1 qualitatively evaluate the benefits of the proposed criteria with respect to impacts on the public's health and safety, worker exposures, and the administrative and regulatory efficiency of the NRC, the Agreement States, and the affected licensees. Section 3.1.1 evaluates the benefits of applying the timeliness criteria. Differences in benefits based on the different options that would apply the timeliness criteria to only a limited number of licensees are then determined in Section 3.1.2. Benefits of alternative allowable time periods for decommissioning are discussed in Section 3.1.3.

In Section 3.2, a quantitative evaluation of the economic impacts on affected licensees is presented. Details of the economic assessment are presented in Appendix A.

In assessing the benefits and costs of the rule, although the timeliness criteria would cover all 24,000 licensees, in practice the rule is expected to significantly impact only a fraction of the 24,000 materials licensees. Although they would be covered by the requirements of the rule, licensees that possess and use only materials with short half-lives or materials only in sealed sources should not feel any impact from such a rule, because their decommissioning efforts are simple and require only that enough time be permitted to either allow short-lived materials to decay to safe levels or to enable them to properly dispose of their sealed sources. Based on information obtained from the NRC's License Management System (LMS90) and estimates regarding the number of licensees in Agreement States, if licensees that only use materials in sealed sources or materials with short-half lives are excluded, an estimated 4,300 licensees would be potentially affected by the timeliness criteria. The numbers and types of potentially affected licensees are presented in Table 3.1.

3.1 Benefits of the Proposed Timeliness Criteria

The lack of definitive criteria as to when licensees shall commence and complete decommissioning their facilities has resulted in a few instances where the Commission has had to resort to issuing Orders to establish schedules for timely decommissioning. During the period that decommissioning is delayed, the public could be subject to unnecessary risk. As a result, amendments to the Commission's regulations are proposed which clearly delineate licensees's responsibilities for timely decommissioning.

This section evaluates the benefits of such a rule compared to taking no action (i.e., maintaining the status quo).

Since the effect of the proposed timeliness criteria will be to minimize the time between end of operations and the completion of decommissioning, benefits can be expected to accrue in the following areas:

1. Decreased risk to the public health and safety resulting from the exposure to ionizing radiation caused by catastrophic events or other inadvertent spread of contamination;
2. Decreased risk to the health and safety of occupational workers resulting from reduced likelihood of inadvertent exposure to ionizing radiation and in areas where radioactive materials had been used; and
3. Improvements in regulatory and administrative efficiency.

3.1.1 Assessment of Benefits

3.1.1.1 Reduction of Risk to Public Health and Safety

It should be noted that current regulations meet the "adequate protection threshold" required by the Atomic Energy Act. Over the last decade of experience with nuclear material licensees' activities, no evidence has emerged to suggest that public health and safety has been significantly affected by decommissioning related activities at materials facilities nor that the annual dose to any maximally exposed member of the public in unrestricted areas has been greater than a fraction of the statutory limits for whole body doses from licensee activities. In fact, the Commission's Site Decommissioning Management Plan (SDMP) (Ta90, Ta91) indicates that even for the more contaminated sites in the SDMP the known contamination at the sites has not been shown to be causing adverse effects on public health and safety. Thus, in view of the small public risk under current regulations, the issue to be addressed is whether further reductions of this small risk would be realized from implementing the timeliness criteria.

According to the estimates in Table 3.1, the number of NRC and Agreement State licensees potentially impacted by the end-of-license criteria is no more than 4,300 if all licensees are covered by the rule and approximately 1,600 if only those subject to financial assurance requirements are covered. An unknown, but possibly sizable, fraction of these licensees might actually decide to decontaminate and decommission their facilities within the allowed time interval even without the imposition of timeliness criteria. Still others might find the time limit inadequate, given the complexities or difficulties inherent in their technologies and opt for a variance from the timing criteria. These facilities would receive case-by-case regulatory treatment. Accordingly, the number of licensee situations for which the imposition of the reference option would yield a benefit (through reducing the time of exposure to the public at risk) may fall in the range of several hundreds to several thousands of licensees under any of the options.

The reduction in risk to the public's health and safety would be directly proportional to the reduction in the elapsed time between cessation of operations and completion of decommissioning. Unfortunately, the magnitude of the expected reduction cannot be estimated, because data are lacking on the relative frequencies of current elapsed time intervals between cessation of operations and completion of decommissioning at material licensee facilities. However, specific knowledge of laxities and unnecessary delays in the start of decontamination and decommissioning of certain facilities after end of operations or materials use caused the Commission to seek remedy in the form of a rulemaking specifying timeliness criteria (Ta90, Ta91).

In those cases where there is significant onsite contamination of land or water resources at the end of facility operation, it is clear that the sooner facility or site decontamination process is started, the lower will be the potential for offsite migration of hazardous radionuclides either via airborne or waterborne routes. Accordingly, there would appear to be a benefit from imposing a timeliness criteria. However, the total number of cases where a substantial benefit is realized is likely to be limited, as the operations of most materials licensees do not pose a potential for significant land or ground water contamination.

Table 3.1 Estimated Number of NRC and Agreement State Material Licensees Potentially Affected by the End-of-License Timeliness Criteria

PROGRAM TYPE	MATERIAL TYPE	INSPECTION INTERVAL (a) (yrs)	NRC LICENSES (No.)	STATE LICENSES (b) (No.)	TOTAL ESTIMATED LICENSES
A. Research Facilities					
Academic, Type A	Byproduct	2	44	86	130
Academic, Type B	Byproduct	2	14	27	41
Academic, Type C	Byproduct	5	19	37	56
Medical Inst., Broad	Byproduct	1	121	237	358
Vet. Non-Human	Byproduct	5	4	8	12
In-vitro Testlab	Byproduct	5	124	243	367
R&D, Broad, Type A	Byproduct	2	130	255	385
R&D, Broad, Type B	Byproduct	3	13	25	38
R&D, Broad, Type C	Byproduct	5	21	41	62
R&D, Multi-Site, Region	Byproduct	1	3	6	9
R&D, Other	Byproduct	5	561	1099	1660
Miscellaneous	Byproduct	--	13	25	38
Sub-Total	Byproduct		1067	2089	3156
Uranium Fuel R&D	Special	1/0	1	1	2
Critical Mass Material	Special	5	10	20	30
CC.M.M.Lic, Except Univ.	Special	5	4	8	12
Unsealed Plutonium(c)	Special	2/3	16	31	47
Unsealed Uranium(d)	Special	2/3	12	24	36
Sub-Total	Special		43	84	127
Total - Research Facilities			1110	2173	3283
B. Waste Facilities					
Nuclear Laundry	Byproduct	3	5	10	15
Waste Incineration	Byproduct	1	1	2	3
Waste Disposal	Byproduct	1	7	14	21
Interim Spent Fuel Storage	Special	1/0	4	4	8
Total - Waste Facilities			17	30	47
C. Manufacturing Facilities					
Manufac./Distrib.A	Byproduct	1	18	35	53
Manufac./Distrib.B	Byproduct	3	17	33	50
Manufac./Distrib.C	Byproduct	5	3	6	9
Manufac./Distrib. Other	Byproduct	6	134	262	396
Pacemaker Mfr., Distrib.	Special(e)	1	1	2	3
Source Mtl. <150 kg.	Source	3	26	51	77
Military Source Mtl.	Source	2	9	18	27
Source Mtl. >150 kg.	Source	3	84	165	249
Total - Manufacturing Facilities			292	572	864
D. Processing Facilities					
Uran. Hexafluoride Prod'n	Source	1/0	2	0	2
Rare Earth Extraction	Source	3	11	22	33
Hot Cell Operations	Special	1/0	5	10	15
Decom. U-Fuel R&D	Special	--	2	1	3
Uran. Fuel Processing	Special	1/0	11	1	12
Decom. J-Fuel Processing	Special	--	3	0	3
Total - Processing Facilities			34	34	68
Grand Total (A+B+C+D)			1453	2809	4262

(a) Inspection data is for NRC licenses only; the inspection intervals correspond to NRC priorities, 1 being the highest priority. Data on Agreement State priorities and inspection is not available

(b) Best estimates of the number of materials licenses for the Agreement States

(c) License is for possession of less than 200 grams of unsealed plutonium

(d) License is for possession of less than 350 grams of unsealed U-235 and less than 200 grams of unsealed U-233

(e) Includes some byproduct material

Other instances of contamination in buildings which are no longer in use or are at the end of license, while not as direct a source of risk to public health and safety as site contamination, can still have benefits realized in potential risk reduction by reducing the elapsed time between cessation of operations and completion of decommissioning. This potential benefit is noted in the SDMP (Ta90, Ta91). Minimization of the time interval between cessation of operation and decommissioning minimizes also the time available for such events as licensee financial difficulties, and spread of contamination and accidents, and provides greater potential availability of workers who are knowledgeable about the buildings and site for conducting decontamination operations.

3.1.1.2 Reduction of Occupational Risk

In general, at the end of use (or end of licensed activity) but prior to the start of decontamination and decommissioning activities, it appears likely that few, if any, workers would occupy the restricted areas where hazardous materials or significant contamination are present. Hence, the reduction in risk to occupational workers during this time interval as a result of a timeliness rule would generally not be significant, at least for routine exposures. This conclusion generally would remain valid even in between cessation of operations and decommissioning, because of the licensee's radiation protection program would control access to such areas and monitor individuals having access.

Nevertheless, as noted above in Section 3.1.1.1, reduction in the elapsed time interval reduces the potential for inadvertent exposures due to accidents (including natural occurrences) and reduces the potential for the spread of contamination to uncontaminated areas. Reduction in the time elapsed also facilitates the eventual decommissioning by minimizing potential for degradation of equipment, components, or structures. Any such degradation which would make decommissioning more difficult. Although there is the possibility of some benefit of the timeliness rule in reducing the time periods available for accidents or other inadvertent events with potentially significant impact on the health and safety of occupational workers, material licensees have experienced few accidents with relatively serious occupational exposure. Hence, the benefit with regard to accidents is likely to be small.

3.1.1.3 Improvements in Administrative or Regulatory Effectiveness

The benefits attributable to improvements in administrative or regulatory effectiveness could apply not only to the regulatory activities of the NRC and the Agreement States but also to affected licensees. Benefits in regulatory efficiency for the NRC derive from the fact that the rule would minimize the difficulties associated with a case-by-case approach to requiring timely decontamination and decommissioning. A major benefit of the proposed timeliness criteria is that they provide a regulatory basis for the NRC to issue Orders to licenses requiring the clean up and decommissioning of inactive sites and thus would facilitate more productive use of NRC's staff resources and alleviate protracted delays of licensee decontamination and

decommissioning activities that impose heavy burdens on the commitment of NRC staff resources to assure that decommissioning is carried out in a manner which minimizes occupational exposure and the risk to the public health and safety. A substantial reduction of avoidable burdens on staff resources could release them to attend to higher priority efforts within NRC's statutory responsibilities.

With regard to Agreement States, in keeping with the Commission's April 11, 1991 directive to the staff concerning cooperation with the Agreement States, NRC staff discussed its plans for this rulemaking with the Agreement States on May 14, 1991. The staff recommends that the rule be made a Division 2 matter of compatibility. Under this level of compatibility, the Agreement States would be expected to adopt a timeliness in decommissioning rule but would be permitted flexibility to apply more stringent requirements if deemed appropriately by the State. Thus, it is reasonable to expect that regulatory efficiencies similar to those discussed above will accrue to the Agreement States, in roughly the same 2 to 1 ratio as the number of licensees in Agreement States (16,000) to the number of NRC-licensed facilities (8,000).

With regard to licensees, the timeliness rule, in prohibiting protracted delays in decontamination and decommissioning, can reasonably be expected to result in administrative efficiency for licensees in that use of workers who possess valuable knowledge and skills will result in a more effective decontamination and decommissioning program. In addition, the clearer statement of NRC regulations in this area will improve licensees' ability to develop and carry out their decommissioning plans.

3.1.2 Comparative Benefits of Options Regarding the Number of Licensees Covered

Section 3.1.1 contains a general assessment of the benefits that would be realized if a rule on timeliness were in place. This section provides a comparative analysis of the differences in benefits depending upon the types of licensee to which the timeliness criteria would apply. The alternatives regarding the licensees that would be covered are presented in Section 2.2.

3.1.2.1 Reduction of Risk to the Public's Health and Safety

With regard to increased protection of public health and safety, the analysis of benefits of applying timeliness criteria on all licensees relative to the status quo regime indicates that the number of licensee situations applicable to a reduction in risk to the public's health and safety through this regulatory change may fall in the range of several hundreds to several thousands of licensees. Since all the other options apply to a more limited number of licensees, smaller benefits for the public risk attribute would accrue.

3.1.2.2 Reduction of Occupational Risk

It was noted that at the end of use (or end-of-licensed activity) but prior to the start of decontamination and decommissioning activities, there may be few,

decommissioning activities that impose heavy burdens on the commitment of NRC staff resources to assure that decommissioning is carried out in a manner which minimizes occupational exposure and the risk to the public health and safety. A substantial reduction of avoidable burdens on staff resources could release them to attend to higher priority efforts within NRC's statutory responsibilities.

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if any, workers occupying the restricted areas where hazardous materials or significant contamination are present. Hence, the routine occupational exposure of workers during this portion of the elapsed time interval would generally hold no significant comparative difference between the status quo regulatory regime and the option of imposing timeliness criteria on all licensees. However, in the case of accidental release of radionuclides or inadvertent spread of contamination workers may be otherwise avoidably exposed if decontamination is delayed. However, the probability of such an event is small, and only for the more hazardous materials would the consequences be very significant. Nonetheless, it is evident that the sooner a facility or site is decontaminated, the less likely will be the risk of inadvertent exposure. Thus, options that do not require decommissioning at end-of-use or end-of-licensed activity will not provide the same incremental reduction in risk to public health and safety.

3.1.2.3 Improvements in Regulatory Efficiency

All of the other options hold the potential of some significant gains for improved regulatory and administrative efficiency relative to the status quo. However, the benefits under Options 1-4 are less than would be realized under Option 5, either because timeliness criteria are not imposed on all licensees or because they do not have provision for end-of-use decontamination.

3.1.2.4 Summation of Comparison of the Reference Options

The above analysis indicates that the benefits in terms of reductions in risk to public health and safety and, reductions in risks to workers, will be maximized by the imposition of timeliness criteria for decommissioning both at end of use and at the end of licensed activity on all licensees.

3.1.3 Impacts on Benefit Assessments Using Different Timeliness Standards

As noted in Section 3.3, there are seldom additional benefits in terms of reduced worker exposures to be gained by delaying decontamination and decommissioning beyond three years from the date that operations ended. Three years is sufficient to allow short-lived radioisotopes to decay, and allowing for such decay will reduce both the occupational exposure of workers involved in the decommissioning and the volumes of low-level wastes that require disposal. Beyond approximately three years, the rate at which the activity of the remaining radioactive contamination decreases slows sharply, reflecting the fact that only long-lived radioisotopes remain. Thus, only marginal additional reductions in occupational exposure and the volumes of waste to be disposed of are achievable.

Licensees require time to evaluate their future plans and the economic costs and benefits of resuming operations. The NRC staff considers 24 months a reasonable period for licensees to evaluate the future use of the facility. Once the decision is made to decommission, the staff believes that 12 months is a reasonable time for the development of a decommissioning plan, if required. The actual time needed to conduct the decommissioning should be about 18 months for most licensees.

The staff recognizes that these estimates are very imprecise, and that any individual licensee may need to decontaminate and decommission on a different schedule for reasons of health and safety or practicality. Provision is made in the proposed rule for licensees to suggest alternative schedules case-by-case.

3.2 Cost of the Proposed Timeliness Criteria

The principal costs expected to result from the imposition of the proposed timeliness criteria relate to the time-value of the monies expended for decommissioning versus the time-value of the annual costs that accrue during the period between cessation of operations and when decommissioning is completed. The current regulations already require every licensee to complete decontamination and decommissioning of their facility prior to the termination of their license. Thus, imposition of the proposed end-of-license timeliness criteria will not increase the costs of decontamination and decommissioning, it will only affect the timeframe in which the funds for these activities are expended. Similarly, the end-of-use timeliness criteria does not impose new requirements for decommissioning, it only affects when the funds required for decommissioning the portion of the facility that is no longer in use will be spent.

As noted above, while the timeliness criteria would apply to all licensees, it is anticipated that only the approximately 4,300 facilities that use unsealed long half-life materials would be affected by the end-of-license timeliness criteria. As with the assessment of benefits, data are simply not available to perform an exhaustive facility-by-facility evaluation of the costs of the proposed criteria. However, previous studies performed by the NRC have estimated the costs of decommissioning generic and/or reference facilities under various decommissioning scenarios. These estimates provide a basis for evaluating the magnitude of the costs associated with the proposed end-of-license criteria. The subsections that follow summarize the methodology and present the results of the evaluation of costs resulting from the imposition of the proposed end-of-license timeliness criteria. Details of the analysis are presented in Appendix A. Data are not available to allow more than a qualitative discussion of the costs associated with the imposition of timeliness criteria relating to end-of-use.

3.2.1 Comparison of Costs for Prompt versus Delayed Decommissioning

3.2.1.1 Data Sources for the Decommissioning Options

The NRC has published a number of reports on the decommissioning of reference nuclear fuel cycle facilities and non-fuel cycle nuclear material licensees. Four of the reports provide the bulk of the cost data used in this analysis: NUREG/CR-1757, *Technology, Safety and Costs of Decommissioning a Reference Uranium Hexafluoride Conversion Plant* (NRC81a); NUREG/CR-1754, *Technology, Safety and Costs of Decommissioning Reference Non-Fuel-Cycle Nuclear Facilities* (NRC81b); NUREG/CR-2210, *Technology, Safety and Costs of Decommissioning Reference Independent Spent Fuel Storage Installations*

(NRC84b); and NUREG/CR-1266, *Technology, Safety and Costs of Decommissioning a Reference Uranium Fuel Fabrication Plant* (NRC80). In addition, NUREG-0904, *Final Environmental Statement Related to the Decommissioning of the Rare Earths Facility, West Chicago, Illinois* (NRC83), provides cost data on the decommissioning of an actual rare earth processing facility. Since these reports include costs and occupational exposures for various decommissioning alternatives, the costs of timely decommissioning as required by the rule can be compared to the costs incurred when decontamination and decommissioning are delayed as could be the case in the absence of the rule.

The referenced studies that have considered the impacts of decommissioning nuclear facilities have identified three alternative decommissioning strategies: DECON, SAFSTOR, and ENTOMB. DECON is defined in the studies as the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations. DECON is the only one of the three decommissioning alternatives that leads to termination of the facility license and release of the facility and site for unrestricted use shortly after cessation of facility operations. For purposes of impact analysis, the DECON alternative, and the costs and occupational exposures associated with it, can be considered to represent the costs and exposures that would be realized if the proposed timeliness criteria are adopted.

SAFSTOR is defined in the referenced decommissioning studies as the alternative in which the nuclear facility is placed and maintained in a condition that allows it to be safely stored for a period of time while decontamination to levels that permit release for unrestricted use is deferred. Thus, in much the same manner as the DECON alternative provides a close approximation of the impacts of the proposed timeliness criteria, the SAFSTOR option provides a close approximation of licensee actions delaying decommissioning in the absence of the proposed rule. However, the discrepancies between these hypothetical alternatives and actual industry practice should not be ignored. For instance, SAFSTOR presumes a well defined and orderly delay of decommissioning, whereas the delays in decommissioning that the proposed timeliness rulemaking seeks to remedy, may involve instances of less than strict adherence to such established safe practices.

It should also be noted that the proposed rulemaking would affect some licensees for which DECON is not a viable option. The most obvious example are the rare earth processing licensees. In many cases these licensees have piles of wastes (tailings) so large that the DECON option would require the removal of acres of material at extremely high cost. While removal of this material to low-level waste burial sites is sometimes considered, stabilization in place is more often the preferred alternative. In evaluating the impacts of the rule on rare earth processors, costs associated with the ENTOMB alternative, as defined in the referenced documents, are used.

3.2.1.2 Costs of Prompt and Delayed Decommissioning at Generic Facilities

The costs incurred during decommissioning, as well as those incurred if the licensee chooses to cease operations and delay decommissioning, may be represented in five broad categories: labor; materials and equipment; insurance, license and inspection fees; utilities; and waste disposal costs. The magnitude of these costs can vary according to whether a licensee decommissions immediately or chooses to delay. As such, they form the foundation of the economic analysis. A description of the relative costs of prompt and delayed decommissioning follows.

In the case of prompt decommissioning, licensee actions may be grouped into two stages. The first is the planning and preparation stage consisting generally of the following activities: documentation on the initiation of decommissioning, including an initial radiation survey to determine the extent of the contamination; preliminary cleaning and rudimentary decontamination; and the preparation of a detailed work plan for final decontamination. This rule clarifies the formal application of some of these activities.

The second stage of prompt decommissioning is decontamination. This involves the cleaning of contaminated surfaces, the removal of various pieces of equipment, and the general preparation of the site for unrestricted release status. One of the most significant costs of this phase are the costs of waste management, including the packaging of wastes, their transportation and ultimate burial. Waste burial costs are currently increasing more rapidly than any other cost category relevant to decommissioning. Therefore, they are highly sensitive to the time factor in an analysis of decommissioning delay. Increased volume reduction of waste during decontamination significantly reduces the cost of disposal, and despite initial increased labor costs for packaging, also reduces overall waste management costs incurred during decommissioning.

In the case of delayed decommissioning, licensee actions are grouped into three stages. The first stage occurs prior to storage and consists of a planning and preparation phase and a rudimentary decontamination phase, much the same as in prompt decommissioning. The planning and preparation stage here, however, will be significantly less extensive. The second stage is long-term storage, which involves the often significant annual costs of maintaining, surveying and monitoring materials or facilities during the period prior to final decontamination. These annual costs can be primarily attributed to license fees, utilities, insurance, and labor for periodic radiation surveys, plant oversight, and administrative and record-keeping duties. Further, there will be costs of license renewal and periodic NRC inspections imposed through annual fees.

The third and final stage in delayed decommissioning is final decontamination. The cost at this stage includes the renewed need for planning and preparation, as well as the costs of decontamination and the physical removal of radioactivity from surfaces and structures. For materials facilities after a delayed storage, these costs are not insignificant.

Decommissioning cost estimates typically add a 10 to 25 percent contingency on to the identified base costs. One author notes the following with regard to this practice: "Contingency is a specific provision for unforeseen elements of cost within the defined project scope...When contingency elements are broken down and applied, on a consistent basis from prior experience it becomes clear that contingency is a real cost of decommissioning and is fully expected to be spent" (IDS87). The cost estimates discussed here include a 25 percent contingency.

Table 3.2 summarizes the estimated costs of timely and delayed decommissioning for seven types of material licensees. Since the original decommissioning cost estimates for non-fuel cycle facilities (NRC81b) do not explicitly address the SAFSTOR option, costs were estimated for the delayed decommissioning of these facilities from the data available for fuel cycle facilities. Details on the derivation of the cost estimates and the specific cost components of each estimate are presented in Appendix A. The "Average Deflator" shown for each estimate represents the inflation factor that was calculated for each set of costs to adjust the original cost estimates to constant 1989 dollars. While the original cost estimates include an estimate of licensing fees, they do not include the annual fees imposed under full cost recovery. Therefore, the appropriate annual fee plus the applicable surcharge has been added to the inflation adjusted costs. The costs shown in Table 3.2 as "Occupational Health Costs" were calculated from the estimated occupational exposures given in the cited references using a value of \$1,000 per person-rem. The generic cost estimates summarized in Table 3.2 form the basis of the analysis of cost impact of the proposed timeliness criteria. The impacts of the proposed rule involve the timing of the various activities and their associated costs. In order to model the impact of the proposed timeliness regulations a number of assumptions must be made. These assumptions concern the timing of decommissioning activities following shutdown with and without the proposed rule, and the length of time required to accomplish the various decommissioning tasks.

The first assumption concerns the delay in decommissioning that would occur in the absence of the proposed rule. While it is known that there is currently a problem with respect to timely decommissioning at some facilities, few data are available on the extent of the problem or the distribution of time periods involved. For this reason, selection of the time periods for delayed decommissioning are based on those used for the 10-year SAFSTOR option. Since costs are developed from the SAFSTOR alternative, and the 10-year time period represents a feasible scenario, this assumption appears to be the best available. However, in order to assess the sensitivity of this assumption, costs associated with 5- and 15-year periods of safe storage are also developed.

The second set of assumptions concerns the time sequences for accomplishing the activities needed to complete decommissioning. Time sequences were established for prompt and delayed decommissioning based on the activities described earlier in this section. An estimate of elapsed time was assigned to each activity. These estimates are generally available directly from the applicable volume of the NRC's Technology, Safety and Costs series. In

Table 3.2 PUBLISHED AND CURRENT DOLLAR DECOMMISSIONING
COSTS FOR SEVEN GENERIC FACILITY TYPES
(\$ X 1,000)

FACILITY TYPE		DECOMMISSIONING						
		PROMPT DECON.		DECOMMISSIONING				
				PLAN & PREP		STORE	DECON	
		PLAN & PREP.	DECON	PLAN & PREP.	DECON	ANNUAL COST	PLAN & PREP.	DECON
FUEL FABRICATOR	Decommissioning Cost (\$1978)	356	3217	186	660	282	555	3249
	Decommissioning Cost (\$1989)	1430	6323	1108	1867	1197	1799	6381
	Average Deflator	1.92	1.73	1.92	1.69	1.73	1.89	1.73
	Occupational Health Costs		18.60		0.40	0.60		18.60
URANIUM CONVERSION	Decommissioning Cost (\$1981)	394	3921	218	664	95	753	4017
	Decommissioning Cost (\$1989)	1267	5898	1008	1558	810	1781	6031
	Average Deflator	1.48	1.33	1.49	1.32	1.34	1.46	1.33
	Occupational Health Costs		79.00		1.00	0.10		78.00
LARGE HOT CELL	Decommissioning Cost (\$1981)		435		100	44		398
	Decommissioning Cost (\$1989)		548		134	66		503
	Average Deflator		1.25		1.29	1.39		1.25
	Occupational Health Costs		N.A.		N.A.	N.A.		N.A.
MANUFACTURING LAB	Decommissioning Cost (\$1988)		115.4					115.4
	Decommissioning Cost (\$1989)		127.4		22.3	16.4		127.4
	Average Deflator		1.04					1.04
	Occupational Health Costs		11.2		0.0	0.0		11.2
Am-241 LAB	Decommissioning Cost (\$1988)		139.0					139.0
	Decommissioning Cost (\$1989)		148.6		21.9	14.8		148.6
	Average Deflator		1.04					1.04
	Occupational Health Costs		50.0		0.0	0.0		50.0
INSTITUTIONAL LAB	Decommissioning Cost (\$1988)		115.3					115.3
	Decommissioning Cost (\$1989)		123.6		23.4	15.5		123.6
	Average Deflator		1.04					1.04
	Occupational Health Costs		0.1		0.0	0.0		0.1
RARE EARTH	Decommissioning Cost (\$1982)		16141		373	233		16141
	Decommissioning Cost (\$1989)		19910		571	377		19910
	Average Deflator		1.23		1.26	1.18		1.23
	Occupational Health Costs		N.A.		N.A.	N.A.		N.A.

developing the time sequences, consecutive tasks that can be completed within a single year were assumed to be completed within the same year. Where consecutive tasks would require more than a year, each activity was assumed to require a full year to be completed. The periods of safe storage are assumed not to overlap with any other activity. Time sequences were developed for prompt decommissioning and 5-, 10-, and 15-year delays in decommissioning. To compare the net present value of prompt versus delayed decommissioning, a discount rate is applied to the streams of expenditures developed for each scenario to convert expenditure flows to present value. The alternative with the lowest present value is the least expensive.

The correct discount rate is the opportunity cost for the firm making the expenditures. This rate will vary greatly across licensees as some are large diversified organizations with multiple opportunities, some are small firms with limited resources, and others are public institutions. The Office of Management and Budget (OMB) applied the opportunity cost concept in their 1972 Circular No. A-94 on appropriate discount rates for regulatory proceedings. OMB recommended a uniform rate of 10 percent based on an estimate of the average rate of return on private investment, before taxes and after inflation. This is based on the understanding that private investment is foregone in order to comply with the regulations.

The appropriateness of a 10 percent real discount rate has been continuously debated. Most arguments focus on a so-called "social rate of time preference" that relates to consumers' willingness to consume goods and services now as opposed to postponed consumption, i.e., save. As many regulations include both the use of capital and the reduction in consumption, either through direct effects or lower production levels, most analysts suggest the appropriate rate should be lower than 10 percent. However, as noted above, some organizations impacted by the timeliness rulemaking may have actual or perceived opportunity costs (discount rates) much higher than 10 percent. For this reason, and to show sensitivity of the analysis to the selected discount rate, rates of 1, 5, 10, and 15 percent were selected for evaluation.

The results of the comparison of the net present value of prompt decommissioning versus 5-, 10-, and 15-year delayed decommissioning for various discount rates are summarized for the seven types of generic facilities in Table 3.3.

3.2.1.3 Net Costs of the Proposed End-of-License Timeliness Criteria

The present values of net costs savings of prompt versus delayed decommissioning presented in Table 3.3, indicate that of the 4,300 licensees estimated to be potentially affected by the proposed timeliness criteria, fewer than 100 rare earth processors and Am-241 laboratories would experience net costs at the 10 percent discount rate, and the majority of these licensees are Am-241 manufacturing laboratories, where the negative impacts are minimal. In fact, at a slightly lower discount rate (8-9 percent), the Am-421 facilities would be economically indifferent. At the same 10 percent discount rate, fuel fabrication facilities, uranium conversion facilities, large hot cell operations, manufacturing facilities, and institutional (academic,

medical, and industrial research) laboratories would experience lower net costs by decommissioning promptly.

At a 5 percent discount rate, there is a net cost saving as a result of the rule for all of the generic facilities, except rare earth processors. As noted above, a five percent real discount rate is believed to capture the real opportunity costs of businesses more accurately than the 10 percent rate recommended by the OMB. At this discount rate, only the 33 rare earth processing facilities would experience a net cost from the proposed regulations.

With respect to the rare earth processing facilities, the analysis indicates that for almost any realistic discount rate, it pays to postpone decommissioning as long as possible. For example, for rare earth processors, at a 10 percent discount rate, the present value of prompt decommissioning is \$7.8 million lower than delaying for five years, and \$14.3 million lower than delaying for 15 years. In essence, the analysis shows that where decommissioning costs are large compared to the annual costs of minimal surveillance and caretaking, decommissioning is never in the economic interest of the licensee.

Finally, it is worth noting that at a 15 percent discount rate the impacts are either significantly smaller or considerably more negative for all seven generic types of facilities when prompt decommissioning is compared to a 15-year delay. This finding merely reflects the economic reality that at high discount rates present expenditures invariably compare unfavorably to expenditures postponed far into the future. A real discount rate of 15 percent over long time periods is not believed to be realistic for the economy of the United States.

3.2.2 Costs of the End-of-Use Timeliness Criteria

Data are simply not available to quantitatively evaluate the costs of the end-of-use timeliness criteria. Of the 4,300 licensees potentially affected by the criteria, it is not known what fraction will encounter a situation where a portion of their facility is taken out of productive use while other licensed activities continue at the site. Nor is it known what fraction of the total site decommissioning costs would need be expended to effect the decontamination of the areas taken out of production, or how much earlier than total site decommissioning the partial decommissioning would be accomplished.

Thus, while quantitative estimates cannot be made, the following observations will help to place the impacts in perspective. The first is that the end-of-use criteria may impose additional decommissioning costs on licensees, even though the criteria appear simply to cause licensees to expend decommissioning funds (for which they are already responsible) at an earlier date. The additional costs are those associated with the planning and mobilizing for the decommissioning effort. The second, is that certain annual costs attributable to the portion of the facility taken out of production, such as surveillance, health physics personnel, taxes and insurance, are only marginal costs while other activities continue at the site, rather than the full costs incurred at the end-of-license when all activities at the site have ceased.

TABLE 3.3 PRESENT VALUE NET COSTS SAVINGS OF TIMELY DECOMMISSIONING
FOR SEVEN GENERIC FACILITY TYPES
(\$ X 1,000)

FACILITY TYPE	DISCOUNT RATE (PERCENT)	NET COSTS SAVINGS OF PROMPT DECOMMISSIONING vs.		
		5-YEAR STORAGE	10-YEAR STORAGE	15-YEAR STORAGE
FUEL FABRICATOR	1	8715	13962	18955
	5	5918	8591	10687
	10	3470	4513	5161
	15	1798	2092	2237
URANIUM CONVERSION	1	6517	9836	12994
	5	4095	5448	6507
	10	2005	2201	2324
	15	604	341	208
LARGE HOT CELL	1	378	658	924
	5	245	385	495
	10	117	163	192
	15	22	20	20
MANUFACTURING LAB	1	94	162	227
	5	56	89	114
	10	21	28	33
	15	-5	-10	-12
Am-241 LAB	1	82	141	198
	5	35	53	65
	10	-10	-18	-24
	15	-43	-63	-72
INSTITUTIONAL LAB	1	94	161	226
	5	60	94	119
	10	28	39	44
	15	4	3	2
RARE EARTH	1	50	-97	-237
	5	-4087	-6839	-8995
	10	-7877	-11863	-14338
	15	-10603	-14753	-16817

Given these facts, a crude estimate of the costs of the proposed criteria can be made by simple calculating at the opportunity cost of the decommissioning funds expended plus the additional costs for planning and mobilization, and comparing them to the opportunity cost associated with alternative uses of the affected portions of the facility.

Finally, it should be recognized that even when no alternative use can be made of the decommissioned facility (i.e., costs to the licensee are at a maximum), the experience gained from the early decommissioning can provide valuable lessons and trained personnel that can reduce the ultimate costs of decommissioning the remainder of the facility.

4. DECISION RATIONALE

The evaluation of the regulatory alternatives presented in Section 3 shows that the only alternative that will achieve the regulatory objectives is to amend the current regulations to incorporate explicit criteria for when decommissioning of materials facilities must be accomplished.

Assessments of the benefits and costs of the proposed timeliness criteria in the preceding sections lead to the conclusion that a 24 month end-of-license and end-of-use time limit for decommissioning on all licensees will yield the greatest net benefit of the alternatives considered. This decision is supported by reasoned judgment on improvements in health and safety, the environment, and administrative efficiency. It is also consistent with quantitative analysis of the costs to licensees.

The costs for most affected licensees are estimated to be lower for prompt decommissioning than if decommissioning is delayed. In the case of rare earth processing licensees, and certain other licensees, costs appear to be greater for prompt decommissioning. However, the economic analysis that suggests that it is in the licensees' economic interest to delay decommissioning indefinitely assumed that the decommissioning costs were fixed. For rare earth processing licensees the cost of clean up of secondary contamination from destabilized and leached tailings may far exceed the costs of prompt decommissioning. Such instances are likely to require case-by-case assessment.

5. IMPLEMENTATION

No implementation problems are anticipated. The framework for implementation is already established in the NRC, the Agreement States, and affected licensees. Minimization of implementation impacts is provided by the provision for variances in the timeliness criteria based on technical considerations or demonstrations that delays will result in lesser impacts on the public's health and safety or the environment.

6. PAPERWORK REDUCTION AND REGULATORY FLEXIBILITY ACTS

Federal laws require that agencies, during the process of promulgating regulations, analyze the impact of these regulations on the resources devoted to paperwork and recordkeeping, and impact of the regulations on small entities. This section addresses these two requirements.

6.1 Paperwork Reduction Act

The Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.) is intended to reduce the time, effort, and financial resources that the private sector expends in providing information to the Federal government. The Act is also intended to reduce the cost to the Federal government of collecting, using, and disseminating information and to ensure that the information collected by the Federal government is useful.

Since the current regulations require all licensees to decontaminate and decommission their facilities prior to license termination, no additional recordkeeping and reporting requirements would be imposed by the proposed end-of-license decommissioning. In fact, the overall amount of paperwork would be expected to decline because of the elimination of paperwork and recordkeeping that is currently performed while decommissioning is delayed.

The proposed end-of-use criteria may result in some increases in paperwork and recordkeeping associated with the need for additional notification of inactive facilities and license termination requests and other information that demonstrates the decontaminated portion of the facility is suitable for unrestricted use. In the case of larger facilities, additional termination survey plans will need to be submitted and approved by the NRC or the Agreement States. An unknown fraction of the 1,650 facilities covered by the end-of-use criteria will actually be affected by the requirements. However, as is the case for end-of-license decommissioning, some types of recordkeeping and paperwork will decline due to the elimination of the need to comply with requirements that would be imposed while decommissioning is delayed.

6.2 Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980 requires Federal Agencies to analyze the economic impact of a proposed rulemaking on small entities if the rulemaking would significantly affect a substantial number of such entities. The NRC has determined that such an analysis, when required, should be incorporated into the analysis prepared under the NRC's Regulatory Analysis Guidelines. The analysis of the impact of the proposed rulemaking is divided into three subsections. The first provides information on the applicable size standards. The second analyzes possible differential negative impacts on small entities. The third reviews the available evidence on the numbers and types of small entities potentially affected by the proposed regulations.

6.2.1 Applicable Size Standards

In December of 1985, the NRC adopted size standards for entities to be considered small businesses for purposes of the Regulatory Flexibility Act. The adopted size standards were as follows:

- for most licensees, annual billings of \$3.5M or less;

- for private practice physicians, annual billings of \$1M or less;

- for state or public educational institutions, an institution supported by a jurisdiction with a population of 50,000 or less; and

- for other educational institutions, an institution having 500 or fewer employees.

6.2.2 Differential Impacts on Small Entities

Small businesses and other entities often face relatively higher costs to comply with regulations than larger ones. One reason is that some costs do not increase proportionately with the size of the entity. For example, a paperwork requirement that is the same for each entity without regard to size will impact smaller entities disproportionately. Another reason is that for some tasks, smaller entities are more likely to have to contract out for these services at higher cost as a result of the inefficiency or inability of maintaining certain expertise on staff. For example, smaller entities will be more likely to have radiation surveys performed by contractors. A final reason that small entities may face special costs pertains to the ability of these entities to raise funds. Smaller entities may have greater problems in obtaining loans or raising cash internally. They may face higher interest rates on borrowed capital.

The first type of differential impact on small business, costs that do not increase proportionately with size, would not appear to be particularly troublesome in regard to the proposed rulemaking. Paperwork and recordkeeping requirements, as noted in the previous section, will probably decline in the end-of-license decommissioning case. While there might be some increase in these costs for the end-of-use decommissioning case, small entities are less likely to have a large number of separate facilities that would be subject to this portion of the proposed regulation.

The requirement that small businesses contract out for certain activities may result in higher decommissioning costs for small businesses. However, higher costs would not change the basic conclusions on the general equality of discounted cash flows for prompt versus delayed decommissioning discussed in Section 3.2., unless the higher costs were significantly less pronounced for the preparation for storage and annual cost during storage since these costs serve to offset the savings realized by postponing decommissioning.

The fact that small entities face increased costs of obtaining funds could have some effect on the outcome of the impact analysis. This would imply a

higher opportunity cost or real discount rate for small entities. As the assumed real discount rate is increased, the cost of deferred decommissioning drops. However, at very high discount rates, it is never in the economic interest of the licensee to decommission. However, since all licensees must eventually decommission, the impact of higher costs of capital on small entities cannot be avoided, it can only be delayed.

6.2.3 Evidence on the Number and Types of Small Entities Affected by the Regulation

The economic evaluation in Section 3.2 indicates that only a fraction of the licensees covered by the proposed timeliness criteria will experience negative economic impacts if they decommission their facilities promptly. At a 10 percent real discount rate, less than 100 facilities could be impacted negatively by the imposition of the timeliness criteria, of which 33 are rare earth processing licensees.

None of the rare earth processors would be classified as a small business. For the roughly 70 manufacturing and distribution facilities, the only available data on their economic size classification are those collected as part of a 1983 survey of approximately 7,000 NRC materials licensees, conducted by NRC's Division of Rates and Records (DRR). The response rate was 83 percent. Data on annual sales were collected only by ranges. Thus, the number of entities with less than \$1M or \$7M are available, but those with less than \$3.5M are not. As part of the Financial Assurance Rulemaking (NRC88b), these data were aggregated into five broad application/ use classes, including manufacturing and distribution. These data show that 21 percent of such licensees have annual sales of less than \$1 million, 21 percent have annual sales of \$1 to \$7 million, and 58 percent have sales greater than \$7 million. Thus, between 15 and 30 of the potentially affected manufacturing and distribution facilities would be classified as small businesses.

At a more realistic 5 percent real discount rate, only the 33 rare earth processing facilities would be potentially impacted by the rule. As noted above, none of these facilities are believed to be small entities for the purposes of the Act.

7. REFERENCES

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- NRC88b U.S. Nuclear Regulatory Commission, *Impact of Proposed Financial Assurance Requirements on Nuclear Material Licensees*, NUREG/CR-4958, Washington, D.C., 1988.
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- NRC84b U.S. Nuclear Regulatory Commission, *Technology, Safety, and Costs of Decommissioning Reference Spent Fuel Storage Installations*, NUREG/CR2210, Washington, D.C., 1984.
- NRC83 U.S. Nuclear Regulatory Commission, *A Handbook for Value-Impact Assessment*, NUREG/CR-3568, Washington, D.C., 1983.
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- NRC81b U.S. Nuclear Regulatory Commission, *Technology, Safety, and Costs of Decommissioning Reference Non-Fuel-Cycle Facilities*, NUREG/CR-1754 and Addendum, Washington, D.C., 1981.
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APPENDIX A

DELAYED COSTS OF PROMPT AND DELAYED DECOMMISSIONING

APPENDIX A: DETAILED COSTS OF PROMPT AND DELAYED DECOMMISSIONING

The determination and valuation of the costs of the proposed regulation is a problematic exercise. Some basic data are available on the number of licensees and their general types. Costs and occupational exposures at generic facility types are available, and these are used to estimate the present value net benefits of prompt versus delayed decommissioning. Data are simply not available to estimate the potential costs and health effects of accidents, or the circumstances under which and for how long decommissioning might be delayed. Despite the limited information in a number of subject areas that would be useful in the analysis of the proposed timeliness regulation, sufficient data are available to reach a number of important conclusions.

A series of previous NRC studies on the costs and radiation exposures that might be associated with decommissioning are an important source of information that can be applied to the analysis of the proposed rulemaking. Several of these studies consider both immediate decommissioning and the so-called SAFSTOR option, in which the facility is "mothballed" for a period of time prior to decommissioning. Since for practical purposes the licensees potentially affected by the proposed criteria are practicing SAFSTOR, this information is the basis used in developing the analysis of the proposed timeliness regulation.

NRC has published a number of reports on the decommissioning of nuclear fuel-cycle facilities and non-fuel-cycle material licensees. The Technology, Safety and Cost series of publications compiles the data relevant to the decommissioning of reference, or generic facility types. This analysis drew significant data from a number of these sources, and the information contained therein is discussed briefly here.

The categories of facility types covered by the Technology, Safety and Cost reports are listed below. All facilities are reference facilities and are not actual sites undergoing decommissioning. Many of these NUREG documents include both a main report as well as one or multiple addenda written at a later date. These addenda are not repeated in the following list, however all the dates of NUREG publication of that subject are listed. It may be assumed that in most cases the first date listed is that of the main report.

Technology, Safety and Costs of Decommissioning a Reference:

Nuclear Fuel Reprocessing Plant (NUREG-0278, 1977)

Pressurized Water Reactor Power Station (NUREG/CR-0130, 1978, 1979, 1983, 1984, 1988)

Small Mixed Oxide Fuel Fabrication Plant (NUREG/CR-0129, 1979)

Low-Level Waste Burial Ground (NUREG/CR-0570, 1980, 1981)

Boiling Water Reactor Power Station (NUREG/CR-0672, 1980, 1983, 1984, 1988)

Uranium Fuel Fabrication Plant (NUREG/CR-1266, 1980)

Uranium Hexafluoride Conversion Plant (NUREG/CR-1757, 1981)

Nuclear Reactors at Multiple Reactor Stations (NUREG/CR-1755, 1982, 1985)

Nuclear Research and Test Reactors (NUREG/CR-1756, 1982, 1983)

Light Water Reactors Following Postulated Accidents (NUREG/CR-2601, 1982)

Independent Spent Fuel Storage Installations (NUREG/CR-2210, 1984)

Nuclear Fuel Cycle and Non-Fuel Cycle Facilities Following Postulated Accidents (NUREG/CR-3293, 1985)

Nuclear Fuel Cycle Facilities (NUREG/CR-4519, 1986)

Four of the above reports are important to this analysis. They include:

NUREG/CR 1757, *Technology, Safety and Costs of Decommissioning a Reference Uranium Hexafluoride Conversion Plant*; NUREG/CR 1754, *Technology, Safety and Costs of Decommissioning Reference Non-Fuel-Cycle Nuclear Facilities*; NUREG/CR-2210, *Technology, Safety and Costs of Decommissioning Reference Independent Spent Fuel Storage Installations*; and NUREG/CR 1266, *Technology, Safety and Costs of Decommissioning a Reference Uranium Fuel Fabrication Plant*.

These publications are organized in a relatively standard format and thus were helpful in the organization of this analysis. In addition, data were obtained from NUREG-0904, *Final Environmental Statement Related to the Decommissioning of the Rare Earths Facility, West Chicago, Illinois*.

Extrapolating relevant cost data from these reports allows the imputation of decommissioning costs for types of materials facilities for which no decommissioning cost information currently exists. Further, since these reports include costs for various decommissioning alternatives, the costs of timely decommissioning can be compared to the costs incurred when decontamination and decommissioning are delayed.

The referenced studies that have considered the impacts of decommissioning nuclear facilities have identified three alternative decommissioning strategies: DECON, SAFSTOR, and ENTOMB. DECON is the alternative in which the equipment, structures, and portions of a facility and site containing radioactive contaminants are removed or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations. DECON is the only one of the three decommissioning alternatives that leads to termination of the facility license and release of the facility and site for unrestricted use shortly after cessation of facility operations.

The DECON alternative is the preferred option for almost all of the licensees considered in this proposed rulemaking. As noted in the Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NRC88a), "For research and test reactors and for nuclear facilities licensed under 10 CFR Parts 30, 40, 70, and 72, ... completing decommissioning shortly after cessation of operations is considered the most reasonable option."

Delaying completion of decommissioning to allow short-lived nuclides to decay may be justified in some cases, however, any extended delay would rarely be justifiable." For purposes of impact analysis, the DECON alternative, and the costs and occupational exposures associated with it, can be considered to represent the costs and exposures that would be realized if the proposed timeliness criteria are adopted.

In much the same manner as the DECON alternative provides a close approximation of the impacts of the proposed timeliness criteria, the SAFSTOR option provides a close approximation of delayed decommissioning. In the SAFSTOR alternative the nuclear facility is placed and maintained in a condition that allows it to be safely stored for a period of time while decontamination to levels that permit release for unrestricted use is deferred. Moreover, SAFSTOR can be used as a means to satisfy the requirements for protection of the public while minimizing the initial commitments of time, money, occupational radiation exposure, and waste disposal space. On the other hand, the reduced initial effort and cost of the SAFSTOR alternative is offset by the need for continuing surveillance and physical security to ensure the protection of the public as well as the eventual need for the decommissioning of the facility. Moreover, an additional disadvantage of SAFSTOR is the potential lack of personnel familiar with the facility when decontamination is eventually accomplished.

The availability of data on the costs and occupational radiation exposures associated with SAFSTOR, together with the resemblance between SAFSTOR and licensee behavior in absence of the proposed rule, render comparisons between the present value costs of DECON and SAFSTOR an attractive methodology for assessing the impact of the proposed regulation. However, the discrepancies between these hypothetical alternatives and actual industry practice should not be ignored. For instance, SAFSTOR presumes a well defined and orderly delay of decommissioning, whereas the delays in decommissioning that the proposed timeliness rulemaking seeks to remedy, may involve instances of less than strict adherence to such established safe practices.

It should also be noted that the proposed rulemaking covers some licensee types for which DECON is not a viable option. The most obvious example are the rare earth licensees. In many cases these licensees have piles of wastes (tailings) so large that the DECON option would require the removal of acres of material at extremely high cost. While removal of this material to low-level waste burial sites is sometimes considered, stabilization in place is more often the preferred alternative. Such a strategy is generally considered to fall under the ENTOMB set of alternatives. ENTOMB is the alternative in which radioactive contaminants are encased in a structurally long-lived material, such as concrete. The entombed structure is appropriately maintained and continued surveillance is carried out in perpetuity or until the radioactivity decays to a level permitting release of the property for unrestricted use. In the relatively few cases where DECON is not a viable alternative, the costs associated with ENTOMB have been substituted to approximate the costs of the proposed timeliness criteria.

The costs incurred during decommissioning, as well as those incurred if the licensee chooses to cease operations yet not decommission, may be represented in five broad categories: labor; materials and equipment; insurance, license and inspection fees; utilities; and disposal costs. The magnitude of these costs can vary according to whether a licensee decommissions immediately or

chooses to delay. As such, they form the foundation of the economic analysis. A description of the relative costs of prompt and delayed decommissioning follows.

In the case of prompt decommissioning, licensee actions may be grouped into two stages. The first is the planning and preparation stage consisting generally of the following activities: documentation on the initiation of decommissioning, including an initial radiation survey to determine the extent of the contamination; preliminary cleaning and rudimentary decontamination; and the preparation of a detailed work plan for final decontamination. Most of the manpower involved in final decommissioning are present during planning and preparation. Exceptions might include one or more supervisors that would oversee primarily decontamination work, a number of technicians, craftsmen and laborers. Engineers, project managers, clerical support staff and a health and safety supervisor for the radiation survey are the primary individuals involved in the planning and preparations stage. Materials used in this stage are almost solely office supplies and possibly various measuring and radiation detection devices. Miscellaneous owner expenses such as utilities, insurance and license fees are not significantly affected by this phase of decommissioning, except license fees which may change as licenses are amended from possession and use status to possession only or decommissioning status.

The second stage of prompt decommissioning is decontamination. This involves the cleaning of contaminated surfaces, the removal of various pieces of equipment, and the general preparation of the site for unrestricted release status. There is a greater variety of labor required for this stage of decommissioning, including project Quality Assurance and planning engineers, project managers, technicians, supervisors, craftsmen, accounting specialists, and support staff. Materials may include hand tools, cleaning supplies, scrub brushes, a variety of cutting tools, torches and lifting equipment. One of the most significant costs of this phase are the costs of waste management, including the packaging of wastes, their transportation and ultimate burial. Waste burial costs are currently increasing more rapidly than any other cost category relevant to decommissioning. As such they are highly sensitive to the time factor in an analysis of decommissioning delay. Increased volume reduction of waste during decontamination significantly reduces the cost of disposal, and despite initial increased labor costs for packaging, also reduces overall waste management costs incurred during decommissioning.

In the case of delayed decommissioning, licensee actions are grouped into three stages. The first stage occurs prior to storage and consists of a planning and preparation phase and a rudimentary decontamination phase, much the same as in prompt decommissioning. The planning and preparation stage here, however, will be significantly less extensive. The second stage is long-term storage, which involves the often significant annual costs of maintaining, surveying and monitoring materials or facilities during the period prior to final decontamination. These annual costs can be primarily attributed to license fees, utilities, insurance and labor for periodic radiation surveys, plant oversight, and administrative and record-keeping duties. Equipment and material requirements on an annual basis are negligible, although they may include office supplies, protective clothing for workers, radiation monitoring devices and security alarm systems. Labor might include: a facility manager, maintenance and operations staff, secretaries and a third party inspection team for the radiation surveys, most likely including a health physicist. Licenses are renewed every five years, and

there may be significant costs involved in amending licenses as plant or facility status changes (NRC80). The annual fees imposed under full cost recovery may also be significant. Utility costs, primarily electricity, may be extensive, in some cases as high as 11 percent of the total annual costs (NRC80). Some estimates also provide for an annual allowance for repairs to the plant as they arise.

The third and final stage in delayed decommissioning is final decontamination. This also involves a planning and preparation stage similar to the planning and preparation stage in the prompt decommissioning. However, costs for this phase are significantly higher for fuel cycle and large materials licensees. This can be primarily attributed to the fact that after a given number of years of storage, the individuals involved in decontamination are less likely to be those who originally worked at the facility when it was operational, or who participated in the initial planning and preparation for storage. Thus, more time and manpower are required for this phase due to the current personnel's lack of familiarity with the facility. It is also likely that decontamination, in terms of the physical removal of radioactive isotopes from surface and structures, becomes increasingly more difficult and costly as time passes.

Most decommissioning cost estimates will add on to the identified base costs between 10 and 25 percent as a contingency. One author notes the following with regard to this practice: "Contingency is a specific provision for unforeseen elements of cost within the defined project scope...When contingency elements are broken down and applied, on a consistent basis from prior experience it becomes clear that contingency is a real cost of decommissioning and is fully expected to be spent" (IDS87). Thus, the cost estimates derived for this study explicitly include a 25 percent contingency.

Tables A-1 through A-5 summarize the estimated costs of timely and delayed decommissioning for seven generic types of material licensees. Since the original decommissioning cost estimates for non-fuel cycle facilities (NRC81b) do not explicitly address the SAFSTOR option, costs were estimated for the delayed decommissioning of these facilities from the data available for fuel cycle facilities. Details on the derivation of the cost estimates and the specific cost components of each estimate are presented below. The "Average Deflator" shown for each estimate represents the inflation factor that was calculated for each set of costs to adjust the original cost estimates to constant 1989 dollars. The new annual fees imposed under full cost recovery are added to the inflation adjusted estimates. The costs of occupational health benefits are based on a value of \$1,000 per person-rem. The generic cost estimates summarized in Tables A-1 through A-5 form the basis of the analysis of cost impact of the proposed timeliness criteria.

The assessment of the implications of timely decommissioning compares the discounted cost streams between previously developed cost data for the DECON and SAFSTOR options. In the case of non-fuel-cycle facilities, NUREG-1754, however, the SAFSTOR option is not considered in detail. As such, costs for this option were estimated or imputed based on cost information for the DECON option, written information discussing the SAFSTOR option within NUREG-1754, and costs for the SAFSTOR option presented in other volumes of NRC's Technology, Safety and Costs series. Three sets of data were estimated for the non-fuel-cycle facilities. These are the costs of deferred decommissioning, the annual costs during the SAFSTOR period, and the initial

TABLE A-1 PUBLISHED AND CURRENT DOLLAR
DECOMMISSIONING COSTS FOR
FUEL FABRICATORS

	(\$,000,1978)				(\$,000,1989)			
	SAFSTOR				SAFSTOR			
	PROMPT DECON.	PREP	ANN.	DECON.	PROMPT DECON.	PREP	ANN.	DECON.
Planning and Preparation								
Labor	275	145	0	432	529	280	0	819
Supplies	10	4	0	12	17	7	0	21
Subtotal: Plan and Prep. Phase	285	149	0	444	547	287	0	840
Decommissioning								
Decommissioning Labor	1470	179	0	1495	2685	336	0	2730
Annual Labor	0	0	104	0	0	0	191	0
Supplies, Materials, Equipment	116	116	2	116	204	187	3	204
Utilities, Taxes, Fees, Insurance	730	218	67	730	1163	347	107	1163
Waste Management	197	0	0	197	312	0	0	312
Contractor	61	15	50	61	97	24	85	97
Repairs	0	0	3	0	0	0	5	0
Subtotal: Decommissioning Phase	2574	528	226	2599	5208	1642	1138	5252
Subtotal: All Phases	2859	677	226	3043	5007	1181	391	5345
25% Contingency	715	169	56	761	1252	295	98	1336
Annual Fee & Surcharge					747	747	747	747
Total	3574	846	282	3804	7006	2224	1235	7428
Average Deflator					1.751	1.745	1.731	1.756
Occupational Health Costs:								
Person-Rem - Facility	16	0.4	0.6	16	16	0.4	0.6	16
Person-Rem - Transportation	2.6			2.6	2.6			2.6
Total Person-Rem	18.6	0.4	0.6	18.6	18.6	0.4	0.6	18.6
@ \$1000/Person-Rem	18.6	0.4	0.6	18.6	18.6	0.4	0.6	18.6
Total Cost Including Health Costs	3592	847	283	3822	7025	2224	1236	7447

TABLE A-2: PUBLISHED AND CURRENT DOLLAR
DECOMMISSIONING COSTS FOR
UF₆ CONVERSION

	(\$,000,1981)				(\$,000,1989)			
	SAFSTOR				SAFSTOR			
	PROMPT DECON	PREP	ANN.	DECON	PROMPT DECON	PREP	ANN.	DECON
Planning and Preparation								
Labor	304	169	0	589	452	253	0	861
Supplies	11	5	0	13	14	6	0	17
Subtotal: Plan and Prep. Phase	315	174	0	602	466	259	0	878
Decommissioning								
Decommissioning Labor	1749	205	0	1826	2465	299	0	2571
Annual Labor	0	0	30	0	0	0	44	0
Supplies, Materials, Equipment	138	121	4	138	186	149	5	186
Utilities, Taxes, Fees, Insurance	740	201	16	740	902	245	19	902
Waste Management	510	5	0	510	619	6	0	619
Contractor	0	0	22	0	0	0	28	0
Repairs	0	0	4	0	0	0	5	0
Subtotal: Decommissioning Phase	3137	532	76	3214	4171	699	101	4278
Subtotal: All Phases	3452	706	76	3816	4637	958	101	5156
25% Contingency	863	176	19	954	1159	239	25	1289
Annual Fee & Surcharge					684	684	684	684
Total	4315	882	95	4770	6480	1881	810	7128
Average Deflator					1.343	1.357	1.336	1.351
Occupational Health Costs:								
Person-Rem - Facility	62	1	0.1	61	62	1	0.1	61
Person-Rem - Transportation	17			17	17			17
Total Person-Rem	79	1	0.1	78	79	1	0.1	78
@ \$1000/Person-Rem	79	1	0.1	78	79	1	0.1	78
Total Cost Including Health Costs	4394	883	95	4848	6559	1882	811	7206

TABLE A-3 PUBLISHED AND CURRENT DOLLAR
DECOMMISSIONING COSTS FOR A LARGE HOT CELL

	(\$,000,1981)				(\$,000,1989)			
	SAFSTOR				SAFSTOR			
	PROMPT DECON.	PREP	ANN. DECON	DECON	PROMPT DECON	PREP	ANN. DECON	DECON
Planning and Preparation								
Labor	0	0	0	0	0	0	0	0
Supplies	0	0	0	0	0	0	0	0
Subtotal: Plan and Prep. Phase	0	0	0	0	0	0	0	0
Decommissioning								
Decommissioning Labor	95	40	32	87	133	56	45	122
Annual Labor	0	0	0	0	0	0	0	0
Supplies, Materials, Equipment	35	12	1	29	37	13	2	31
Utilities, Taxes, Fees, Insurance	43	17	2	38	52	21	2	47
Waste Management	175	11	0	164	213	13	0	199
Contractor	0	0	0	0	0	0	0	0
Repairs	0	0	0	0	0	0	0	0
Subtotal: Decommissioning Phase	348	80	36	319	435	104	49	398
Subtotal: All Phases	348	80	36	319	435	104	49	398
25% Contingency	87	20	9	80	109	26	12	100
Annual Fee & Surcharge					5	5	5	5
Total	435	100	44	398	548	134	66	503
Average Deflator					1.248	1.292	1.375	1.249
Occupational Health Costs:								
Person-Rem - Facility								
Person-Rem - Transportation								
Total Person-Rem	0	0	0	0	0	0	0	0
@ \$1000/Person-Rem	0	0	0	0	0	0	0	0
Total Cost Including Health Costs	435	100	44	398	548	134	66	503

TABLE A-4 PUBLISHED AND CURRENT DOLLAR
DECOMMISSIONING COSTS FOR
VARIOUS TYPES OF LABORATORIES

	DECOMMISSIONING COST (\$1,000, 1986)						DECOMMISSIONING COST (\$1,000, 1989)						PREPARATION COST (\$1,000, 1989)						ANNUAL COST (\$1,000, 1989)					
	PROMPT DECOM AND SAFSTOR						PROMPT DECOM AND SAFSTOR						SAFSTOR ONLY						SAFSTOR ONLY					
	3M	18C	125I	137Cs	241Am	USER	3M	18C	125I	137Cs	241Am	USER	3M	18C	125I	137Cs	241Am	USER	3M	18C	125I	137Cs	241Am	USER
Planning and Preparation:																								
Labor	14.2	13.4	13.4	12.8	13.9	14.2	14.8	13.9	13.9	13.4	14.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Supplies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal: Plan and Prep. Phase	14.2	13.4	13.4	12.8	13.9	14.2	14.8	13.9	13.9	13.4	14.5	14.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Decommissioning:																								
Annual Labor	44.5	35.1	34.4	32.5	55.0	40.3	46.1	36.4	35.6	33.6	57.0	41.8	2.8	2.0	2.0	1.4	2.6	2.8	2.8	2.0	2.0	1.4	2.6	2.8
Supplies, Materials, Equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8	4.2	3.8	3.8	5.2	5.2	4.2	4.2	3.8	3.8	5.2	5.2
Utilities, Taxes, Fees, Insurance	11.3	12.2	11.1	14.7	14.2	11.1	13.8	12.7	11.6	15.3	14.8	11.6	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
Waste Management	32.5	27.8	20.9	19.9	28.1	26.6	33.6	28.7	21.5	20.5	28.9	27.5	2.8	2.4	2.2	2.2	3.0	2.8	2.8	1.4	1.2	1.1	1.5	1.3
Contractor	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Repairs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	2.2	1.9	1.9	2.7	2.3	1.3	1.1	1.0	1.0	1.4	1.1
Subtotal: Decommissioning Phase	88.4	75.0	66.3	67.0	97.3	78.1	91.6	77.7	68.7	69.4	100.8	80.9	13.4	11.1	10.2	9.6	14.0	15.5	8.1	6.5	6.1	5.5	8.3	9.2
Subtotal: All Phases	102.6	88.4	79.7	79.8	111.2	92.3	106.3	91.6	82.6	82.6	115.2	95.7	13.4	11.1	10.2	9.6	14.0	15.5	8.1	6.5	6.1	5.5	8.3	9.2
25% Contingency	25.6	22.1	19.9	20.0	27.8	23.1	26.6	22.9	20.6	20.7	28.8	23.9	3.3	2.8	2.5	2.4	3.5	3.8	2.0	1.6	1.5	1.4	2.1	2.3
Total	128.2	110.5	99.6	99.8	139.0	115.3	132.9	114.6	103.2	103.5	144.1	119.6	16.7	13.9	12.7	12.0	17.4	19.4	10.1	8.1	7.6	6.9	10.3	11.5
Average Deflator	1.036 1.036																							
Occupational Health Costs:																								
Person-Ram - Facility	0.1	0.001	0.1	6	50	0.1	0.1	0.001	0.1	6	50	0.1												
Person-Ram - Transportation																								
Total Person-Ram	0.1	0.001	0.1	6	50	0.1	0.1	0.001	0.1	6	50	0.1												
@ \$1000/Person-Ram	0.1	0.001	0.1	6	50	0.1	0.1	0.001	0.1	6	50	0.1												
Total Cost Including Health Cost	128.3	110.5	99.7	105.8	139.0	115.4	133.0	114.6	103.3	103.5	144.1	119.7	16.7	13.9	12.7	12.0	17.4	19.4	10.1	8.1	7.6	6.9	10.3	11.5

TABLE A-5: PUBLISHED AND CURRENT DOLLAR DECOMMISSIONING
COSTS FOR A RARE EARTH FACILITY

	(\$,000,1962)				(\$,000,1989)			
	SAFSTOR				SAFSTOR			
	PROMPT DECON.	PREP	ANN.	DECON	PROMPT DECON.	PREP	ANN.	DECON
Planning and Preparation								
Labor	0	0	0	0	0	0	0	0
Supplies	0	0	0	0	0	0	0	0
Subtotal: Plan and Prep. Phase	0	0	0	0	0	0	0	0
Decommissioning								
Decommissioning Labor	4580	104	0	4580	6013	145	0	6013
Annual Labor	0	0	120	0	0	0	145	0
Supplies, Materials, Equipment	6000	150	4	6000	6996	175	3	6996
Utilities, Taxes, Fees, Insurance	0	0	15	0	0	0	17	0
Waste Management	400	0	0	400	466	0	0	466
Contractor	0	0	20	0	0	0	23	0
Repairs	0	0	0	0	0	0	0	0
Subtotal: Decommissioning Phase	10980	254	159	10980	13476	319	188	13476
Subtotal: All Phases	10980	254	159	10980	13476	319	188	13476
25% Contingency	5161	119	74	5161	6334	150	88	6334
Annual Fee & Surcharge					101	101	101	101
Total	16141	373	233	16141	19910	571	377	19910
Average Deflator					1.227	1.257	1.183	1.227
Occupational Health Costs:								
Person-Rem - Facility	0	0	0	0	0	0	0	0
Person-Rem - Transportation	0	0	0	0	0	0	0	0
Total Person-Rem	0	0	0	0	0	0	0	0
@ \$1000/Person-Rem	0	0	0	0	0	0	0	0
Total Cost Including Health Costs	16141	373	233	16141	19910	571	377	19910

costs of preparing the plant for SAFSTOR. These costs are augmented with the cost of health effects associated with decommissioning.

For the non-fuel-cycle facilities, the costs of deferred decommissioning operations were estimated to be identical to those for immediate decommissioning. This determination was based on the examination of relationships between immediate and deferred decommissioning for various types of generic facilities. The annual costs during the SAFSTOR period were estimated based partially on the labor cost of performing a radiological survey derived from the planning and preparation stage of immediate decommissioning for each type of laboratory, and partially imputed based on annual SAFSTOR costs for UF6 and fuel fabrication plants. The imputation was accomplished by scaling costs for the two plant types based on the ratio of total decommissioning costs of the two plants to the decommissioning costs for each laboratory type. Prior to scaling these annual costs, the costs for performing radiological surveys at the UF6 and fuel fabrication plants, which were assumed to be conducted by a third party inspection team, were eliminated to avoid double counting. Labor costs that were imputed in this manner included labor costs for a facility manager, maintenance and operations man and a secretary. Other costs included miscellaneous equipment and supply costs, utilities, taxes, inspections and license amendments, insurance, specialty and security contractors, and repairs. Total annual costs ranged from \$7,000 to \$11,000 with approximately \$3,000 accounted for by the radiological survey and that remainder accounted for by the miscellaneous imputed costs.

The initial costs of preparing for SAFSTOR for these facilities were estimated in the same manner as the annual costs except that the miscellaneous imputed costs were assumed to double over those for the annual costs.

The initial cost estimates for the decommissioning of reference facilities were obtained from the cited reports. However, most of these reports were published at least two to three years ago, some as long ago as twelve years, and thus the costs they present require updating to present year dollars. In order to apply inflation factors correctly, it was necessary to allocate items and personnel necessary for decommissioning to specific groups. First, broad categories such as equipment/materials and utilities were broken down as much as possible into their component items such as power tools and cleaning supplies for equipment/materials and gas and electric in the utility category. In some cases such as labor, specific professions were aggregated into broader categories, such as supervisory, clerical, etc. This methodology made it possible to obtain the most accurate deflators for specific decommissioning cost categories.

Data for calculating the specific deflators were obtained from a number of sources. Salary and wage indexes were obtained from the Bureau of Labor Statistics publication, Employment Cost Indexes and Levels, 1975-1989, Table 6. Producer Price Index annual averages for selected categories of products from 1975 to 1989 and 1990 through August were obtained from the Bureau of Labor Statistics. This information was used to update equipment/material and utility costs.

The impacts of the proposed rule involve the timing of the various activities and their associated costs. In order to model the impact of the proposed timeliness regulations a number of assumptions must be made. These assumptions concern the timing of decommissioning activities following shut-down with and without the proposed rule, and the length of time required to accomplish the various decommissioning tasks.

The first assumptions concern the delay in decommissioning that would occur in the absence of the proposed rule. While it is known that there is currently a problem with respect to timely decommissioning at some facilities, few data are available on the extent of the problem or the distribution of time periods involved. For this reason, selection of the time periods for delayed decommissioning are based on those used for the 10-year SAFSTOR option. However, in order to assess the sensitivity of this assumption, costs associated with 5- and 15-year periods of safe storage are also developed.

The second set of assumptions concerns the time sequences for accomplishing the activities needed to complete decommissioning. Time sequences were established for prompt and delayed decommissioning based on the activities previously described for each alternative. An estimate of elapsed time was assigned to each activity. These estimates are generally available directly from the applicable volume of the NRC's Technology, Safety and Costs series. In developing the time sequences, consecutive tasks that can be completed within a single year were assumed to be completed within the same year. Where consecutive tasks would require more than a year, each activity was assumed to require a full year to be completed. The periods of safe storage are assumed not to overlap with any other activity.

To compare the net present value of prompt versus delayed decommissioning, a discount rate is applied to the streams of expenditures developed for each scenario to convert expenditure flows to present value. The alternative with the lowest present value is the least expensive and thus most desirable, all other things equal.

The correct discount rate is the opportunity cost for the firm making the expenditures. This rate will vary greatly across licensees as some are large diversified organizations with multiple opportunities, some are small firms with limited resources, and others are public institutions. The Office of Management and Budget (OMB) applied the opportunity cost concept in their 1972 Circular No. A-94 on appropriate discount rates for regulatory proceedings. OMB recommended a uniform rate of 10 percent based on an estimate of the average rate of return on private investment, before taxes and after inflation. This is based on the understanding that private investment is foregone in order to comply with the regulations.

The appropriateness of a 10 percent real discount rate has been continuously debated. Most arguments focus on a so-called "social rate of time preference" that relates to consumers willingness to consume goods and services now as opposed to postponed consumption, i.e., save. As many regulations include both the use of capital and the reduction in consumption, either through direct effects or lower production levels, most analysts suggest the appropriate rate should be lower than 10 percent. However, as noted above,

some organizations impacted by the timeliness rulemaking may have actual or perceived opportunity costs (discount rates) much higher than 10 percent. For this reason, and to show sensitivity of the analysis to the selected discount rate, rates of 1, 5, 10, and 15 percent were selected for evaluation.

The results of the comparison of the net present value of prompt decommissioning versus 5-, 10-, and 15-year delayed decommissioning for various discount rates are summarized for the seven types of generic facilities in Tables A-6 through A-12.

While the correspondence between the generic facilities and specific licensees is fairly strong for the major fuel-cycle facilities such fuel fabricators of UF6 producers, the correspondence between the various laboratories costed in the non-fuel-cycle study and the numerous types of academic, medical, research, and medical facilities is much more problematic. The non-fuel-cycle report considers six laboratory types. The costs presented for five of the laboratories are considered to be representative of facilities for the manufacture of radiochemicals and sealed sources for five different radionuclides. The sixth laboratory is purported to be representative of a institutional user laboratory where radioisotopes are used. As no data are available to construct a frequency distribution of the manufacturing facilities by type and/or mixture of radionuclides handled, and since the decommissioning cost estimates for the different generic facilities vary only slightly, the average of the costs for laboratories handling H-3, C-14, I-125, and Cs-137 is believed to provide the best estimate of the costs for manufacturing and distribution facilities.

TABLE A-6 COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC FUEL FABRICATION PLANT (INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR		10-YEAR SAFSTOR		15-YEAR SAFSTOR	
	BASE REGULATORY CASE	NET CASE BENEFITS	BASE REGULATORY CASE	NET CASE BENEFITS	BASE REGULATORY CASE	NET CASE BENEFITS
1991	1106	1430	1106	1430	1106	1430
1992	1866	5594	1866	5594	1866	5594
1993	1236	0	1236	0	1236	0
1994	1236	0	1236	0	1236	0
1995	1236	0	1236	0	1236	0
1996	1236	0	1236	0	1236	0
1997	1236	0	1236	0	1236	0
1998	1050	0	1236	0	1236	0
1999	5650	0	1236	0	1236	0
2000	0	0	1236	0	1236	0
2001	0	0	1236	0	1236	0
2002	0	0	1236	0	1236	0
2003	0	0	1050	0	1236	0
2004	0	0	5650	0	1236	0
2005	0	0	0	0	1236	0
2006	0	0	0	0	1236	0
2007	0	0	0	0	1236	0
2008	0	0	0	0	1050	0
2009	0	0	0	0	5650	0
DISCOUNT RATE (%)						
1	16408	7693	21655	7693	26648	7693
5	13317	7399	15990	7399	18085	7399
10	10534	7065	11577	7065	12225	7065
15	8560	6762	8853	6762	8999	6762
1		8715		13962		18955
5		5918		8591		10687
10		3470		4513		5161
15		1798		2092		2237

BASE CASE = DELAYED DECOMMISSIONING

REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

TABLE A-7 COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC URANIUM CONVERSION PLANT (INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR			10-YEAR SAFSTOR			15-YEAR SAFSTOR		
	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS
1991	1008	1267		1008	1267		1008	1267	
1992	1559	5293		1559	5293		1559	5293	
1993	811	0		811	0		811	0	
1994	811	0		811	0		811	0	
1995	811	0		811	0		811	0	
1996	811	0		811	0		811	0	
1997	811	0		811	0		811	0	
1998	1781	0		811	0		811	0	
1999	6109	0		811	0		811	0	
2000	0	0		811	0		811	0	
2001	0	0		811	0		811	0	
2002	0	0		811	0		811	0	
2003	0	0		1781	0		811	0	
2004	0	0		6109	0		811	0	
2005	0	0		0	0		811	0	
2006	0	0		0	0		811	0	
2007	0	0		0	0		811	0	
2008	0	0		0	0		1781	0	
2009	0	0		0	0		6109	0	
DISCOUNT RATE (%)									
1	13687	7170		17006	7170		20164	7170	
5	10989	6894		12342	6894		13401	6894	
10	8585	6580		8782	6580		8904	6580	
15	6900	6296		6637	6296		6504	6296	
1		6517			9836			12994	
5		4095			5448			6507	
10		2005			2202			2324	
15		604			341			208	

BASE CASE = DELAYED DECOMMISSIONING
REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

TABLE A-B COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC LARGE HOT CELL (INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR			10-YEAR SAFSTOR			15-YEAR SAFSTOR		
	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS
1991	134		548	134		548	134		548
1992	66		0	66		0	66		0
1993	66		0	66		0	66		0
1994	66		0	66		0	66		0
1995	66		0	66		0	66		0
1996	66		0	66		0	66		0
1997	503		0	66		0	66		0
1998	0		0	66		0	66		0
1999	0		0	66		0	66		0
2000	0		0	66		0	66		0
2001	0		0	66		0	66		0
2002	0		0	503		0	66		0
2003	0		0	0		0	66		0
2004	0		0	0		0	66		0
2005	0		0	0		0	66		0
2006	0		0	0		0	66		0
2007	0		0	0		0	503		0
2008	0		0	0		0	0		0
2009	0		0	0		0	0		0
DISCOUNT RATE (%)									
1	925		548	1206		548	1471		548
5	792		548	932		548	1043		548
10	664		548	710		548	739		548
15	569		548	567		548	567		548
1			378			658			924
5			245			385			495
10			117			163			192
15			22			20			20

BASE CASE = DELAYED DECOMMISSIONING

REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

TABLE A-9 COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC MANUFACTURING/DISTRIBUTION LABORATORY (INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR			10-YEAR SAFSTOR			15-YEAR SAFSTOR		
	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS
1991	22.3		138.7	22.3		138.7	22.3		138.7
1992	16.4		0	16.4		0	16.4		0
1993	16.4		0	16.4		0	16.4		0
1994	16.4		0	16.4		0	16.4		0
1995	16.4		0	16.4		0	16.4		0
1996	16.4		0	16.4		0	16.4		0
1997	138.7		0	16.4		0	16.4		0
1998	0		0	16.4		0	16.4		0
1999	0		0	16.4		0	16.4		0
2000	0		0	16.4		0	16.4		0
2001	0		0	16.4		0	16.4		0
2002	0		0	138.7		0	16.4		0
2003	0		0	0		0	16.4		0
2004	0		0	0		0	16.4		0
2005	0		0	0		0	16.4		0
2006	0		0	0		0	16.4		0
2007	0		0	0		0	138.7		0
2008	0		0	0		0	0		0
2009	0		0	0		0	0		0
DISCOUNT RATE (%)									
1	232		139	301		139	367		139
5	194		139	227		139	252		139
10	159		139	166		139	172		139
15	132		139	128		139	126		139
1			94			162			228
5			56			89			114
10			21			28			33
15			-5			-10			-12

BASE CASE = DELAYED DECOMMISSIONING
REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

TABLE A-10 COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC PACEMAKER MANUFACTURING DISTRIBUTION (Am-241) LABORATORY
(INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR			10-YEAR SAFSTOR			15-YEAR SAFSTOR		
	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS
1991	21.9	198.6		21.9	198.6		21.9	198.6	
1992	14.8	0		14.8	0		14.8	0	
1993	14.8	0		14.8	0		14.8	0	
1994	14.8	0		14.8	0		14.8	0	
1995	14.8	0		14.8	0		14.8	0	
1996	14.8	0		14.8	0		14.8	0	
1997	198.6	0		14.8	0		14.8	0	
1998	0	0		14.8	0		14.8	0	
1999	0	0		14.8	0		14.8	0	
2000	0	0		14.8	0		14.8	0	
2001	0	0		14.8	0		14.8	0	
2002	0	0		198.6	0		14.8	0	
2003	0	0		0	0		14.8	0	
2004	0	0		0	0		14.8	0	
2005	0	0		0	0		14.8	0	
2006	0	0		0	0		14.8	0	
2007	0	0		0	0		198.6	0	
2008	0	0		0	0		0	0	
2009	0	0		0	0		0	0	
DISCOUNT RATE (%)									
1	280	199		340	199		396	199	
5	233	199		251	199		264	199	
10	188	199		180	199		174	199	
15	155	199		135	199		126	199	
1		82			141			198	
5		35			53			65	
10		-10			-18			-24	
15		-43			-63			-72	

BASE CASE = DELAYED DECOMMISSIONING

REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

TABLE A-11 COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC INSTITUTIONAL LABORATORY (INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR			10-YEAR SAFSTOR			15-YEAR SAFSTOR		
	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS
1991	23.4	123.7		23.4	123.7		23.4	123.7	
1992	15.5	0		15.5	0		15.5	0	
1993	15.5	0		15.5	0		15.5	0	
1994	15.5	0		15.5	0		15.5	0	
1995	15.5	0		15.5	0		15.5	0	
1996	15.5	0		15.5	0		15.5	0	
1997	123.7	0		15.5	0		15.5	0	
1998	0	0		15.5	0		15.5	0	
1999	0	0		15.5	0		15.5	0	
2000	0	0		15.5	0		15.5	0	
2001	0	0		15.5	0		15.5	0	
2002	0	0	123.7	0	0		15.5	0	
2003	0	0	0	0	0		15.5	0	
2004	0	0	0	0	0		15.5	0	
2005	0	0	0	0	0		15.5	0	
2006	0	0	0	0	0		15.5	0	
2007	0	0	0	0	0	123.7	0	0	
2008	0	0	0	0	0	0	0	0	
2009	0	0	0	0	0	0	0	0	
DISCOUNT RATE (%)									
1	216	124		206	124		350	124	
5	184	124		216	124		244	124	
10	152	124		163	124		168	124	
15	128	124		128	124		126	124	
1		94			161			226	
5		60			94			119	
10		28			39			44	
15		4			3			2	

BASE CASE = DELAYED DECOMMISSIONING
REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

TABLE A-12 COST PROFILES AND PRESENT VALUE NET BENEFITS FOR TIMELY DECOMMISSIONING
AT A GENERIC RARE EARTH FACILITY (INCLUDING OCCUPATIONAL HEALTH BENEFITS)

YEAR	5-YEAR SAFSTOR			10-YEAR SAFSTOR			15-YEAR SAFSTOR		
	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS	BASE CASE	REGULATORY CASE	NET BENEFITS
1991	470	19809		470	19809		470	19809	
1992	233	233		233	233		233	233	
1993	233	233		233	233		233	233	
1994	233	233		233	233		233	233	
1995	233	233		233	233		233	233	
1996	233	233		233	233		233	233	
1997	19809	116		233	116		233	116	
1998	233	116		233	116		233	116	
1999	233	116		233	116		233	116	
2000	233	116		233	116		233	116	
2001	233	116		233	116		233	116	
2002	233	58		19809	58		233	58	
2003	116	58		233	58		233	58	
2004	116	58		233	58		233	58	
2005	116	58		233	58		233	58	
2006	116	58		233	58		233	58	
2007	116	58		233	58		19809	58	
2008	58	58		116	58		233	58	
2009	58	58		116	58		233	58	
2010	58	58		116	58		233	58	
2011	58	58		116	58		233	58	
2012	58	58		116	58		233	58	
2013	58	58		58	58		116	58	
2014	58	58		58	58		116	58	
2015	58	58		58	58		116	58	
2016	58	58		58	58		116	58	
2017	58	58		58	58		116	58	
2018	58	58		58	58		58	58	
DISCOUNT RATE (%)									
1	22349	22299		22202	22299		22061	22299	
5	17530	21616		14778	21616		12622	21616	
10	13270	21147		9284	21147		6809	21147	
15	10269	20872		6118	20872		4054	20872	
1		50			-97			-237	
5		-4087			-6839			-8995	
10		-7877			-11863			-14338	
15		-10603			-14753			-16817	

BASE CASE = DELAYED DECOMMISSIONING
REGULATORY CASE = PROMPT (END-OF-LICENSE) DECOMMISSIONING

ENCLOSURE 4
DRAFT PUBLIC ANNOUNCEMENT

NRC Proposes to Set Specific Requirements for Timely
Decommissioning of Materials Facilities

The Nuclear Regulatory Commission is proposing to amend its regulations to set specific time requirements for decommissioning nuclear materials facilities. The proposed rule would establish time limits for decommissioning, whole or in part, of material facilities.

These changes would establish specific time limits for decommissioning the licensee's entire facility (site and structures) at the end of all licensed activity at the site, allowing license termination and release of the site for unrestricted use; and timely decommissioning of specific portions of the licensee's facility where licensed activities have ceased, while licensed activities continue to be conducted at other site locations. A licensee would have a 24-month period following cessation of activities, plus an additional 60 days notification period, by which to notify the NRC that no principal activities had taken place at the facility for a period of 24 months (licensees would be allowed to request an extension of the 24-month period if they provide justification for such an extension). Licensees who are not required to submit a decommissioning plan would then be required to complete decommission within 18 months. Licensees who are required to submit a decommissioning plan would be allowed 12 months to

prepare and submit the plan following the 60-day notification and, following NRC approval of the plan, would be required to complete decommissioning within 18 months. A licensee may propose an alternative to the 18-month time limit if the licensee can demonstrate that it is not technically feasible to complete the activity within the allotted 18-month time or that additional delay would result in reduced radiation risk to workers or the public. It is estimated that approximately 24,000 licensees (including those in Agreement States) would be covered by the rulemaking.

Current regulations allow nuclear material licensees considerable discretion as to the timing of decommissioning. This has allowed some licensees to remain inactive without decommissioning on the basis that operations may resume sometime in the future. Similarly, licensees are not required to decommission in a timely manner portions of their facilities that become inactive as their operations evolve. This allows licensees to postpone heavy decommissioning costs by simply continuing sufficient controls, monitoring, and surveillance to meet minimal safety requirements.

When decommissioning of an inactive facility is delayed for long periods, there are risks that safety practices at the inactive facility may become lax as interest in the facility wanes or that unforeseen changes in business such as bankruptcy further delay decommissioning of the facility.

Written comments on the proposed amendments to Parts 30, 40, 70, and 72 of the Commission's regulations should be received by (date). They should be addressed to the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Service Branch.

ENCLOSURE 5

DRAFT CONGRESSIONAL LETTERS

The Honorable Philip R. Sharp, Chairman
Subcommittee on Energy and Power
Committee on Energy and Commerce
United States House of Representatives
Washington, DC 20515

Dear Mr. Chairman:

Enclosed for the information of the Subcommittee is a copy of a Notice of Proposed Rulemaking to be published in the Federal Register. The Nuclear Regulatory Commission is proposing to amend its regulations to require timely decommissioning of nuclear materials facilities.

The changes are twofold. They would establish time limits and conditions by which licensees shall decommission site and structures at the end of all licensed activities, leading to license termination and release of the site for unrestricted use. They would also establish time limits and conditions by which licensees shall decommission separate buildings or outdoor areas where licensed activities have ceased, while operations continue at other site locations.

These changes are intended to promote the efficient possession and use of nuclear materials and decrease the risk to public health posed by inactive sites, whole or in part.

Sincerely,

Eric S. Beckjord, Director
Office of Nuclear Regulatory Research

Enclosure:
Notice of Proposed Rulemaking

cc: The Honorable Carlos J. Moorhead

ENCLOSURE 6

DRAFT ENVIRONMENTAL ASSESSMENT

DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF
NO SIGNIFICANT IMPACT

ON

PROPOSED RULE ON "TIMELINESS IN
DECOMMISSIONING OF MATERIALS FACILITIES"

Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

I. THE PROPOSED ACTION

The proposed action is to amend 10 CFR Parts 30, 40, 70, and 72, to include explicit criteria for when decommissioning of nuclear materials facilities is to be completed. Under the proposed regulation, licensees would have a 24-month period following cessation of activities, plus an additional 60 days' notification period, in which to notify the NRC that no principal activities had taken place for a period of 24 months (licensees would be allowed to request an extension of the 24-month period if they provide justification for such an extension). Licensees who are not required to submit a decommissioning plan would then be required to complete decommissioning within 18 months. Licensees who are required to submit a decommissioning plan would be allowed 12 months to prepare and submit the plan following the 60-day

notification period and, following NRC approval of the plan, would be required to complete decommissioning within 18 months. The proposed regulations provide for variances when a licensee can demonstrate that decommissioning within the permitted time period is not technically achievable or that delaying decommissioning will reduce the impact on public health and safety or the environment.

II. THE NEED FOR THE PROPOSED RULEMAKING ACTION

Current regulations contained in 10 CFR Parts 30, 40, 70, and 72 require prompt decommissioning but do not set specific time limits for completing decommissioning. As a result, schedules for completion of decommissioning must be determined on a case-by-case basis.

This results in inconsistent and inefficient application of the regulations. This case-by-case approach wastes staff resources and imposes considerable uncertainty on licensees. In addition, the public may be subjected to unnecessary risk if decommissioning is delayed while the Commission prepares, issues, and defends an Order requiring the decontamination and decommissioning of a facility.

III. ALTERNATIVES TO THE PROPOSED RULEMAKING ACTION

The alternatives to the proposed rulemaking action are as follows: take no action; amend individual licenses to specify when decommissioning will be

completed; or issue regulatory guidance. Summaries of the alternatives are provided in this section.

Alternative 1 - No Action

Alternative 1 maintains the status quo. The impacts of adopting the no action alternative would be to continue case-by-case reviews of decommissioning schedules, with the continued inefficient use of the NRC's and industry's resources, uncertainties on the part of licensees, and the potential for inconsistent application of NRC policy.

Alternative 2 - License Amendments

Alternative 2 would require amendment of individual licenses to specify when decommissioning will be completed. The impacts of this alternative are the same as for Alternative 1.

Alternative 3 - Regulatory Guidance

Under Alternative 3, the NRC would issue regulatory guidance concerning appropriate time schedules for decommissioning the variety of materials licensees. However, guidance, by definition, would not provide the firm regulatory basis required to solve the existing problem.

Alternative 4 - Rulemaking

Under Alternative 4, NRC would amend its current regulations to require decommissioning of all materials facilities within the time periods indicated in Section I. The time limits would also apply to portions of the licensee's site that are taken out of production. Individual licensees would be able to obtain extensions of the timeliness criteria if they can demonstrate that decommissioning within the specified time period is not technically achievable or that delaying decommissioning will reduce the impacts on the public's health and safety or the environment.

IV. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION (RULEMAKING AND THE ALTERNATIVE ACTIONS)

The potential environmental impacts of the proposed rulemaking are those that could arise from requiring that decommissioning be accomplished earlier than it might have been in the absence of the rule.

In the Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NUREG-0586), the NRC found that decommissioning has many positive environmental impacts. These include the return of valuable lands and structures to the public domain and the elimination of potential problems associated with an increasing inventory of radioactively contaminated facilities. The major adverse impacts associated with decommissioning are routine occupational exposures and the commitment of small amounts of land to

radioactive waste disposal. Other impacts, including public radiation doses, were shown to be minor.

With respect to the materials licensees covered by the proposed regulation, the GEIS found that either immediate decommissioning or short-term storage to allow short-lived radionuclides to decay is the preferred decommissioning strategy. Delaying decommissioning for an extended period of time would only rarely be justified for these types of facilities.

The GEIS concludes that the overall impact of decommissioning existing nuclear materials facilities is small. Since the proposed regulatory changes would still allow the preferred decommissioning strategies; i.e., immediate decommissioning or short-term storage, it can be concluded that the proposed rulemaking will have no adverse impact on the environment. There would be no significant adverse environmental impact if any of the alternatives were adopted.

V. FINDING OF NO SIGNIFICANT IMPACT

The Commission has determined under the National Environmental Policy Act of 1969, as amended, and the Commission's regulations in 10 CFR Part 51, that the proposed amendments to 10 CFR Parts 30, 40, 70, and 72, specifying timeliness criteria for decommissioning, if adopted, would not have a significant effect on the quality of the human environment and that an environmental impact statement is not required. This determination is based on the foregoing environmental assessment performed in accordance with the procedures and

criteria in Part 51, "Environmental Protection Regulations for Domestic Licensing and Related Regulatory Function."

VI. MAJOR REFERENCE DOCUMENTS

1. Regulatory Analysis: Amendments to 10 CFR Parts 30, 40, 70, and 72 Specifying Timeliness Criteria for Completion of Decommissioning, Draft, prepared for the U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, by SC&A, Inc., McLean, VA, December 1991.
2. Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities, NUREG-0586, U.S. Nuclear Regulatory Commission, Office of Nuclear Regulatory Research, Washington, DC, August 1988.

VII. PERSONS CONTACTED

Dan E. Martin, NRC

John W.N. Hickey, NRC

Paul J. Kovach, NRC