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49 FR 46418
AB 50-2
PDR

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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APR 25 1985

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MEMORANDUM FOR: Kitty S. Dragonette
Division of Waste Management
Office of Nuclear Material Safety and Safeguards

FROM: John Philips, Chief
Rules and Procedures Branch
Division of Rules and Records
Office of Administration

SUBJECT: URANIUM MILL TAILINGS REGULATIONS: CONFORMING NRC
REQUIREMENTS TO EPA STANDARDS

The Rules and Procedures Branch has reviewed the draft final rule that would amend NRC's uranium mill tailings regulations in order to conform NRC requirements to EPA standards. We have enclosed a marked-up copy of the package that sets out our comments.

We understand that word changes in this conforming process have been kept to a minimum in order to more directly emphasize the changes required by the EPA standard. However, at this point in the amendatory process, we urge that you adopt the standard convention endorsed by the Office of the Federal Register and used in a significant portion of regulatory writing to impose an obligation or express a prohibition. In this convention, discussed in section 13.27 of the NRC Regulations Handbook (NUREG/BR-0053), "shall" is used to impose an obligation on an individual or a legal entity capable of performing the required action, "must" is used as the mandatory form when the subject is an inanimate object, and "may not" is used to express a prohibition. Our comments on the revised Appendix A reflect this convention. If adopted, a short explanatory paragraph may be added to the preamble.

The preamble to this final rule must contain a clear indication of how interested persons may examine or obtain the technical supporting documents cited in this rulemaking. This is especially important because the Environmental Impact Statement and the Regulatory Impact Analysis on which this rulemaking depends were not prepared by the NRC.

We suggest that additional material from the Introduction and Summary to the Staff Analysis of Public Comment be included in the final rule preamble. We believe this would provide a helpful context for the discussion of public comment in the final rule.

We have forwarded a copy of the final rule to the Document Management Branch, TIDC, for their comment/concurrence concerning the paperwork management aspects of this rulemaking action.

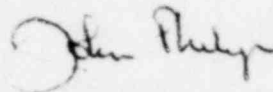
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Kitty S. Dragonette

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If you have any questions, please call me on ext. 27086 or Michael T. Lesar of my staff on ext. 27758.



John Philips, Chief
Rules and Procedures Branch
Division of Rules and Records
Office of Administration

Enclosure: A stated

cc: R. Stephen Scott, TIDC

*Encl. to memo to
Dragonette for
J. Philipe - 4/25/85*

NUCLEAR REGULATORY COMMISSION

10 CFR PARTS 40 and 150

Uranium Mill Tailing Regulations: Conforming NRC
Requirements to EPA Standards

AGENCY: Nuclear Regulatory Commission.

ACTION: Final rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is issuing amendments to its regulations governing the disposal of uranium mill tailings. These rule changes conform existing NRC regulations to the regulations published by the Environmental Protection Agency for the protection of the environment from these wastes. This action is being taken to comply with the legislative mandate set out in the Uranium Mill Tailings Radiation Control Act (UMTRCA) and the NRC Authorization Act for FY 1983.

EFFECTIVE

DATE: These changes become effective (30 days after publication).

ADDRESSES: Comments received on the proposed rule may be examined at the Commission's Public Docket Room, 1717 H Street NW, Washington, DC between 8:15 a.m. and 5:00 p.m. weekdays.

FOR FURTHER INFORMATION CONTACT: Robert Fonner, Office of the Executive Legal Director, telephone (301) 492-8692, or Kitty S. Dragonette, Division of Waste Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427-4300.

*as well as
the Remedial Impact Analysis
and the Environment Impact
Statements prepared by EPA*

SUPPLEMENTARY INFORMATION:

Introduction and Background

The Nuclear Regulatory Commission (NRC) is issuing modifications to its regulations for the purpose of conforming them to generally applicable requirements promulgated by the Environmental Protection Agency (EPA). These EPA requirements ^{are} ~~are~~ contained in Subparts D and E of 40 CFR Part 192 (48 FR 45926; October 7, 1983), are applicable to the management of uranium and thorium byproduct material and became effective for NRC and Agreement State licensees and license applicants on December 6, 1983. This action modifies previously existing regulations of the Commission to conform them to the EPA requirements and incorporates ^{some} ~~certain~~ of the EPA requirements into the Commission's regulations. The affected Commission regulations are contained in Appendix A to 10 CFR Part 40, which was promulgated in final form on October 3, 1980 (45 FR 65521). Proposed changes were published on November 26, 1984 (49 FR 46418). The comment period originally expired on January 10, 1985 but was extended until February 10, 1985 (50 FR 2293, January 16, 1985).

^{se} ~~The modifications to Commission regulations issued herein incorporate~~
~~within NRC regulations some of the new EPA requirements.~~ The action that
 the Commission will take with respect to the remainder of the ~~the~~ EPA
 requirements ^{primarily those dealing with ground water protection} was the subject of an Advanced Notice of Proposed Rulemaking
 (ANPRM) which requested comment on that subject (49 FR 46425, November 26,
 1984). Under Section 18(a) of Pub. L. 97-415, the Nuclear Regulatory
 Commission Authorization Act for fiscal years 1982 and 1983, the Commis-
 sion was directed to conform its regulations to EPA's with notice and
 opportunity for public comment.

Overview of Comments on Proposed Rule Changes

Twenty-four commenters responded with 26 sets of comments. Six environmental groups, seven states, two Federal agencies, seven industry representatives, one pro-energy (pro-nuclear) group and one individual responded.

Comments were offered on both general issues and the specific changes in the proposed rule notice and reflected diverse views. ⁹¹A staff analysis of all the comments received is available in the NRC's Public Document Room (PDR). The following discussion summarizes and responds to all comments of major or generic significance and to all comments that prompted additional rule changes.

Commission Authority and Responsibility Statement

⁹¹ Comment The notice included a statement on "Commission Authority and Responsibility." The statement summarized the Commission's policy on the exercise of its responsibility and authority for mill tailings, including the authority to approve site specific alternatives proposed by licensees under section 84c of the Atomic Energy Act (AEA).

Commenters were divided on this issue. The environmental groups and EPA disagreed with the statement. Industry advocated an alternate approach. In industry's view, reliance on the basic requirements of UMTRCA with respect to the jurisdiction of the agencies would be a stronger legal position and eliminate the need to rely on ~~Section~~ 84c. One State supported the statement and the need for NRC and Agreement States to review and approve site specific alternatives to standards without EPA concurrence.

*Insert from pp 1-3 of the
comment analysis with specific
identities deleted. Would provide
some context for the following
summary*

EPA disagreed with NRC's interpretation of section 84c. EPA stated "Section 84c does not confer on NRC authority to approve or employ alternative standards or to substitute its judgment for EPA's regarding the level of protection necessary to protect public health and the environment. Rather it authorizes NRC to approve or employ licensee-proposed alternatives to NRC's own general implementing requirements . . ." Further, EPA argued that its standard that requires EPA approval of site specific alternative concentration limits is within its authority, not NRC's under section 84c. In EPA's view, NRC must also establish specific requirements before it can consider alternatives to them. The environmental groups were in basic agreement with EPA.

Response The Commission conducted an independent review of UMTRCA and the legislative history surrounding this issue.

The Commission reaffirmed that it is authorized under section 84c of the AEA to grant exemptions from EPA's standards without obtaining EPA's concurrence. The basis for this conclusion covers four points: First is the belief that "specific Commission requirements" can be ~~deemed~~ adopted without a rulemaking proceeding. Section 84a(2) requires the Commission to ensure that tailings are managed in conformance with EPA's standards. Section 84a(2) creates a statutory obligation ^{on} ~~by~~ the Commission to enforce EPA's standards independent of whether the Commission adopts regulations which would clarify how the Commission would enforce those standards.

Second, section 84c explicitly states that the NRC may approve alternatives which, to the extent practicable, would achieve safety levels equivalent to those which would be achieved by compliance with NRC's requirements and EPA's standards. Thus, the NRC is authorized to approve an alternative which does not provide the same level of protection of

?

4 correct only if the and is intended to convey an either/or situation

public health, safety and the environment which would be achieved if EPA's standards were complied with fully. *//* Third, UMTRCA does not use the phrase "implementing requirements." Section 84c refers to only "specific requirements adopted and enforced by the Commission." This phrase is clearly intended to include all requirements adopted by the Commission to regulate mill tailings. The source of the adopted requirements is immaterial to the statutory scheme and may include EPA's detailed standards. *//* Finally, EPA's comment does not effectively respond to the Commission's argument that EPA site specific concurrence in exemptions contradicts the prohibition on EPA's issuance of a permit in section 275b.(2) of the AEA.

Comments questioning NRC's motives or intent are offset by the findings required of the Commission in section 84c in order to exercise the flexibility to approve alternatives. Assertion of legal right does not equate to an intent to abuse a right. The AMC jurisdiction issue is addressed in the following section.

The ~~Statement~~ ^{on "Commission Authority and Responsibility"} is repeated in this notice without change to reaffirm the Commission's position.

Procedural and Jurisdictional Issues

// Comment The American Mining Congress (AMC) presented extensive legal arguments on the EPA/NRC jurisdictional issue. The AMC comments focused on the following legal points: (1) Since its ratification of Reorganization Plan No. 3 of 1970, consistent Congressional policy has been to limit EPA standard setting authority for NRC licensed facilities to "generally applicable standards," meaning standards that are applicable outside site boundaries and that impose no site specific design, engineering or management

requirements; (2) Congress, in UMTRCA, adopted the division of jurisdiction between EPA and NRC first established in the 1970 Reorganization Plan; and (3) EPA's standards are not "generally applicable standards" and are therefore beyond the jurisdiction of EPA. Consequently, the EPA standards are a "mere nullity" of no legal force or effect and NRC is not legally bound to conform to the standards.

Response As noted earlier, the Commission conducted an independent review of UMTRCA and its legislative history. The Commission concluded that EPA generally acted within its jurisdiction and found the AMC arguments flawed. The following points summarize the Commission's findings:

1. Before UMTRCA, EPA, not NRC, had primary authority over both the radiological and non-radiological impacts from uranium mill tailings;
2. During Congressional deliberations over UMTRCA, NRC attempted to reduce substantially EPA's authority over radiological hazards of mill tailings by limiting it to EPA's "traditional" authority under Reorganization Plan No. 3, i.e., authority to promulgate only generally applicable, non-site specific radiological standards, applicable only outside the boundaries of the tailings sites;
3. EPA opposed the NRC's attempt to transfer to itself EPA's authority to regulate mill tailings. EPA's efforts were partially successful and resulted in a Congressional compromise which precluded EPA from promulgating site specific standards but which did not restrict EPA to standards applicable only outside site boundaries. EPA was also given concurrence authority over NRC regulations for controlling non-radiological hazards.
4. Except for one instance, EPA acted within its jurisdiction under UMTRCA in setting environmental standards for managing radioactive emissions and hazardous chemical wastes from uranium mill tailings; and

5. EPA exceeded its jurisdiction by stating that its concurrence would be required before the NRC could grant site specific case-by-case exemptions from NRC regulations for implementing EPA's standards. The Commission believes that such a concurrence role by EPA also contradicts the 1983 amendment to UMTRCA which added section 84c to the AEA.

(^{91 Comments}) Environmental groups and EPA commented on the legality of not meeting the six-month Congressional mandate to conform by April 1, 1984 and conforming in two steps. Commenters asserted that NRC's action is illegal, that it does not meet the explicit intent of UMTRCA, and that NRC should conform to the ground-water standards in 40 CFR 192 immediately. Concern that a four-year rulemaking on ground water delays compliance with EPA's ground-water requirements was expressed. Commenters objected to NRC's position that conforming to EPA's ground-water standards should be combined with developing a rule that fully meets the mandate in ~~Section~~ 84a(3) to have general requirements that are comparable to EPA's requirements for similar materials regulated under the Solid Waste Disposal Act. EPA argued that the EPA standards in 40 CFR 192 already meet this requirement to be comparable.

Response The decisions regarding whether and how NRC should conform to the EPA standards involved complex legal, jurisdictional, and policy issues. The Commission carefully considered the implications of several alternatives and its authority and responsibilities before deciding on the course of action evidenced by the notices of proposed rulemaking and ANPRM. Further, Congress did not impose any penalty if NRC failed to meet the 6 months as it did with the loss of authority if EPA failed to meet its October 1, 1983 date.

No health and safety or environmental impacts have resulted or will result from delay since the Commission believes that NRC and the States are required to implement and enforce the EPA standards under section 275d of the AEA in the interim until final conforming regulations are in place. NRC has so informed its licensees and Agreement States and is implementing the standard.

The scope and timing of the second-step rulemaking is still under consideration. Comments on the ANPRM are being analyzed. A simple rule change to incorporate the specific ground-water protection provisions of 40 CFR 192 is one option being considered.

Comment
One environmental group and industry urged that NRC delay conforming action until the legal challenges to the EPA standard in the Tenth Circuit are settled.

Response *Because* Since timetables for court action are highly uncertain and because the EPA standards are being implemented and enforced, the Commission sees no reason to delay conformance by rule. Obviously, if court action sets aside all or part of NRC's or EPA's rules, additional rule changes will be required.

Scope of Rulemaking

Comment
Commenters offered a wide range of views on the scope of the rulemaking. NRC was urged to undertake independent new rulemaking. An environmental group advocated complete revision of 10 CFR Part 40, Appendix A, as issued in October, 1980 to provide more protection from radon. Industry argued that NRC must undertake a completely new independent rulemaking to replace both the EPA and NRC rules. Industry asserted that EPA's standards are not adequately supported by analysis relating costs

and risks and are outside EPA's jurisdiction and that NRC has provided no analysis establishing that Appendix A of Part 40 requirements are reasonably related in terms of cost, risks, and benefits. A key point in industry arguments was the 1983 Pub.L. 97-415 addition to section 84a(1) of the AEA requiring the Commission to insure that the management of byproduct material takes " . . . into account the risk to the public health, safety, and the environment, with due consideration of the economic costs and such other factors as the Commission determines to be appropriate." The industry arguments imply that this addition mandates a total reconsideration and revision of NRC rules. Industry also noted the depressed economic state of the industry and early stabilization plans that have resulted since the 1980 rule.

Response EPA developed and issued the standards in 40 CFR 192 under the mandate in ^{section} 275b(1) of the AEA. EPA's mandate included, "In establishing such standards, the Administrator shall consider the risk to the public health, safety, and the environment, the environmental and economic costs of applying such standards, and such other factors as the Administrator determines to be appropriate." NRC is conducting the present action under the mandate in section 275f(3) of the AEA. EPA was explicitly charged to consider risk and economic costs. No mention of an independent risk/economic cost finding is explicitly required of NRC in ^{taking any} ~~con-~~forming ^{action}. EPA has the lead responsibility and the Commission believes it must assume that EPA met the mandate.

The Commission views the mandate in ^{section} 84a(1) as applying to all aspects of its uranium recovery program. The Commission believes that it can fulfill this mandate without further rulemaking. However, section 84a(1) should be emphasized in Appendix A to make it clear that the NRC will in

fact consider risks and economic costs and site specific needs in general. The insert to the Introduction ^{to Appendix A that} paraphrasing section 84a(1) will explicitly ^{Yes} emphasize this point.

The Commission also believes that implementation of "practicable" should be consistent with the intent of section 84a(1) and current as low as reasonably achievable (ALARA) Commission policy in 10 CFR 20. This point is clarified by paraphrasing 10 CFR 20.1(c) in an addition to the Introduction. ^{to Appendix A}

Industry comments on the depressed state of the industry are valid and licensees are faced with early reclamation. However, the Commission believes that this situation only emphasizes the site specific decisions needed and does not support the need for generic rulemaking.

^{9/ Comment}
 [All categories of commenters advocated specific suggestions to expand the scope of the proposed rulemaking. Commenters generally fell into three categories - those advocating: (1) additional changes needed to conform to the EPA standards, (2) additional changes that would make 10 CFR Part 40 more explicit or more protective of public health, safety, and environment but that are not directly related to conforming to the EPA standards, and (3) additional changes that would make Part 40 less restrictive or conform to the collective intent of Congress expressed in various legislation and hearing records rather than the EPA standards. Comments in the first category were considered within the scope of this rulemaking. Comments in the latter two categories will be considered along with comments received on the accompanying ANPRM.

One commenter suggested that the Commission require that design calculations for covers incorporate a design margin to explicitly account for changes in moisture content and porosity, external erosional forces,

and internal chemical reactions in order to meet the reasonable assurance provision of the EPA radon and longevity standard over the long term.

Response ① The factors identified are important to consider in evaluating expected cover performance. However, ~~such~~ ^{these} factors are very site specific and represent a level of detail that NRC normally relegates to guidance or procedural documents. The design margin recommended is essentially applied in the staff's use of conservative material parameters in the site specific evaluation of the design of soil and rock covers.

9/ Comment ②
NRC was urged to add an active monitoring program for tailings stability to the Commission's rules.

Response ① Criterion 12 of the Commission's rules has a minimum requirement for annual inspections by the custodial government agency to confirm the integrity of stabilization and the need for any maintenance.

9/ Comment ②
Industry recommended a number of changes based on the Commission's earlier suspension action. The recommended changes and rationale for action were essentially the same as presented in the suspension notices. Examples include deletion of below grade or equivalent as the prime option in Criterion 3 and deletion of radium content restrictions on cover materials in Criterion 6.

Response ① The intent of this action is nondiscretionary conforming changes to eliminate conflicts and inconsistencies, add imposed standards or Congressional direction, or make minor editorial or clarifying changes. Industry comments were mainly statements or claims based on "may not be required" and would require extensive new rulemaking and are thus considered outside the scope of the present action.

Comments on 40 CFR 192

7/ Comment
 [Virtually all categories of commenters offered comments on the validity and merits of the EPA standard. The majority reflected dissatisfaction.

Response: As noted in the accompanying the proposed R4/C ANPRM (49 FR 46427), the Commission must focus on choices and decisions it must make on actions within its discretion. Until or unless court action sets aside the EPA standards, they are binding on NRC and Agreement State licensees. NRC licensees are faced with two sets of effective regulations that contain conflicting or inconsistent requirements. Under law, NRC must implement and enforce both.

As implied by the Commission Authority and Responsibility statement, the only provision of the EPA standard the Commission does not plan to implement and enforce is the provision in 40 CFR 192.32(a)(2)(iv) requiring EPA concurrence on site specific decisions. The Commission believes that removing conflicts and inconsistencies in the two sets of regulations and using site specific alternative authority to deal with occasional site specific problems represent^{is} the best regulatory approach.

Thus, comments on the lawfulness, merits, and value of the EPA standards were considered outside the scope of this action and were not a factor in developing this final rule.

Other

7/ Comment
 [One State questioned how the process of dealing with alternatives using the type of flexibility afforded by Section 84c of the AEA would work in Agreement States.

Response: Section 19 of Pub.L 97-415, the NRC Authorization Act for fiscal years 1982 and 1983, added the following option to ~~Section~~ 274o of the AEA for Agreement States: " . . . the State may adopt alternatives (including, where appropriate, site-specific alternatives) to the requirements adopted and enforced by the Commission for the same purpose if, after notice and opportunity for public hearing, the Commission determines that such alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety and the environment from radiological and non-radiological hazards associated with such sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose and any final standards promulgated by the Administrator of the Environmental Protection Agency in accordance with section 275. Such alternative State requirements may take into account local or regional conditions, including geology, topography, hydrology and meteorology."

The Commission must determine that alternative standards adopted by the State achieve the required levels of protection. Further, the Commission must notice the alternatives and provide an opportunity to request public hearing. This additional flexibility to adopt generic or site specific standards is available to the State regardless of the status of the State's regulations. ✓

The comment does point out that 10 CFR 150.31 should be amended to add the option quoted above. Including the language in Part 150 is not legally required for the State to exercise the option, but addition would clarify the situation.

No comments were received on the Regulatory Flexibility Certification or Paperwork Reduction Act Statement in the notice. No specific comments were received on the NEPA discussion under Impact of the Amendments.

COMMENTS ON SPECIFIC PROPOSED MODIFICATIONS TO APPENDIX A 10 CFR 40

The proposed rule ~~notice~~^{preamble} listed the specific modifications and rationale for each change. The list chronologically followed 10 CFR 40, Appendix A. In the following analysis, each of the modifications are summarized and addressed. The numbering system from the proposed ~~notice~~^{rule preamble} is provided.

Introduction

Modification 1.(a) Typographical error and no comments were received.

Modification 1.(b) This proposed change deleted an outdated information submittal requirement associated with the 1980 publication of Appendix A.

^{If Commenter}
 One commenter expressed concern that the deletion would mean that detailed information on licensees' programs showing how they meet the criteria in Appendix A would not be required.

Response Licensee compliance with Appendix A and the EPA standards is being handled and documented in the routine course of licensing and enforcement activities. A specific or separate submittal is not needed and would represent an unwarranted burden on licensees.

Modification 1.(c) This change would add a paraphrase of the provisions of section 84c of the AEA. The language provides applicants and

licensees the opportunity to propose alternatives to the specific requirements of Appendix A.

91 Comment

Comments on the addition of the flexibility provisions of section 84c to the Introduction generally did not take issue with the addition itself since it paraphrased the law. States and environmental groups expressed concerns about implementation. Some of the industry commenters favored extensive supplemental rulemaking to reduce the burden on licensees to develop alternatives.

Response The Commission agrees that additional guidance on how to implement the section 84c flexibility may be needed. Generic guidance is difficult to prepare absent experience with specific proposals. NRC has used this flexibility only once. In addition, detailed implementation guidance is normally not included in the Commission's rules. It is developed in more flexible guidance documents.

Criterion 1

Modification 2.(a) This change would delete the "thousands of years" and add the 1,000-year time frame in the EPA design standard. Editorial errors confused the specifics of this modification. The first paragraph of proposed modified Criterion 1 should have read: "In selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites, the following site features which will determine the extent to which a program meets the broad objective of isolating the tailings and associated contaminants from man and the environment during operations and for 1,000 years thereafter, without ongoing active maintenance, shall be considered."

9 Comments

Comments on proposed changes to Criterion 1 on the time frame for protection reflected confusion on goals or objectives versus requirements and disagreement on what the times and reliance on active maintenance should be. State and environmental comments urged times greater than the 1,000-year EPA design standard on cover longevity and no reliance on maintenance. Industry favored a 200-year goal and reliance on maintenance.

Response Comments highlighted an important reason for the reactions to the existing language and the proposed change. The first paragraph of Criterion 1 is a statement of a very general goal or objective, not a specific standard or requirement. The proposed change and associated editorial errors compounded the problem. It was intended to prevent misunderstandings due to the reference to thousands of years, not to repeat the specific design standard being added to Criterion 6.

Comments advocating a 200-year goal are directed at the EPA design standard and how it will be implemented in site specific actions. The Commission disagrees with any position that would put the goal for protecting man and the environment from tailings at 200 years. The EPA primary design stand is 1,000 years. Further, as a general goal, permanent isolation with no planned reliance on active maintenance is consistent with the findings in the GEIS, the EPA standard and the Congressional intent in section 161x(2) of the AEA that states: "... the need for long term maintenance and monitoring ... will be minimized and, to the maximum extent practicable, eliminated." ^{Because} Since Congress did not flatly prohibit maintenance, NRC may consider it, but the preference for no maintenance is clear.

The first paragraph of Criterion 1 is being clarified to emphasize the goal versus standard concept and to delete any specific time frame.

"Shall" is being changed to "should" in the fourth paragraph of Criterion 1 to further emphasize the goal concept.

Modification 2.(b) This change would delete the ground-water modifier "usable" to be consistent with the primary thrust of the EPA standard to protect all ground water.

^{9/ Comment}
(State and environmental commenters supported this change and industry opposed it for reasons discussed under Criterion 5 modifications.

Response The general thrust of the EPA standard is to protect all ground water. The proposed change was not intended to set aside the site specific option to pursue alternate concentration limits which may be based in part on the existing and potential use of the ground water. The existing language in Criterion 1 referring to "... isolation of contaminants from usable groundwater sources" conflicts with the EPA standard.

Criterion 3

Modification 3.(a) This change would delete the ground-water modifiers "high quality" to be consistent with the primary thrust of the EPA standard.

No new issues were raised on this change.

Criterion 4

Modification 4.(a) This change would delete "maximum possible flood" and insert "Probable Maximum Flood" (PMF).

^{9/ Comment}
(Comments on the proposed change in Criterion 4 to replace "maximum possible flood" with "Probable Maximum Flood" reflected divergent views on the appropriate design flood to be used in analysis. Environmental

commenters favored maximum conservatism and industry advocated less conservative assumptions than either the existing or proposed language.

Response The intent of paragraph(a) in Criterion 4 is to require that siting of tailings disposal areas minimize the upstream catchment area to reduce the potential for erosion regardless of the magnitude of the design flood. The modifiers "maximum possible" and "probable maximum" are both inappropriate since this criterion is not intended to discuss design flood requirements. In order to emphasize the primary purpose of the requirement, the Commission is replacing "probable maximum flood" with "floods."

Criterion 5

Proposed changes to Criteria 1, 3, and 5 were all intended to reflect that the EPA standard starts from a premise that no seepage from new or expanded impoundments or degradation of ground water are allowed and that all ground water is to be protected regardless of quality or use category. ^{91 Comment} Industry strongly opposed protecting non-usable ground water, recommended deferring all ground-water changes, and argued that the EPA ground-water standards are invalid because they fail the Congressional test of comparability to standards for wastes of similar hazard (e.g., mining wastes). EPA made a general comment that more distinction between existing and new sites is needed.

Response The comments clearly reflect confusion about the status of the EPA ground-water protection standards, the status of 10 CFR 40 Appendix A requirements, and the basis for proposing the few changes

related to ground-water protection in advance of more comprehensive rule-making on ground water. As discussed under the general issues, the EPA standards have been applicable in regulation since December 6, 1983. NRC rulemaking is not required to impose the EPA standards. The proposed changes to Appendix A, and Criterion 5 in particular, were not intended to fully conform to or to modify the EPA standard in any way.

insert form
P37 - comment
analysis

The EPA comment that the distinction between new and existing sites was not reflected was based on the brief rationale for the proposed change rather than the changes themselves. The rationale did not address the complex site specific options provided under the EPA standard (i.e., the use of site specific alternate concentration limits as the secondary standard). Criterion 5, as modified in this rulemaking does not impact the existing/new site provisions and site specific provisions of 40 CFR 192 and no additional changes are warranted on this basis.

Specific clarification of the dual regulatory situation on ground water is needed and an insert at the beginning of Criterion 5 is being added. A minor change to provide a subject for the list of considerations in Criterion 5 is also being made for clarity.

Modification 5.(a) This change would delete language implying that seepage to ground water is acceptable if it does not change the use category.

No new issues were raised on this change.

Modification 5.(b) This change would delete language referring to bottom liners of "low permeability."

91 Comment
Commenters generally raised issues similar to those raised elsewhere on ground water. One commenter opposed this modification on technical grounds and pointed out that no material is totally impermeable and that

state-of-the-art liners have permeability ratings on the order of 10^{-12} m/sec.

Response The observation that in an absolute and theoretical sense even synthetic liners are impermeable, is correct. Commission concern is that most people reading the reference to "low permeability" will not consider the absolute or theoretical concept and that most readers would consider clay as low permeability and synthetic materials as impermeable. Deletion of "low permeability" leaves the issue of what type of liners are acceptable to the more specific EPA standards.

Modification 5.(c) This change would delete a reference to potential use category as a standard.

91 Comment Commenters questioned implementation aspects. One commenter stated that deletion would leave the issue of degree of ground-water restoration open and another that deletion allows NRC to be more restrictive in degree of restoration than the EPA standard.

Response Deletion of the requirement to restore to ground water "to its potential use before milling operations began to the maximum extent practicable," does leave the degree of restoration open. The degree of restoration will be determined on a site specific basis in accordance with the EPA ground-water protection standards.

Modification 5.(d) This change would delete references to use category and tailings in contact with ground water.

No significant new issues were raised in comments on this proposed change.

Modification 5.(e) The ground-water modifier "usable" would be deleted.

No significant new issues were raised in comments on this proposed change.

Criterion 6

Modification 6.(a) This change would delete the two picocuries per square meter per second radon flux and minimum 3-meter cover thickness provisions and insert EPA's radon flux and longevity and stabilization standard.

9/ Comment Commenters objected to incorporation of the EPA longevity and radon design standards into Criterion 6. Many of the arguments were directed against the EPA standard as being too lax to adequately protect health and the environment. *On the other hand, many commenters argued that the standard was more stringent than warranted by the risks. weac*

Response Comments directed at the validity and merits of the EPA standard were considered outside the scope of this action as noted earlier.

Comment Several commenters urged NRC to keep its more restrictive radon limit and 3-meter minimum cover. *See* Commenters urging NRC to keep its more restrictive radon limit argued that the 2 picocurie flux is ALARA, is easily met based on the Department of Energy's (DOE) Title I research experience and is cost effective. Comments urging that the 3-meter requirement be retained based their position primarily on the protection 3 meters of earth affords against erosion and intrusion.

Response The new issue raised on the radon limit is the reference to Title I research. The DOE Title I research experience compared costs for different types of cover strategies; however these studies didn't perform analyses which would result in conclusions on the warranted levels of radon releases from covered tailings. To truly investigate whether the meeting of the 2 pCi/m²s flux criterion is ALARA would

require a cost-benefit analysis, which EPA did in promulgating its standard.

Although laboratory and field experience by both DOE and NRC confirm that the 2 pCi/m²s criterion can be met, it is difficult to prove that it can be significantly maintained over the long-term due to weathering, settlement and other defect generating mechanisms. Moreover, the proximity of the 2 pCi/m²s flux to the natural radon flux from background sources introduces much uncertainty. The uncertainty is addressed in the design standard by the "reasonable assurance" implementation criterion, whereby NRC utilizes reasonably conservative parameter values in predicting the long-term radon flux. The resulting flux levels are usually much less than a factor of 10 above the 2 pCi/m²s flux criterion. Thus no ~~change~~ ^{to the rule} is needed to assure conservatism.

As noted in the rationale for the proposed change, the specific thickness of 3 meters was derived from radon flux considerations. These considerations were based on meeting the 2 picocurie or twice-background performance criteria and are clearly inconsistent with the 20 picocurie value. Effective alternatives to total reliance on soil thickness are feasible and may make more environmental and economic sense. Well designed rock covers on the tops and side slopes of reclaimed tailings can provide sufficient erosion and intruder protection so that a soil cover of less than 3 meters has been found acceptable.

^{Comment} One State objected to including the 200-year minimum longevity requirement based on the small incremental costs and practicality of meeting the longer (1,000-year) time and the longevity of the hazards from tailings.

Response The 200-year minimum longevity requirement provides relief in those unique reclamation situations where the 1,000-year criterion can be shown to be too much of a cost hardship to satisfy. The Commission views the EPA longevity standard to be 1,000 years unless site specific circumstances preclude meeting 1,000 years.

9/ Comment
One State objected to NRC's proposed use of design standards and suggested that NRC rules explicitly require proof that the design has been met by the reclamation actions.

Response The EPA longevity and radon standard is written as a design standard. Requirements to confirm adequacy of design during and after construction have merit but will be very site and design specific. Normal inspection and enforcement activities would include quality control and compliance with designs approved and specified in license conditions. If unique site circumstances warrant, a requirement to confirm design parameters after the fact is not precluded.

11 Comment
Three commenters offered clarifying suggestions. They included clarifying the reference to "permanent disposal," defining the term "disposal area," and addressing how the longevity design standard will be implemented. One commenter also suggested that the standard be clarified to make it clear, that to the extent practicable, the cover would still meet the 20 picocurie flux limit at the end of the 1,000-year design period.

Response The Commission is implementing the suggestion to clarify "permanent disposal" but believes that "disposal area" is adequately addressed in the context of the proposed changes. The suggestion to address implementation would result in a level of detail in the rule normally relegated to NRC guidance documents.

The Commission agrees that the EPA standard is not completely clear that the flux limit is to be met throughout the effective design life to the extent practicable and is clarifying this point.

Comments
 Industry opposed including any EPA standards for thorium byproduct material or ~~that~~ ^{if some standard is included that} at least explicit flexibility for site specific decisions should ^{also} be included. Industry also suggested a 50-year stabilization time period for thorium byproduct materials.

Response The comments opposing incorporation of the EPA standards for thorium byproduct material are generally expressing dissatisfaction with the EPA standard itself. The thorium standards proposed for insertion are already in effect on NRC and State licensees and are nondiscretionary. The EPA standard in 40 CFR 192.42 provides for substitute generic provisions to those in Subpart E, but with EPA concurrence. NRC has the authority to consider and approve site specific alternatives if the finding in section 84c can be made.

Modification 6.(b) This change would add the two radon flux modifying footnotes from the EPA standard that specify that no monitoring is required, averaging is allowed, and cover materials do not have to be considered in meeting the flux limit.

Comments
 Several state and environmental commenters objected to the incorporation of the EPA footnote qualifying the longevity and radon standard as a design standard not requiring confirmatory monitoring. Averaging provisions and disregard of the radon from cover materials in the footnotes were also of concern.

Response The footnotes quoted from the EPA standards in 40 CFR 192 are necessary to define how EPA intended the longevity and radon standards to be used. The footnotes set the conditions which EPA supported as a

reasonable balance of cost and benefit that would be achievable with present state of the art. The practical problems which led EPA to issue a design standard and NRC experience in radon attenuation measurements and calculations convince the Commission that flux monitoring should not be mandated. Measurement of flux levels in the field is difficult and subject to wide variations due to factors such as sensitivity to measurement methods, meteorological variations, nonhomogeneity of the tailings piles, and disturbance of the radon releases by the monitoring process. NRC's current method for providing reasonable assurance that the EPA flux standard will be met focuses on the selection and application of parameters and calculational methodology for radon barrier design. NRC expects to review quality assurance records during construction to assure that the approved design is implemented in the field. The Commission notes that Agreement States can adopt more restrictive standards than EPA or NRC and may mandate monitoring if desired.

NRC experience also supports the need for averaging over the impoundment. The tailings are not homogeneous. As a practical matter, radon transport offsite results in mixing before the public is exposed so that doses are reflected by average values. Details on calculation methods are more appropriate in guidance documents that can be tailored to site specific conditions and track state-of-the-art experience.

Concern about high radium content of cover materials is addressed in the second paragraph of the proposed modified Criterion 6. The second paragraph contains the requirements on low radium content that were already in Appendix A. The footnote only clarifies that the EPA standard applies to the tailings flux through the cover and that radon from cover materials

are not to be included in demonstrating compliance with the 20 picocurie flux.

Modification 6.(c) This change would correct a typographical error and delete the 3-meter requirement.

No new issues were raised on this change.

Modification 6.(d) This change would add the threshold radium levels for applicability of the inserted EPA standard on longevity and control of radon releases.

W Comment
 One State expressed the view that the provision allowing averaging of radium content over 100 square meters allows highly contaminated small areas to be ignored and is therefore insufficiently protective. Other comments were based on the validity and merits of the EPA standards, particularly the thorium standards.

Response The language proposed for insertion is needed to reflect the conditions under which EPA intended the longevity and radon standard to apply. The modification as proposed would allow NRC to be more restrictive if warranted by site specific conditions. NRC may require some degree of control for areas contaminated above background but below the threshold levels. ^A rule change is ^{not} needed to maintain this option on a site specific basis.

Criterion 8

Modification 7.(a) The change would add the EPA standard language on the as low as practicable goals for radon releases during operations.

W Comment
 Commenters questioned implementation aspects of the Criterion 8 change. One commenter argued for the current terminology reflected in

10 CFR Part 20 for keeping releases as low as reasonably achievable (ALARA) as the true EPA intent.

Response The Commission agrees that EPA's intent was to impose the ALARA principal and that ALARA is more consistent with Commission radiation protection policies as reflected in 10 CFR Part 20. The actual language in a standard has higher legal force than the preamble stating intent, but in this case since numerical values or other specific provisions are not involved, the Commission has more flexibility in conforming.

Modification 7.(b) These changes would add language from the EPA standard imposing 40 CFR 190 equivalent limits for thorium byproduct materials and compliance with 40 CFR Part 440, Subpart C.

91 Comment
One environmental commenter objected to the "reasonable assurance" language. Industry repeated objections to all the thorium standards. Industry recommended that waiver provisions from a recent EPA rulemaking under the Clean Air Act (50 FR 5190, February 6, 1985) be incorporated into the thorium dose limits. Industry also opposed adding the language requiring compliance with 40 CFR Part 440, Subpart C stating that these regulations are invalid since EPA lacks authority to regulate byproduct material under the Clean Water Act.

Response The proposed text was quoted verbatim from the EPA standard in 40 CFR 192. No deletions or modifications of existing NRC rules are involved.

The proposed change incorporates for clarity standards that are already binding on NRC licensees and eliminates the need to refer to 40 CFR 192 for any requirements other than ground-water protection. The waiver

provisions suggested may have merit in considering site specific situations but are outside the scope of this rulemaking. The Commission sees no merit in arguments that 40 CFR 440, Subpart C, is invalid.

Modification 8 Criteria 2, 7, 9, 10, 11, and 12 are not affected by proposed changes.

Changes to these criteria recommended by commenters are outside the scope of this rulemaking.

Modifications

~~In accordance with the above,~~ the Commission is issuing the following modifications to Appendix A to 10 CFR Part 40:

1. Introduction.

(a) In the second sentence of the third paragraph, change "amendability" to "amenability."

(b) Delete the fourth paragraph in its entirety.

(c) Add the following two paragraphs at the end: ~~¶~~ "Licensees or applicants may propose alternatives to the specific requirements in this Appendix. The alternative proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology. The Commission may find that the proposed alternatives meet the Commission's requirements if the alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with the sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the requirements of this Appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR 192, Subparts D and E."

//All site specific licensing decisions based on the criteria in this Appendix or alternatives proposed by licensees or applicants will take into account the risk to the public health and safety and the environment with due consideration to the economic costs involved and any other factors the Commission determines ~~to be~~ appropriate. In implementing this Appendix, the Commission will consider "practicable" and "reasonably achievable" as equivalent terms. Decisions involving these terms will take into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest."

2. Criterion 1.

(a) Revise the first paragraph to read:

"The general goal or broad objective in siting and design decisions is permanent isolation of tailings and associated contaminants by minimizing disturbance and dispersion by natural forces, and to do so without ongoing maintenance. For practical reasons, specific siting decisions and design standards ~~shall~~ ^{must} involve finite times (e.g., the longevity design standard in Criterion 6). The following site features which will contribute to such a goal or objective ~~shall~~ ^{must} be considered in selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites:"

(b) In the fourth paragraph delete the word "shall" and insert "should".

(c) In the second listed item of the first paragraph, delete the word "usable".

Note: Current
revision of 10 CFR
Part 40 has
not been
US EPA

3. Criterion 3.

- (a) Delete the modifiers "high quality" for groundwater in the ~~second~~ ^{third} sentence of the second paragraph.

4. Criterion 4.

- (a) Revise paragraph (a) by deleting "maximum possible flood" and inserting "floods".

5. Criterion 5.

- (a) Add the following paragraph at the beginning:

"Licensees and applicants are cautioned that the ground-water provisions of 40 CFR 192, Subparts D and E, are binding. The thrust of the EPA standards in 40 CFR 192 is nondegradation of all groundwater. The primary ground-water standard in 40 CFR 192.32(a)(1), which applies to new or expanded impoundments, does not include consideration of existing or future groundwater quality. The secondary standard in 40 CFR 192.32(a)(2) applies to management of all byproduct material including existing and new or expanded impoundments. In the secondary standard, several groundwater quality criteria are considered, especially in site specific decisions on applications for alternate concentration limits. Criterion 5 supplements and does not conflict with or modify provisions of 40 CFR 192. Until or unless the Commission undertakes additional rulemaking as described in the advance notice of proposed rulemaking published in the Federal Register on November 26, 1984 (49 FR 46425), licensees and applicants must refer to both 10 CFR Part 40 and 40 CFR Part 192 for the complete set of applicable ground-water protection requirements."

(b) Delete in its entirety the first paragraph beginning "Steps shall be taken..." and ending "...this objective." and insert the following: "In developing and conducting groundwater protection programs, applicants and licensees shall consider the following: "

(c) In the first listed item under the first paragraph beginning with "Installation of..." delete the words "low permeability" as a characteristic of bottom liners.

(d) In the second paragraph beginning "Where groundwater impacts..." delete the phrase "to its potential use before milling operations began to the maximum extent practicable."

(e) Delete in its entirety the third paragraph beginning "While the primary method of protecting ground water shall be isolation..." and ending "...from current or potential uses."

(f) In the first sentence of the fifth paragraph beginning "This information shall be gathered..." delete the word "usable" where it modifies "groundwater."

6. Criterion 6.

(a) Delete the first sentence in entirety, beginning with "Sufficient earth cover..." and ending with "...meter per second.", and in its place insert "In disposing of waste byproduct material, licensees shall place an earthen cover over tailings or wastes at the end of milling operations and ^{shall close} the waste disposal area ~~shall be closed~~ in accordance with a design¹ which ~~shall~~ provide⁵ reasonable assurance of control of radiological hazards to (i) be effective for one thousand years, to the extent reasonably achievable, and, in any case, for at least 200 years, and (ii) limit releases of radon-222 from uranium byproduct materials, and radon-220 from thorium byproduct materials, to the atmosphere so as to

not exceed an average² release rate of 20 picocuries per square meter per second (pCi/m²s) to the extent practicable throughout the effective design life determined pursuant to (i) above."

(b) Add to Criterion 6 the following two footnotes which accompany the revised first sentence: footnote (1) "The standard applies to design. Monitoring for radon after installation of an appropriately designed cover is not required," and footnote (2) "This average ~~shall~~ ^{applies} to the entire surface of each disposal area over periods of at least one year, but short compared to 100 years. Radon will come from both uranium byproduct materials and from covering materials. Radon emissions from covering materials should be estimated as part of developing a closure plan for each site. The standard, however, applies only to emissions from byproduct materials to the atmosphere."

(c) In the fifth sentence of the first paragraph, replace "non-soiled" with "non-soil," and replace the words "to reduce tailings covers to less than three meters" with the words "as cover materials."

(d) At the end of Criterion 6, add a new paragraph to read: "The design requirements in this Criterion for longevity and control of radon releases ~~shall~~ apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 square meters, which, as a result of byproduct material does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over the first 15 centimeters (cm) below the surface, and (ii) 15 pCi/g of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over 15-cm thick layers more than 15 cm below the surface."

7. Criterion 8.

(a) At the end of the first full paragraph, add a new sentence to read "During operations and prior to closure, radiation doses from radon emissions from surface impoundments ~~shall~~ ^{must} be kept as low as is reasonably achievable."

(b) Following the third full paragraph of Criterion 8, just before Criterion 8A, insert the following two new paragraphs:

"Milling operations producing or involving thorium byproduct material ~~shall~~ ^{must} be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as a result of exposures to the planned discharge of radioactive materials, radon-220 and its daughters excepted, to the general environment."

"Uranium and thorium byproduct materials ~~shall~~ ^{must} be managed so as to conform to the applicable provisions of Title 40 of the Code of Federal Regulations, Part 440, Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory, as codified on January 1, 1983."

8. Criteria 2, 7, 9, 10, 11, and 12 are not affected by this action.

The Commission is also issuing the following change to 10 CFR Part 150:

9. At the end of § 150.31, a new paragraph (d) is added to read: "In adopting requirements pursuant to paragraph (b)(2) of this section, the State may adopt alternatives (including, where appropriate, site-specific

alternatives) to the requirements adopted and enforced by the Commission for the same purpose if, after notice and opportunity for public hearing, the Commission determines that ^{the}~~such~~ alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety and the environment from radiological and nonradiological hazards associated with such sites, which is equivalent to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose and any final standards promulgated by the Administrator of the Environmental Protection Agency in accordance with section 275. ~~When~~ ^{an} alternative State requirements may take into account local or regional conditions, including geology, topography, hydrology and meteorology."

Commission Authority and Responsibility

Section 84c. of the Atomic Energy Act states that:

A Licensee may propose alternatives to specific requirements adopted and enforced by the Commission under this act. Such alternative proposals may take into account local or regional conditions, including geology, topography, hydrology and meteorology. The Commission may treat such alternatives as satisfying Commission requirements if the Commission determines that such alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety, and the environment

from radiological and nonradiological hazards associated with such sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose and any final standards promulgated by the Administrator of the Environmental Protection Agency in accordance with Section 275.

The Commission historically has had the authority and responsibility to regulate the activities of persons licensed under the Atomic Energy Act of 1954, as amended. Consistent with that authority and in accordance with ~~Section~~ 84c. of that Act, the Commission has the discretion to review and approve site specific alternatives to standards promulgated by the Commission and by the Administrator of the Environmental Protection Agency. In the exercise of this authority, ~~Section~~ 84c. does not require the Commission to obtain the concurrence of the Administrator in any site specific alternative which satisfies Commission requirements for the level of protection for public health, safety, and the environment from radiological and nonradiological hazards at uranium mill tailings sites. As an example, the Commission need not seek concurrence of the Administrator in case-by-case determinations of alternative concentration limits and delisting of hazardous constituents for specific sites. It should be understood that the proposed conforming regulations deal with the exercise of the Commission's responsibility and authority under the Atomic Energy Act of 1954, solely as regards uranium mill tailings sites and have no broader connotation.

The Commission believes that licensee proposals for alternatives

can be an important and effective way to help deal with the problems associated with implementing the new EPA standards. The Commission expects that it may require several years to have its conforming regulations fully in place. It expects to use the flexibility provided by ~~Section~~ 84 in the interim to consider and approve alternative proposals from licensees. Section 84c. provides NRC sufficient authority to independently approve alternatives so long as the Commission can make the required determination.

Impact of the Amendments

The Commission's action in issuing these modifications to its regulations in Appendix A to 10 CFR Part 40 is to conform them to the new EPA standards. These changes are for the purpose of avoiding conflicts and inconsistencies, and for clarifying previously existing language so as to be compatible with the new requirements. The action taken here by the Commission is a consequence of previous actions taken by the Congress and the EPA, and is legally mandated in ~~Section~~ 275b(3) of the Atomic Energy Act of 1954, as amended.

Commission action in this case is essentially nondiscretionary in nature, and for purposes of environmental analysis, rests upon existing environmental and other impact evaluations in the following documents: (1) "Final Environmental Impact Statement for Standards for the Control of Byproduct Materials from Uranium Ore Processing (40 CFR Part 192)," Volumes 1 and 2, EPA 520/1-83-008-1 and 2, September 1983, and (2) "Regulatory Impact Analysis of Final Environmental Standards for Uranium Mill Tailings at Active Sites," EPA 520/1-83-010, September 1983, both prepared in support of Subparts D and E of 40 CFR Part 192, and (3) "Final Generic

Indicate how interested
persons may obtain or examine
cited documents for NUREG sec.
37A

Environmental Impact Statement on Uranium Milling," NUREG-0706, September 1980, prepared in support of Appendix A of 10 CFR Part 40. The Commission believes that these supporting analyses for the EPA standards and the existing Commission regulations provide a more than adequate environmental review for the standards addressed ~~herein~~ ^{in this rulemaking}, and that no additional impact analysis is warranted by the conforming actions issued ~~herein~~ ^{in this final rule}. The EPA engaged in and completed a NEPA process with full consideration of environmental concerns, and for the purposes of this rulemaking action, can be viewed as the lead agency.

PAPERWORK REDUCTION ACT STATEMENT

This rule does not contain a new or amended information collection requirement subject to the requirements of the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.). Existing requirements were approved by the Office of Management and Budget approval number 3150-0020.

REGULATORY FLEXIBILITY CERTIFICATION

As required by the Regulatory Flexibility Act of 1980, 5 U.S.C. 605(b), the Commission certifies that this rule will not have a significant economic impact upon a substantial number of small entities. Therefore, we have not performed a Regulatory Flexibility Analysis. The basis for this finding is that of the licensed uranium mills, only one qualifies as a small entity. Almost all the mills are owned by large corporations. Three of the mills are partly-owned by companies that could qualify as small businesses, according to the Small Business Administration generic



UNITED STATES
NUCLEAR REGULATORY COMMISSION

ANNOUNCEMENT NO. 3

DATE: January 18, 1984

TO:

All NRC Employees

*Superintendent of Documents,
U.S. Government Printing Office,
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Washington DC 20013-7982.*

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To inform the public accurately and consistently about how to obtain NRC NUREG publications, we recommend that the staff use one of the following statements, as appropriate, in all Federal Register notices announcing the availability of NUREG publications:

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The availability statement ordinarily appears as the last paragraph in a notice published in the General Notice section of the Federal Register or as a footnote in a notice containing a rulemaking document.

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William J. Pesaw
William J. Pesaw, Director
Division of Technical Information
and Document Control
Office of Administration

small entity definition of 500 employees. However, under the Regulatory Flexibility Act, a small business is one that is independently owned and operated. ^{Because} Since these three mills are not independently owned they do not qualify as small entities.

5
LIST OF SUBJECTS IN 10 CFR PART 40 and 150

Part 40 -

Government contracts, Hazardous materials-transportation, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Source material, ~~and~~ Uranium.

~~LIST OF SUBJECTS IN 10 CFR PART 150~~

Part 150 -

Hazardous materials-transportation, Intergovernmental relations, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Security measures, Source material, ~~and~~ Special nuclear material.

Under the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, 5 U.S.C. 553, and the Uranium Mill Tailings Radiation Control Act of 1978, as amended, the NRC is issuing the following amendments to 10 CFR Parts 40 and 150.

PART 40 DOMESTIC LICENSING OF SOURCE MATERIAL

1. 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). Section 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).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§ 40.3, 40.25(d)(1)-(3), 40.35(a)-(d), 40.41(b) and (c), 40.46, 40.51(a) and (c), and 40.63 are issued under sec. 161b, 68 Stat. 948, as amended, (42 U.S.C. 2201(b)); and §§ 40.25(c) and (d)(3) and (4), 40.26(c)(2), 40.35(e), 40.42, 40.61, 40.62, 40.64 and 40.65 are issued under sec. 161o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Appendix A to Part 40 is revised to read as follows:

Appendix A to Part 40 - Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material From Ores Processed Primarily for Their Source Material Content.

Introduction. Every applicant for a license to possess and use source material in conjunction with uranium or thorium milling, or byproduct material at sites formerly associated with such milling, is required by the provisions of § 40.31(h) to include in a license application proposed specifications relating to milling operations and the disposition

of tailings or wastes resulting from such milling activities. This appendix establishes technical, financial, ownership, and long-term site surveillance criteria relating to the siting, operation, decontamination, decommissioning, and reclamation of mills and tailings or waste systems and sites at which such mills and systems are located. As used in this appendix, the term "as low as is reasonably achievable" has the same meaning as in § 20.1(c) of 10 CFR Part 20 of this chapter.

In many cases, flexibility is provided in the criteria to allow achieving an optimum tailings disposal program on a site-specific basis. However, in such cases the objectives, technical alternatives and concerns which must be taken into account in developing a tailings program are identified. As provided by the provisions of § 40.31(h) applications for licenses must clearly demonstrate how the criteria have been addressed.

The specifications ~~shall~~ ^(must) be developed considering the expected full capacity of tailings or waste systems and the lifetime of mill operations. Where later expansions of systems or operations may be likely (for example, where large quantities of ore now marginally uneconomical may be stock-piled), the amenability of the disposal system to accommodate increased capacities without degradation in long-term stability and other performance factors ~~shall~~ ^(must) be evaluated.

Licensees or applicants may propose alternatives to the specific requirements in this Appendix. The alternative proposals may take into account local or regional conditions, including geology, topography, hydrology, and meteorology. The Commission may find that the proposed alternatives meet the Commission's requirements if the alternatives will achieve a level of stabilization and containment of the sites concerned,

and a level of protection for public health, safety, and the environment from radiological and nonradiological hazards associated with the sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by the requirements of this Appendix and the standards promulgated by the Environmental Protection Agency in 40 CFR 192, Subparts D and E.

All site specific licensing decisions based on the criteria in this Appendix or alternatives proposed by licensees or applicants will take into account the risk to the public health and safety and the environment with due consideration to the economic costs involved and any other factors the Commission determines ~~to be~~ appropriate. In implementing this Appendix, the Commission will consider "practicable" and "reasonably achievable" as equivalent terms. Decisions involving these terms will take into account the state of technology, and the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to the utilization of atomic energy in the public interest.

I. Technical Criteria

Criterion 1--The general goal or broad objective in siting and design decisions is permanent isolation of tailings and associated contaminants by minimizing disturbance and dispersion by natural forces, and to do so without ongoing maintenance. For practical reasons, specific siting decisions and design standards ~~shall~~ ^{must} involve finite times (e.g., the longevity design standard in Criterion 6). The following site features which will contribute to such a goal or objective ~~shall~~ ^{must} be considered in selecting among alternative tailings disposal sites or judging the adequacy of existing tailings sites:

- Remoteness from populated areas;
- Hydrologic and other natural conditions as they contribute to continued immobilization and isolation of contaminants from groundwater sources; and
- Potential for minimizing erosion, disturbance, and dispersion by natural forces over the long term.

The site selection process ~~shall~~^{must} be an optimization to the maximum extent reasonably achievable in terms of these features.

In the selection of disposal sites, primary emphasis ~~shall~~^{must} be given to isolation of tailings or wastes, a matter having long-term impacts, as opposed to consideration only of short-term convenience or benefits, such as minimization of transportation or land acquisition costs. While isolation of tailings will be a function of both site and engineering design, overriding consideration ~~shall~~^{must} be given to siting features given the long-term nature of the tailings hazards.

Tailings should be disposed of in a manner that no active maintenance is required to preserve conditions of the site.

Criterion 2--To avoid proliferation of small waste disposal sites and thereby reduce perpetual surveillance obligations, byproduct material from in situ extraction operations, such as residues from solution evaporation or contaminated control processes, and wastes from small remote above ground extraction operations ~~shall~~^{must} be disposed of at existing large mill tailings disposal sites; unless, considering the nature of the wastes, such as their volume and specific activity, and the costs and environmental impacts of transporting the wastes to a large disposal site, such offsite disposal is demonstrated to be impracticable or the advantages of onsite burial clearly outweigh the benefits of reducing the perpetual surveillance obligations.

Criterion 3--The "prime option" for disposal of tailings is placement below grade, either in mines or specially excavated pits (that is, where the need for any specially constructed retention structure is eliminated).

The evaluation of alternative sites and disposal methods performed by mill operators in support of their proposed tailings disposal program (provided in applicants' environmental reports) ~~shall~~ ^{must} reflect serious consideration of this disposal mode. In some instances, below grade disposal may not be the most environmentally sound approach, such as might be the case if a groundwater formation is relatively close to the surface or not very well isolated by overlying soils and rock. Also, geologic and topographic conditions might make full below grade burial impracticable: for example, bedrock may be sufficiently near the surface that blasting would be required to excavate a disposal pit at excessive cost, and more suitable alternative sites are not available. Where full below grade burial is not practicable, the size of retention structures, and size and steepness of slopes of associated exposed embankments ~~shall~~ ^(must) be minimized by excavation to the maximum extent reasonably achievable or appropriate given the geologic and hydrologic conditions at a site. In these cases, it must be demonstrated that an above grade disposal program will provide reasonably equivalent isolation of the tailings from natural erosional forces.

Criterion 4--The following site and design criteria ~~shall~~ ^{must} be adhered to whether tailings or wastes are disposed of above or below grade.

(a) Upstream rainfall catchment areas must be minimized to decrease erosion potential and the size of the flood ^{which} could erode or wash out sections of the tailings disposal area.

(b) Topographic features should provide good wind protection.

(c) Embankment and cover slopes ~~shall~~^{must} be relatively flat after final stabilization to minimize erosion potential and to provide conservative factors of safety assuring long-term stability. The broad objective should be to contour final slopes to grades which are as close as possible to those which would be provided if tailings were disposed of below grade; this could, for example, lead to slopes of about 10 horizontal to 1 vertical (10h:1v) or less steep. In general, slopes should not be steeper than about 5h:1v. Where steeper slopes are proposed, reasons why a slope less steep than 5h:1v would be impracticable should be provided, and compensating factors and conditions which make such slopes acceptable should be identified.

(d) A full self-sustaining vegetative cover ~~shall~~^{must} be established or rock cover employed to reduce wind and water erosion to negligible levels.

Where a full vegetative cover is not likely to be self-sustaining due to climatic or other conditions, such as in semi-arid and arid regions, rock cover ~~shall~~^{must} be employed on slopes of the impoundment system. The NRC will consider relaxing this requirement for extremely gentle slopes such as those which may exist on the top of the pile.

The following factors ~~shall~~^{must} be considered in establishing the final rock cover design to avoid displacement of rock particles by human and animal traffic or by natural process, and to preclude undercutting and piping:

- shape, size, composition, and gradation of rock particles (excepting bedding material average particles size ~~shall~~^{must} be at least cobble size or greater);

- rock cover thickness and zoning of particles by size; and
- steepness of underlying slopes.

Individual rock fragments ~~shall~~^{must} be dense, sound, and resistant to abrasion, and ~~shall~~^{must} be free from cracks, seams, and other defects that would tend to unduly increase their destruction by water and frost actions. Weak, friable, or laminated aggregate ~~shall~~^{may} not be used.

Rock covering of slopes may ~~not be required~~^{be unnecessary} where top covers are very thick (on the order of 10m or greater); impoundment slopes are very gentle (on the order of 10 h:1v or less); bulk cover materials have inherently favorable erosion resistance characteristics; and, there is negligible drainage catchment area upstream of the pile and good wind protection as described in points (a) and (b) of this Criterion.

Furthermore, all impoundment surfaces ~~shall~~^{must} be contoured to avoid areas of concentrated surface runoff or abrupt or sharp changes in slope gradient. In addition to rock cover on slopes, areas toward which surface runoff might be directed ~~shall~~^{must} be well protected with substantial rock cover (rip rap). In addition to providing for stability of the impoundment system itself, overall stability, erosion potential, and geomorphology of surrounding terrain ~~shall~~^{must} be evaluated to assure that there are not ongoing or potential processes, such as gully erosion, which would lead to impoundment instability.

(e) The impoundment ~~shall~~^{may} not be located near a capable fault that could cause a maximum credible earthquake larger than that which the impoundment could reasonably be expected to withstand. As used in this criterion, the term "capable fault" has the same meaning as defined in § III(g) of Appendix A of 10 CFR 100. The term "maximum credible earthquake" means that earthquake which would cause the maximum vibratory

Again in most sections,
conventions may not express
a prohibition

ground motion based upon an evaluation of earthquake potential considering the regional and local geology and seismology and specific characteristics of local subsurface material.

(f) The impoundment, where feasible, should be designed to incorporate features which will promote deposition. For example, design features which promote deposition of sediment suspended in any runoff which flows into the impoundment area might be utilized; the object of such a design feature would be to enhance the thickness of cover over time.

Criterion 5--Licensees and applicants are cautioned that the groundwater provisions of 40 CFR 192, Subparts D and E, are binding. The thrust of the EPA standards in 40 CFR 192 is nondegradation of all groundwater. The primary groundwater standard in 40 CFR 192.32(a)(1), which applies to new or expanded impoundments, does not include consideration of existing or future groundwater quality. The secondary standard in 40 CFR 192.32(a)(2) applies to management of all byproduct material including existing and new or expanded impoundments. In the secondary standard, several groundwater quality criteria are considered, especially in site specific decisions on applications for alternate concentration limits. Criterion 5 supplements and does not conflict with or modify provisions of 40 CFR 192. Until or unless the Commission undertakes additional rulemaking as described in the advance notice of proposed rulemaking published in the Federal Register on November 26, 1984 (49 FR 46425), licensees and applicants must refer to both 10 CFR Part 40 and 40 CFR Part 192 for the complete set of applicable ground-water protection requirements.

In developing and conducting groundwater protection programs, applications^{nts} and licensees shall consider the following:

- Installation of bottom liners (Where synthetic liners are used, a leakage detection system ~~shall~~^{must} be installed immediately below the liner to ensure major failures are detected if they occur. This is in addition to the groundwater monitoring program conducted as provided in Criterion 7. Where clay liners are proposed or relatively thin, in-situ clay soils are to be relied upon for seepage control, tests ~~shall~~^{must} be conducted with representative tailings solutions and clay materials to confirm that no significant deterioration of permeability or stability properties will occur with continuous exposure of clay to tailings solutions. Tests ~~shall~~^{must} be run for a sufficient period of time to reveal any effects if they are going to occur (in some cases deterioration has been observed to occur rather rapidly after about nine months of exposure)).
- Mill process designs which provide the maximum practicable recycle of solutions and conservation of water to reduce the net input of liquid to the tailings impoundment.
- Dewatering of tailings by process devices and/or in-situ drainage systems (At new sites, tailings ~~shall~~^{must} be dewatered by a drainage system installed at the bottom of the impoundment to lower the phreatic surface and reduce the driving head for seepage, unless tests show tailings are not amenable to such a system. Where in-situ dewatering is to be conducted, the impoundment bottom ~~shall~~^{must} be graded to assure that the drains are at a low point. The drains ~~shall~~^{must} be protected by suitable filter materials to assure that drains remain free running. The drainage system ~~shall~~^{must} also be adequately sized to assure good drainage).
- Neutralization to promote immobilization of toxic substances.

Where groundwater impacts are occurring at an existing site due to seepage, action ~~shall~~^{must} be taken to alleviate conditions that lead to excessive seepage impacts and restore groundwater quality. The specific seepage control and groundwater protection method, or combination of methods, to be used must be worked out on a site-specific basis. Technical specifications ~~shall~~^{must} be prepared to control installation of seepage control systems. A quality assurance, testing, and inspection program, which includes supervision by a qualified engineer or scientist, ~~shall~~^{must} be established to assure the specifications are met.

In support of a tailings disposal system proposal, the applicant/operator shall supply information concerning the following:

- The chemical and radioactive characteristics of the waste solutions.
- The characteristics of the underlying soil and geologic formations particularly as they will control transport of contaminants and solutions. This ~~shall~~^{is} include detailed information concerning extent, thickness, uniformity, shape, and orientation of underlying strata. Hydraulic gradients and conductivities of the various formations ~~shall~~^(must) be determined.

This information ~~shall~~^{must} be gathered from borings and field survey methods taken within the proposed impoundment area and in surrounding areas where contaminants might migrate to groundwater. The information gathered on boreholes ~~shall~~^{must} include both geologic and geophysical logs in sufficient number and degree of sophistication to allow determining significant discontinuities, fractures, and channeled deposits of high hydraulic conductivity. If field survey methods are used, they should be in addition to and calibrated with borehole logging. Hydrologic

parameters such as permeability ~~shall~~^{may} not be determined on the basis of laboratory analysis of samples alone; a sufficient amount of field testing (e.g., pump tests) ~~shall~~^{must} be conducted to assure actual field properties are adequately understood. Testing ~~shall~~^{must} be conducted to allow estimating chemi-sorption attenuation properties of underlying soil and rock.

- Location, extent, quality, capacity and current uses of any groundwater at and near the site.

Furthermore, steps ~~shall~~^{must} be taken during stockpiling of ore to minimize penetration of radionuclides into underlying soils; suitable methods include lining and/or compaction of ore storage areas.

Criterion 6--In disposing of waste byproduct material, licensees shall place an earthen cover over tailings or wastes at the end of milling operations and, ~~the waste disposal area shall be closed~~^{shall close} in accordance with a design¹ which ~~shall~~^{will} provide reasonable assurance of control of radiological hazards to (i) be effective for 1,000 years, to the extent reasonably achievable, and, in any case, for at least 200 years, and (ii) limit releases of radon-222 from uranium byproduct materials, and radon-220 from thorium byproduct materials, to the atmosphere so as to not exceed an average² release rate of 20 picocuries per square meter per second (pCi/m²s) to the extent practicable throughout the effective

¹The standard applies to design. Monitoring for radon after installation of an appropriately designed cover is not required. (ies)

²This average ~~shall~~ apply to the entire surface of each disposal area over periods of at least 1 year, but short compared to 100 years. Radon will come from both uranium byproduct materials and from covering materials. Radon emissions from covering materials should be estimated as part of developing a closure plan for each site. The standard, however, applies only to emissions from uranium byproduct materials to the atmosphere.

design life determined pursuant to (i) above. In computing required tailings cover thicknesses, moisture in soils in excess of amounts found normally in similar soils in similar circumstances ~~shall~~^{may} not be considered. Direct gamma exposure from the tailings or wastes should be reduced to background levels. The effects of any thin synthetic layer ~~shall~~^{may} not be taken into account in determining the calculated radon exhalation level. If non-soil materials are proposed as cover materials, it must be demonstrated that such materials will not crack or degrade by differential settlement, weathering, or other mechanism, over long-term time intervals.

Near surface cover materials (i.e., within the top three meters) ~~shall~~^{may} not include waste or rock that contains elevated levels of radium; soils used for near surface cover must be essentially the same, as far as radioactivity is concerned, as that of surrounding surface soils. This is to ensure that surface radon exhalation is not significantly above background because of the cover material itself.

The design requirements in this criterion for longevity and control of radon releases ~~shall~~ apply to any portion of a licensed and/or disposal site unless such portion contains a concentration of radium in land, averaged over areas of 100 square meters, which, as a result of byproduct material does not exceed the background level by more than: (i) 5 picocuries per gram (pCi/g) of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over the first 15 centimeters (cm) below the surface, and (ii) 15 pCi/g of radium-226, or, in the case of thorium byproduct material, radium-228, averaged over 15-cm thick layers more than 15 cm below the surface.

Criterion 7--At least one full year prior to any major site construction, a preoperational monitoring program ~~shall~~^{must} be conducted to provide

complete baseline data on a milling site and its environs. Throughout the construction and operating phases of the mill, an operational monitoring program ~~shall~~^{must} be conducted to measure or evaluate compliance with applicable standards and regulations; to evaluate performance of control systems and procedures; to evaluate environmental impacts of operation; and to detect potential long-term effects.

Criterion 8--Milling operations ~~shall~~^{must} be conducted so that all airborne effluent releases are reduced to levels as low as is reasonably achievable. The primary means of accomplishing this ~~shall~~^{must} be by means of emission controls. Institutional controls, such as extending the site boundary and exclusion area, may be employed to ensure that offsite exposure limits are met, but only after all practicable measures have been taken to control emissions at the source. Notwithstanding the existence of individual dose standards, strict control of emissions is necessary to assure that population exposures are reduced to the maximum extent reasonably achievable and to avoid site contamination. The greatest potential sources of offsite radiation exposure (aside from radon exposure) are dusting from dry surfaces of the tailings disposal area not covered by tailings solution and emissions from yellowcake drying and packaging operations. During operations and prior to closure, radiation doses from radon emissions from surface impoundments of uranium or thorium byproduct materials ~~shall~~^{must} be kept as low as is reasonably achievable.

Checks ~~shall~~^{must} be made and logged hourly of all parameters (e.g., differential pressures and scrubber water flow rates) which determine the efficiency of yellowcake stack emission control equipment operation.

It ~~shall~~^{must} be determined whether or not conditions are within a range prescribed to ensure that the equipment is operating consistently near peak efficiency; corrective action ~~shall~~^{must} be taken when performance is outside of prescribed ranges. Effluent control devices ~~shall~~^{must} be operative at all times during drying and packaging operations and whenever air is exhausting from the yellowcake stack. Drying and packaging operations ~~shall~~^{must} terminate when controls are inoperative. When checks indicate the equipment is not operating within the range prescribed for peak efficiency, actions ~~shall~~^{must} be taken to restore parameters to the prescribed range. When this cannot be done without shutdown and repairs, drying and packaging operations ~~shall~~^{must} cease as soon as practicable. Operations may not be re-started after cessation due to off-normal performance until needed corrective actions have been identified and implemented. All such cessations, corrective actions, and re-starts ~~shall~~^{must} be reported to the appropriate NRC regional office as indicated in Criterion 8A, in writing, within 10 days of the subsequent restart.

To control dusting from tailings, that portion not covered by standing liquids ~~shall~~^{must} be wetted or chemically stabilized to prevent or minimize blowing and dusting to the maximum extent reasonably achievable. This requirement may be relaxed if tailings are effectively sheltered from wind, such as may be the case where they are disposed of below grade and the tailings surface is not exposed to wind. Consideration ~~shall~~^{must} be given in planning tailings disposal programs to methods which would allow phased covering and reclamation of tailings impoundments ~~since~~^{because} this will help in controlling particulate and radon emissions during operation. To control dusting from diffuse sources, such as tailings and ore pads where

automatic controls do not apply, operators shall develop written operating procedures specifying the methods of control which will be utilized.

Milling operations producing or involving thorium byproduct material ~~shall~~^{must} be conducted in such a manner as to provide reasonable assurance that the annual dose equivalent does not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other organ of any member of the public as a result of exposures to the planned discharge of radioactive materials, radon-220 and its daughters excepted, to the general environment.

Uranium and thorium byproduct materials ~~shall~~^{must} be managed so as to conform to the applicable provisions of Title 40 of the Code of Federal Regulations, Part 440, "Ore Mining and Dressing Point Source Category: Effluent Limitations Guidelines and New Source Performance Standards, Subpart C, Uranium, Radium, and Vanadium Ores Subcategory," as codified on January 1, 1983.

Criterion 8A--Daily inspections of tailings or waste retention systems ~~shall~~^{must} be conducted by a qualified engineer or scientist and documented.

The appropriate NRC regional office as indicated in Appendix D of 10 CFR Part 20, or the Director, Office of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555, ~~shall~~^{must} be immediately notified of any failure in a tailings or waste retention system which results in a release of tailings or waste into unrestricted areas, and/or of any unusual conditions (conditions not contemplated in the design of the retention system) which if not corrected could indicate the potential or lead to failure of the system and result in a release of tailings or waste into unrestricted areas.

II. Financial Criteria

Criterion 9--Financial surety arrangements ~~shall~~^{must} be established by each mill operator prior to the commencement of operations to assure that sufficient funds will be available to carry out the decontamination and decommissioning of the mill and site and for the reclamation of any tailings or waste disposal areas. The amount of funds to be ensured by such surety arrangements ~~shall~~^{must} be based on Commission-approved cost estimates in a Commission-approved plan for (1) decontamination and decommissioning of mill buildings and the milling site to levels which would allow unrestricted use of these areas upon decommissioning, and (2) the reclamation of tailings and/or waste disposal areas in accordance with technical criteria delineated in Section I of this Appendix. The licensee shall submit this plan in conjunction with an environmental report that addresses the expected environmental impacts of the milling operation, decommissioning and tailings reclamation, and evaluates alternatives for mitigating these impacts. The surety ~~shall~~^{must} also cover the payment of the charge for long-term surveillance and control required by Criterion 10. In establishing specific surety arrangements, the licensee's cost estimates ~~shall~~^{must} take into account total costs that would be incurred if an independent contractor were hired to perform the decommissioning and reclamation work. In order to avoid unnecessary duplication and expense, the Commission may accept financial sureties that have been consolidated with financial or surety arrangements established to meet requirements of other Federal or state agencies and/or local governing bodies for such decommissioning, decontamination, reclamation, and long-term site surveillance and control, provided such arrangements are considered adequate to satisfy these

requirements and that the portion of the surety which covers the decommissioning and reclamation of the mill, mill tailings site and associated areas, and the long-term funding charge is clearly identified and committed for use in accomplishing these activities. The licensee's surety mechanism will be reviewed annually by the Commission to assure that sufficient funds would be available for completion of the reclamation plan if the work had to be performed by an independent contractor. The amount of surety liability should be adjusted to recognize any increases or decreases resulting from inflation, changes in engineering plans, activities performed, and any other conditions affecting costs. Regardless of whether reclamation is phased through the life of the operation or takes place at the end of operations, an appropriate portion of surety liability ~~shall~~ *(must)* be retained until final compliance with the reclamation plan is determined. This will yield a surety that is at least sufficient at all times to cover the costs of decommissioning and reclamation of the areas that are expected to be disturbed before the next license renewal. The term of the surety mechanism must be open ended, unless it can be demonstrated that another arrangement would provide an equivalent level of assurance. This assurance could be provided with a surety instrument which is written for a specified period of time (e.g., 5 years) yet which must be automatically renewed unless the surety notifies the beneficiary (the Commission or the State regulatory agency) and the principal (the licensee) some reasonable time (e.g., 90 days) prior to the renewal date of their intention not to renew. In such a situation the surety requirement still exists and the licensee would be required to submit an acceptable replacement surety within a brief period of time to allow at least 60 days for the regulatory agency to collect.

Proof of forfeiture ~~must~~^{shall} not be necessary to collect the surety so that in the event that the licensee could not provide an acceptable replacement surety within the required time, the surety ~~shall~~^{must} be automatically collected prior to its expiration. The conditions described above would have to be clearly stated on any surety instrument which is not open-ended, and must be agreed to by all parties. Financial surety arrangements generally acceptable to the Commission are:

- (a) Surety bonds;
- (b) Cash deposits;
- (c) Certificates of deposit;
- (d) Deposits of government securities;
- (e) Irrevocable letters or lines of credit; and

(f) Combinations of the above or such other types of arrangements as may be approved by the Commission. However, self insurance, or any arrangement which essentially constitutes self insurance (e.g., a contract with a state or Federal agency), will not satisfy the surety requirement since this provides no additional assurance other than that which already exists through license requirements.

Criterion 10--A minimum charge of \$250,000 (1978 dollars) to cover the costs of long-term surveillance ~~shall~~^{must} be paid by each mill operator to the general treasury of the United States or to an appropriate State agency prior to the termination of a uranium or thorium mill license.

If site surveillance or control requirements at a particular site are determined, on the basis of a site-specific evaluation, to be significantly greater than those specified in Criterion 12 (e.g., if fencing is determined to be necessary), variance in funding requirements may be specified by the Commission. In any case, the total charge to cover the costs

of long-term surveillance ~~shall~~^{must} be such that, with an assumed 1 percent annual real interest rate, the collected funds will yield interest in an amount sufficient to cover the annual costs of site surveillance. The total charge will be adjusted annually prior to actual payment to recognize inflation. The inflation rate to be used is that indicated by the change in the Consumer Price Index published by the U.S. Department of Labor, Bureau of Labor Statistics.

III. Site and Byproduct Material Ownership

Criterion 11--

A. These criteria relating to ownership of tailings and their disposal sites become effective on November 8, 1981, and apply to all licenses terminated, issued, or renewed after that date.

B. Any uranium or thorium milling license or tailings license ~~shall~~^{must} contain such terms and conditions as the Commission determines necessary to assure that prior to termination of the license, the licensee will comply with ownership requirements of this criterion for sites used for tailings disposal.

C. Title to the byproduct material licensed under this Part and land, including any interests therein (other than land owned by the United States or by a State) which is used for the disposal of any such byproduct material, or is essential to ensure the long term stability of such disposal site, ~~shall~~^{must} be transferred to the United States or the State in which such land is located, at the option of such State. In view of the fact that physical isolation must be the primary means of long-term control, and Government land ownership is a desirable supplementary measure, ownership of certain severable subsurface interests

(for example, mineral rights) may be determined to be unnecessary to protect the public health and safety and the environment. In any case, however, the applicant/operator must demonstrate a serious effort to obtain such subsurface rights, and must, in the event that certain rights cannot be obtained, provide notification in local public land records of the fact that the land is being used for the disposal of radioactive material and is subject to either an NRC general or specific license prohibiting the disruption and disturbance of the tailings. In some rare cases, such as may occur with deep burial where no ongoing site surveillance will be required, surface land ownership transfer requirements may be waived. For licenses issued before November 8, 1901, the Commission may take into account the status of the ownership of such land, and interests therein, and the ability of a licensee to transfer title and custody thereof to the United States or a State.

D. If the Commission subsequent to title transfer determines that use of the surface or subsurface estates, or both, of the land transferred to the United States or to a State will not endanger the public health, safety, welfare, or environment, the Commission may permit the use of the surface or subsurface estates, or both, of such land in a manner consistent with the provisions provided in these criteria. If the Commission permits such use of such land, it will provide the person who transferred such land with the right of first refusal with respect to such use of such land.

E. Material and land transferred to the United States or a State in accordance with this Criterion ~~shall~~ ^{must} be transferred without cost to the United States or a State other than administrative and legal costs incurred in carrying out such transfer.

F. The provisions of this Part respecting transfer of title and custody to land and tailings and wastes ~~shall~~^{may} not apply in the case of lands held in trust by the United States for any Indian tribe or lands owned by such Indian tribe subject to a restriction against alienation imposed by the United States. In the case of such lands which are used for the disposal of byproduct material, as defined in this Part, the licensee shall enter into arrangements with the Commission as may be appropriate to assure the long-term surveillance of such lands by the United States.

IV. Long-Term Site Surveillance

Criterion 12--The final disposition of tailings or wastes at milling sites should be such that ongoing active maintenance is not necessary to preserve isolation. As a minimum, annual site inspections ~~shall~~^{must} be conducted by the government agency retaining ultimate custody of the site where tailings, or wastes are stored to confirm the integrity of the stabilized tailings or waste systems and to determine the need, if any, for maintenance and/or monitoring. Results of the inspection ~~shall~~^{must} be reported to the Commission within 60 days following each inspection. The Commission may require more frequent site inspections if, on the basis of a site-specific evaluation, such a need appears necessary due to the features of a particular tailings or waste disposal system.

PART 150 - EXEMPTIONS AND CONTINUED REGULATORY AUTHORITY IN AGREEMENT
STATES AND IN OFFSHORE WATERS UNDER SECTION 274

§ 150.31 Requirements for Agreement State regulation of byproduct material.

* * * * *

3. ~~A new paragraph (d) is added to read as follows:~~ ^{91(d)} "In adopting requirements pursuant to paragraph (b)(2) of this section, the State may adopt alternatives (including, where appropriate, site-specific alternatives) to the requirements adopted and enforced by the Commission for the same purpose if, after notice and opportunity for public hearing, the Commission determines that ^{the} ~~such~~ alternatives will achieve a level of stabilization and containment of the sites concerned, and a level of protection for public health, safety and the environment from radiological and nonradiological hazards associated with ^{the} ~~such~~ sites, which is equivalent to, to the extent practicable, or more stringent than the level which would be achieved by standards and requirements adopted and enforced by the Commission for the same purpose and any final standards promulgated by the Administrator of the Environmental Protection Agency in accordance with section 275. ~~Such~~ the alternative State requirements may take into account local or regional conditions, including geology, topography, hydrology and meteorology."

Dated at Washington, DC, this ____ day of _____, 1985.

For The Nuclear Regulatory Commission.

Samuel J. Chilk,
Secretary of the Commission.

Insert
60 A

3. The authority citation for Part 150 continues to read as follows:

Authority: Sec. 161, 68 Stat. 948, as amended, sec. 274, 73 Stat. 638 (42 U.S.C. 2201, 2021); sec. 201, 88 Stat. 1242, as amended (42 U.S.C. 5841).

Sections 150.3, 150.15, 150.15a, 150.31, 150.32 also issued under secs. 11e(2), 81, 68 Stat. 923, 935, as amended, secs. 83, 84, 92 Stat. 3033, 3039 (42 U.S.C. 2014e(2), 2111, 2113, 2114). Section 150.14 also issued under sec. 53, 68 Stat. 930 (42 U.S.C. 2073). Section 150.17a also issued under sec. 122, 68 Stat. 939 (42 U.S.C. 2152). Section 150.30 also issued under sec. 234, 83 Stat. 444 (42 U.S.C. 2282).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273); §§150.20(b)(2)-(4) and 150.21 are issued under sec. 161b, 68 Stat. 948, as amended (42 U.S.C. 2201(b)); §150.14 is issued under sec. 161i, 68 Stat. 949, as amended (42 U.S.C. 2201(i)); and §§150.16-150.19 and 150.21(b)(1) are issued under sec. 1610, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

4. In §150.31, paragraph (d) is added to read as follows: