



UNITED STATES DEPARTMENT OF COMMERCE
National Bureau of Standards
Gaithersburg, Maryland 20899

July 16, 1986

Walton R. Kelly
U.S. Nuclear Regulatory Commission
MS 623-SS
Washington, DC 20555

Dear Mr. Kelly:

Attached you will find an announcement for the International Conference on Thermodynamics of Aqueous Systems with Industrial Applications, which some are calling the Airlie House II.

You may have attended its predecessor, which was held in 1978, or be familiar with the published account of its proceedings, ACS Symposium Series 133. A great many of our colleagues have expressed how valuable they thought the first conference was and all agreed that it is about time for a second convening. The first conference was notable for bringing together a broad spectrum of academic and industrial researchers, many of whom typically do not find themselves at the same technical gatherings. We are hoping for similar representation at this conference.

As co-chairman of the experimental data and techniques session, I would like to invite you to submit an abstract for consideration in this session. My co-chairman is Prof. Dimitri Sverjensky of the Earth Sciences Department at Johns Hopkins University and we are striving to prepare an interdisciplinary program which will highlight new measurement techniques from both the physical and earth sciences and will illustrate the extent to which fundamental study of aqueous systems fulfills a common need in both process and environmental engineering applications.

We are planning to have the proceedings published so a written paper will be required at some time prior to the meeting. Presentations will be strictly limited to 20 minutes and a page limit of 6 pages is anticipated at this point.

If you can not submit an abstract, I certainly hope that you will still be able to attend. If you feel that one of the other listed topics is more suitable, I can forward any contribution to the appropriate chairman or tell you who to contact. In any event, an indication of your intentions at this juncture would be helpful and greatly appreciated.

Cordially,

David Smith-Magowan
Electrolyte Data Center

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Enclosure

Third Announcement

INTERNATIONAL CONFERENCE ON
THERMODYNAMICS OF AQUEOUS SYSTEMS
WITH INDUSTRIAL APPLICATIONS

May 10-14, 1987

Airlie House, Warrenton, Virginia (near Washington, DC)

Experimental Data and Techniques
Basic Theory
Correlation and Estimation Techniques
Data Compilations
Computer Calculation of Equilibria
Industrial Applications
New Directions

The conference is sponsored by the Design Institute for Physical Property Data (DIPPR) of the American Institute of Chemical Engineers, the National Bureau of Standards and the National Science Foundation. Attendance will be approximately 150 from industry, government, and academia.

Abstracts of proposed papers should be submitted by September 1, 1986. Registration material will be available September 1, 1986.

F. - further information, contact:

Technical Material

Dr. Noel C. Scrivner
E. I. du Pont de Nemours & Co.
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Registration Material

Ms. Mary Pat Healy
DIPPR-AICHe.
345 East 47th Street
New York, NY 10017
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Proposed Rules

Federal Register

Vol. 51, No. 118

Thursday, June 19, 1986

This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF JUSTICE

Immigration and Naturalization Service

8 CFR Part 103

Powers and Duties of Service Officers; Availability of Service Records

Correction

In FR Doc. 86-12144 beginning on page 19559 in the issue of Friday, May 30, 1986, make the following correction:

On page 19560, first column, in mandatory instruction 2, third line, "(b)(3)" should have read "(b)(2)".

BILLING CODE 1605-01-M

NUCLEAR REGULATORY COMMISSION

10 CFR Part 60

Disposal of High-Level Radioactive Wastes in Geologic Repositories; Conforming Amendments

AGENCY: Nuclear Regulatory Commission.

ACTION: Proposed rule.

SUMMARY: The Nuclear Regulatory Commission (NRC) is proposing to amend its regulations for disposal of high-level radioactive wastes in geologic repositories. The amendments are necessary to conform existing NRC regulations to the environmental standards for management and disposal of high-level radioactive wastes promulgated by the Environmental Protection Agency (EPA) on September 19, 1985. The proposed rule would incorporate all the substantive requirements of the environmental standards and make several changes in the wording used by EPA in order to maintain consistency with the current wording of the NRC regulations.

DATE: Comment period expires August 18, 1986. Comments received after this date will be considered if it is practical to do so, but assurance of consideration

cannot be given except as to comments received on or before this date.

ADDRESSES: Written comments may be submitted to the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555, Attention: Docketing and Services Branch. Comments may also be delivered to Room 1121, 1717 H Street NW., Washington, DC, from 8:15 a.m. to 5:00 p.m. weekdays. Copies of the documents referred to in this notice and comments received may be examined at the NRC Public Document Room, 1717 H Street NW., Washington, DC.

FOR FURTHER INFORMATION CONTACT: Daniel J. Fehringer, Division of Waste Management, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, telephone (301) 427-4796.

SUPPLEMENTARY INFORMATION:

Background

Section 121 of the Nuclear Waste Policy Act of 1982 (NWPA), 42 U.S.C. 10141, directs the Environmental Protection Agency (EPA) to "promulgate generally applicable standards for protection of the general environment from offsite releases from radioactive material in repositories." EPA published its final high-level radioactive waste (HLW) standards in the Federal Register on September 19, 1985 (50 FR 38066). Section 121 of the NWPA further specifies that the regulations of the NRC "shall not be inconsistent with any comparable standards promulgated by [EPA]."

The Nuclear Regulatory Commission has previously published rules (10 CFR Part 60, 46 FR 13980, February 25, 1981, 48 FR 28204, June 21, 1983) which established procedures and technical criteria for disposal of HLW in a geologic repository by the U.S. Department of Energy (DOE). This notice describes the interpretations and analyses which the Commission considers to be appropriate for implementation of the EPA standards, and identifies modifications to the Commission's regulations which are considered appropriate to maintain consistency with the standards promulgated by EPA.

It should be noted that "working draft" versions of the EPA standards were available to the Commission when Part 60 was being developed, and the Commission structured its regulations to

be compatible with those draft standards. (See, for example, 48 FR 28195-28205, June 21, 1983, where the Commission discussed its final technical criteria, and NUREG-0804, the staff's analysis of public comments on the proposed technical criteria. NUREG-0804 is available in the NRC Public Document Room.) Since many of the general features of the "working drafts" remain present in the final standards, Part 60 is largely consistent with those standards. EPA has, however, sometimes used different terminology to describe concepts already present in Part 60. To maintain the overall structure of Part 60, and to avoid introduction of duplicative terminology which could prove confusing in a licensing review, the Commission prefers to retain its own established terms. Most of the amendments to Part 60 proposed in this notice involve direct incorporation within Part 60 of the substantive requirements of the EPA standards, reworded as necessary to conform to the terminology of Part 60. (Additional proposed amendments derive from EPA's "assurance requirements," as discussed in Section III of this notice. One further amendment, unrelated to the EPA standards, is proposed for clarification of existing wording in Part 60.) With the issuance of this rule, no substantive changes are intended in the requirements of the EPA standards or in the environmental protection they afford.

The EPA standards specify certain limits on radiation exposures and releases of radioactive material during two principal stages: First, the period of management and storage operations at a repository and, second, the long-term period after waste disposal has been completed. These standards, and the proposed rules to implement them during operations and after closure, are discussed in section I below, while section II provides some further observations regarding the manner in which the Commission intends to apply the EPA standards in its licensing proceedings. Section III describes additional proposed rules related to certain "assurance requirements" which are present in EPA's standards but which are not applicable to NRC-licensed facilities. In order to avoid potential jurisdictional problems which might arise if this section of the EPA

standards were applied to NRC-licensed facilities, the NRC is proposing to add substantially equivalent provisions to its regulations. Finally, this notice presents a section-by-section analysis of the proposed rule (section IV), followed by the specific text of the proposed amendments to Part 60. (The organization of section IV follows that of Part 60 while the text of section I is organized to present a section-by-section discussion of the EPA standards. Parts of section IV are therefore repetitions of information presented in section I.)

I. Limits on Exposures and Releases

The limits established by EPA for the period of repository operations appear at 40 CFR 191.03. The limits applicable to the period after disposal include "containment requirements" (limits on cumulative releases of radionuclides to the environment for 10,000 years) in § 191.13, "individual protection requirements" in § 191.15, and "ground water protection requirements" in § 191.16. Implementation of each of these sections is discussed in the following paragraphs.

Standards for repository operations (§ 191.03). The standards for repository operations are virtually identical to the standards previously promulgated by EPA for the uranium fuel cycle (42 FR 2860, January 13, 1977), and will be implemented in the same manner.¹ DOE will be expected to demonstrate, through analyses of anticipated facility performance, that the dose limits of these standards, as well as the standards for protection against radiation set out in 10 CFR Part 20, will not be exceeded. Releases of radionuclides and resulting doses during operations are amenable to monitoring, and DOE will be required to conduct a monitoring program to confirm that the limits are complied with. Section 60.111(a) would be amended to include the EPA dose limits. Section 60.101(a)(2) already includes a provision requiring "reasonable assurance" that the release limits be achieved, and it is not necessary to repeat this language in the

¹ It should be noted that a potential ambiguity exists in this section of EPA's HLW standards and in EPA's uranium fuel cycle standards. Both standards limits the annual dose equivalent to any member of the public to "25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other critical organ" (emphasis added). The Commission has always interpreted these limits as if the word "and" were replaced by "or." Thus, the Commission would not consider it acceptable to allow an annual dose equivalent of 25 millirems to the whole body and an additional 25 millirems to any other organ. The Commission will continue to implement these limits as it has in the past, but will encourage EPA to clarify the wording quoted above.

release limits of § 60.111. It is also not necessary to employ the terms "management" and "storage," as EPA has done, since all preclosure repository operations are already subject to the provisions of § 60.111.

Postclosure standards. The EPA postclosure standards are all expressed in terms of a "reasonable expectation" of meeting specified levels of performance. EPA explained that it selected this term because "reasonable assurance" has come to be associated with a level of confidence that may not be appropriate for the very long-term analytical projections that are called for by 191.13." The Commission is sensitive to the need to account for the uncertainties involved in predicting performance over 10,000 years, and the difficulties as well as the importance of doing so. The Commission has attempted to address this concern in the existing language of § 60.101(a)(2). That section requires a finding of reasonable assurance, "making allowance for the time period, hazards, and uncertainties involved, that the outcome will be in conformance" with the relevant criteria. Rather than adopt an additional concept such as "reasonable expectation," the Commission proposes to add additional explanatory text, derived from EPA's wording, to its existing discussion of reasonable assurance. This text will make clear the Commission's belief that its concept of reasonable assurance, although somewhat different from previous usage in reactor licensing, is appropriate for evaluations of repository performance where long-term issues and substantial uncertainties are inherent in projections of repository performance. The Commission considers that the level of confidence associated with its concept of reasonable assurance is the same as that sought by EPA in the use of the term "reasonable expectation."

In the case of the *individual protection requirements* (40 CFR 191.15), the standards limit the annual dose equivalent to any member of the public in the accessible environment. A new provision in § 60.112(b) is proposed that would include the dose limits established by EPA as well as the additional specifications, which the Commission finds to be reasonable, with regard to consideration of all pathways including consumption of drinking water from a "significant source of ground water," as defined by EPA.

The EPA standards require that the individual protection requirements be achieved only for "undisturbed performance" of a geologic repository ("disposal system" in EPA's terminology). The proposed amendment

to Part 60 makes no reference to "undisturbed performance." Instead, it provides that the standard is to be met "in the absence of unanticipated processes and events." The Commission considers the concepts of undisturbed performance and the absence of unanticipated processes and events to be identical. As used by EPA (40 CFR 191.12(p)), "undisturbed performance" refers to the predicted behavior of a disposal system if it is "not disrupted by human intrusion or the occurrence of unlikely natural events." Since human intrusion and unlikely natural processes and events are precisely the types of "unanticipated processes and events" defined in § 60.2, the two concepts are the same. Thus, the Commission considers that the phrase "in the absence of unanticipated processes and events" has the same meaning as "undisturbed performance" in the EPA standards. To maintain the overall structure of Part 60, and to avoid introduction of duplicative language, the Commission prefers to retain its own established terms.

The engineered barriers of a repository will, in many cases, be instrumental in achieving compliance with both the individual protection requirements and the groundwater protection requirements discussed below. The Commission notes that the existing provisions of Part 60 require the engineered barriers of a repository to achieve their containment and release rate performance objectives "assuming anticipated processes and events." Thus, equating "undisturbed performance" with "anticipated processes and events" causes no change in the types of conditions for which the engineered barriers must be designed.

The *ground water protection requirements* (40 CFR 191.16) focus on the quality of any "special source of ground water," which is defined, generally, as a source of drinking water in an area that includes and surrounds the geologic repository. This area extends for five kilometers beyond the controlled area. The standard applies to water "withdrawn" from such a special source. The Commission is proposing to include the EPA standard as a new performance objective (§ 60.112(c)). Once again the rule applies in the absence of unanticipated processes and events instead of "undisturbed performance."

The *containment requirements* (40 CFR 191.13) restrict the total amount of radioactive material released to the environment for 10,000 years following permanent closure of a repository. EPA provides a table listing release limits for

the significant radionuclides present in HLW or spent fuel. The values in this table were derived, based on environmental transport and dosimetry considerations, so that the amount of each radionuclide listed in the table will, if released to the environment, produce approximately the same number of population health effects. The standard further specifies different release limits for releases with differing likelihoods of occurrence. The Commission is proposing to incorporate these requirements as a new performance objective (§ 60.112(a)), along with a new § 60.115 containing EPA's table of release limits.

The regulation goes on to state that the disposal systems shall be designed to provide a reasonable expectation—"based on performance assessments"—that the release limits are satisfied. While the proposed amendments incorporate most of the EPA standard in its precise terms, they omit the reference to performance assessments. Part 60 already requires analyses virtually identical to those contemplated by EPA, but the Commission proposes to add additional wording to § 60.21(c)(1)(ii)(C) to emphasize consistency with the EPA standards.

The Commission notes, in this connection, that EPA's reference to estimating the cumulative releases caused by all significant processes and events, to be incorporated in an overall probability distribution of cumulative release to the extent practicable, does not modify the principles underlying Part 60. As was observed when NRC's final technical criteria were published in 1983 (48 FR 28204), the Commission expects that the information considered in a licensing proceeding will include probability distribution functions for the consequences from anticipated and unanticipated processes and events. Further information concerning the Commission's plans for assessing repository performance is contained in Section II of this notice.

II. Additional Comments on Implementation of the EPA Standards

Four sections of the EPA standards contain numerical requirements for which compliance must be demonstrated—standards for repository operations, post-closure individual and groundwater protection requirements and containment requirements restricting the total amount of radionuclides projected to be released to the environment after repository closure. The discussion of section I of this notice articulates the Commission's interpretation of the standards that have been issued by EPA. Additional comments related to

implementation of each of these sections are presented in the following paragraphs.

Standards for repository operations. As discussed previously, the standards for repository operations are virtually identical to the standards previously promulgated by EPA for the uranium fuel cycle, and will be implemented in the same manner. A license applicant will be expected to demonstrate, through analyses of anticipated facility performance, that the dose limits of these standards will not be exceeded. Doses during operations are amenable to monitoring, and the applicant will be required to conduct a monitoring program to confirm that the dose limits are complied with.

Individual and groundwater protection requirements. The individual and groundwater protection requirements are applicable for the first 1,000 years after permanent closure of a repository. Monitoring is not practical for this period of time and the applicant will therefore be required to demonstrate compliance with these requirements through analyses of projected repository performance. Two general approaches might be pursued by DOE. First, DOE might choose to calculate the expected concentrations of radionuclides in certain groundwaters potentially useable by humans in the future. Such calculations would include projections of waste package and engineered barrier performance (to provide a source term) as well as evaluations of the direction, velocity and volumetric flow rates of groundwaters near the repository. The EPA standards specify the types of groundwaters to be considered in such analyses (through the definitions of the terms "significant" and "special" sources of groundwater), and these concepts will be incorporated directly into Part 60. Alternatively, DOE might choose to show compliance with these requirements by demonstrating that other barriers, such as the waste packages or the emplacement medium (e.g., salt), will provide substantially complete containment for the first 1,000 years after permanent closure thereby preventing contamination of the groundwaters of concern.

If DOE chooses to calculate the expected concentrations of radionuclides in groundwaters, rather than to rely on containment by engineered barriers, it will also be necessary to calculate potential doses to individuals in the future. The individual protection requirements limit the annual dose equivalent to any member of the public in the accessible environment. If

a "significant source of groundwater" (as defined) is present, the Commission will assume that a hypothetical individual resides at the boundary of the controlled area and obtains his domestic water supply from a well at that location. If no such source of groundwater is present, the location of the maximally exposed individual and the pathways by which he might be exposed to radionuclides released from a repository must be examined on a site-specific basis.

The individual protection requirements also necessitate assumptions about the dietary patterns and other potential modes of ingestion of radionuclides during the next 1,000 years. The Commission will assume that current patterns remain unchanged, unless it can be convincingly demonstrated that a change is likely to occur (e.g., reduced groundwater consumption due to depletion of an aquifer).

Both the individual and groundwater protection requirements are applicable only for "undisturbed performance" of a repository system. As discussed in Section I, this term is considered to be equivalent to "anticipated processes and events," as currently defined in Part 60. The Commission will therefore require a demonstration of compliance with these requirements assuming the occurrence of anticipated processes and events, but will not require a demonstration of compliance in the event of unanticipated processes and events.

Containment requirements. The containment requirements are applicable for 10,000 years after repository closure. Therefore, compliance with these requirements must also be evaluated by analyses of projected repository performance rather than by monitoring. The containment requirements call for significantly different analyses than those discussed above. This section of the EPA standards restricts the total amount of radioactive material released to the environment for 10,000 years following permanent closure of a repository. This section further specifies different release limits for releases with differing likelihoods of occurrence. Notwithstanding the quantitative probabilistic form of the EPA containment requirements (40 CFR 191.13), the Commission finds that there is adequate flexibility therein to allow them to be implemented using the licensing procedures of 10 CFR Parts 2 and 60. A further discussion of these matters is appropriate in order to avoid ambiguity in the application of the probabilistic conditions.

As the Commission emphasized when the technical criteria for geologic repositories were promulgated in final form (48 FR 28204), there are two distinct elements underlying a finding that a proposed facility satisfies the desired performance objective for long-term isolation of radioactive waste. There is, first, a standard of performance—some statement regarding the quantity of radioactive material that may be released to the accessible environment. This standard can be expressed in quantitative terms, and may include numerical requirements for the probabilities of exceeding certain levels of release.

The second element of a finding relates to the confidence that is needed by the factfinder in order to be able to conclude that the standard of performance has been met. The Commission has insisted, and the EPA has agreed, that this level of confidence must be expressed qualitatively. The licensing decisions that must be made in connection with a repository involve substantial uncertainties, many of which are not quantifiable (e.g., those pertaining to the correctness of the models used to describe physical systems). Such uncertainties can be accommodated within the licensing process only if a qualitative test is applied for the level of confidence that the numerical performance objective will be achieved.

The essential point to be kept in mind is that findings regarding long-term repository performance must be made with "reasonable assurance." The Commission attempted to explain this concept in the existing wording of § 60.101(a) where it noted that allowance must be made for the time period, hazards, and uncertainties involved. Additional language is being proposed at this time, in the same section of Part 60, to further emphasize that qualitative judgments will need to be made including, for example, consideration of the degree of diversity or redundancy among the multiple barriers of a special repository.

Application of a qualitative test in no way diminishes the level of safety required by a numerical standard. The applicant will be required to submit a systematic and thorough analysis of potential releases and the Commission will issue a license only if it finds a substantial, though unquantified, level of confidence that compliance with the release limits will be achieved. As we have stated previously (48 FR 28201), in order to make a finding with "reasonable assurance," the performance assessment which has

been performed in the course of the licensing review must indicate that the likelihood of exceeding the EPA standard is low and, further, the Commission must be satisfied that the performance assessment is sufficiently conservative, and its limitations are sufficiently well understood, that the actual performance of the geologic repository will be within predicted limits.

The Commission will evaluate compliance with the containment requirements based on a performance assessment. Such an assessment will: (1)

Identify all significant processes and events which could affect the repository (2) evaluate the likelihood of each process or event and the effect of each on release of radionuclides to the environment, and (3) to the extent practicable, combine these estimates into an overall probability distribution displaying the likelihood that the amount of radioactive material released to the environment will exceed specified values. The Commission anticipates that the overall probability distribution will be displayed in the format shown below.

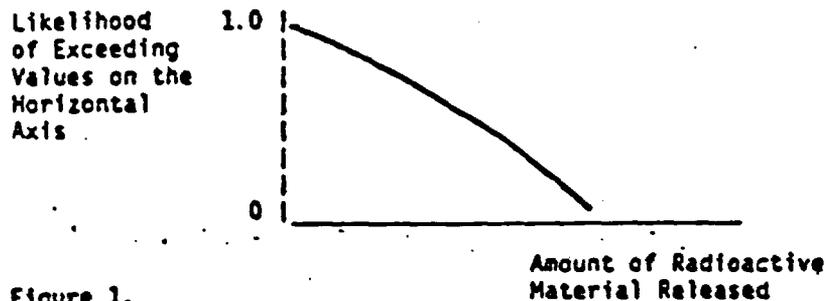


Figure 1.

Illustrative "Complementary Cumulative Distribution Function."

When the results of analyses are displayed in this format, the limits of EPA's containment requirements take the form of "step functions," as shown in Figure 2.

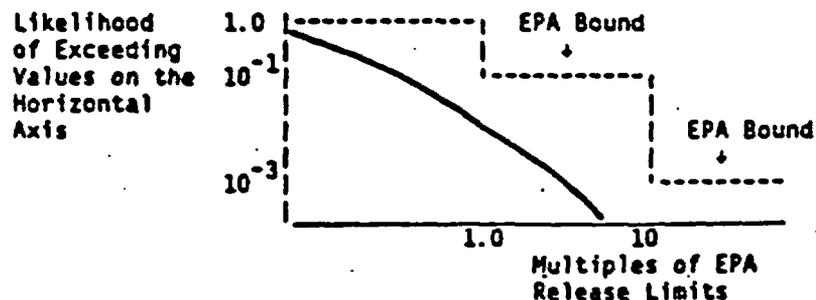


Figure 2. Graphic Representation of EPA Containment Requirements.

In Figure 2, releases which exceed the value specified in the EPA containment requirements (Table 1) must have a likelihood less than one chance in ten (over 10,000 years), and releases which exceed ten times that value must have a likelihood less than one chance in one thousand (over 10,000 years). Thus, in order to demonstrate compliance with EPA's containment requirements, the entire probability distribution must lie below the "stair-step" constraints illustrated in Figure 2.

In constructing a probability distribution of the type illustrated above, it is necessary to consider, in EPA's terms, all "significant processes and events that may affect the disposal system." This is equivalent, as we interpret the EPA standard, to all

"anticipated" and unanticipated" processes and events in the terminology of Part 60. (By the definition of "unanticipated processes and events" in Part 60, processes and events less likely than "unanticipated" are not sufficiently credible to warrant consideration.) For

purposes of the proposed § 60.112(a) only, which incorporates EPA's containment requirements, no distinction is to be made between "anticipated" and "unanticipated" processes and events; all such processes and events must be factored into the evaluation, including determination of such probabilities of occurrence as may be found to be appropriate. (For purposes of the proposed § 60.112 (b) and (c), which incorporate EPA's individual and groundwater protection requirements, only "anticipated" processes and events need be considered as discussed previously.)

The Commission will require an extensive and thorough identification of relevant processes and events, but will require analyses of the probability and/or consequence of each only to the extent necessary to determine its contribution to the overall probability distribution. If it can be shown, for example, that a particular event is so unlikely to occur that its effects on the probability distribution would not be meaningful, further analysis of the consequences of that event would not be required. Generally, categories of processes and events which can be shown to have a likelihood less than one chance in 10,000 over 10,000 years, along with categories of processes and events which otherwise can be shown not to change the remaining probability distribution of cumulative release significantly, need not receive further analysis. (The term "categories" is used to refer to general classes of processes and events, such as faulting, volcanism, or drilling, subsets of these general categories, such as drilling which intersects a canister or fault displacement of a specific magnitude, may need to be retained in an analysis if the general category has been finely divided into a large number of specific process or event description, each with reduced probabilities of occurrence.)

Treatment of uncertainties. As discussed previously, substantial uncertainties will be involved in analyses of long-term repository performance. These uncertainties may include (1) identification of basic phenomena and their potential effects on repository performance, (2) development and validation of models to describe these phenomena, (3) accuracy of available data, and (4) calculational uncertainties. Various methods may be used to accommodate such uncertainties including, for example, numerical estimates of uncertainties (expressed as probability distributions) or conservative, "bounding" models or data. Treatment

of uncertainties will rely heavily on expert judgment, both for selection of an appropriate method and for application of that technique. EPA recognized the importance of uncertainties when its standards were promulgated. In Appendix B of 40 CFR Part 191 (50 FR 38088, September 19, 1985), EPA stated "substantial uncertainties are likely to be encountered in making (numerical) predictions (of repository performance). In fact, sole reliance on these numerical predictions to determine compliance may not be appropriate; the implementing agencies may choose to supplement such predictions with qualitative judgments as well." It is possible—in fact likely—that the various parties to a licensing proceeding will have significantly different views, all with technical merit, regarding the best methods to use, and these differing views may result in presentation of widely different estimates of repository performance.

Any such differences could be resolved in a number of ways. One permissible method for dealing with the uncertainties reflected in the record of the proceeding would be to rely heavily upon conservative, "bounding" analyses. Perhaps it could be shown that even if this approach were employed, the predicted performance would still satisfy the containment requirements established by EPA. On the other hand, an apparent violation of the standard (based on conservative analyses) would not necessarily preclude the Commission from finding, with reasonable assurance, that repository performance would conform to the EPA standard. After carefully evaluating the relevant uncertainties, DOE could present the same data in the form of a cumulative probability distribution that was less conservative—for example, one that more accurately represents the best current technical understanding. Thus, alternative methods are available to DOE for treatment of uncertainties when making its demonstration of reasonable assurance of compliance with the provisions of Part 60.

It should be noted, however, that analyses based on "best estimates" of repository performance might be found to be inadequate if substantial uncertainties are present. In that case, notwithstanding the apparent conformity with the EPA standard, the Commission might ultimately conclude that it lacked the necessary reasonable assurance, considering the uncertainties involved, that the performance would meet the containment requirements.

Because uncertainties are so important in analyses of repository

performance and will play such a major role in a licensing proceeding, the Commission emphasizes the importance of efforts being undertaken to foster a common technical understanding and to resolve issues, where it is practicable to do so, prior to receipt of a license application. Many of the provisions of the Nuclear Waste Policy Act are directed toward this goal. One especially important opportunity, in this regard, is DOE's preparation of site characterization plans and the review and comment process to be carried out by the Commission and other interested parties. Additionally, NRC and DOE are engaged, under an interagency procedural agreement, in ongoing technical discussions on matters that pertain to licensing requirements; these discussions are in the form of open meetings, affording other persons an opportunity to identify pertinent considerations that might also need to be addressed. The staff is also issuing staff technical positions on specific methods of analysis that would be acceptable for evaluating compliance with Part 60 technical criteria and performance objectives. As issues mature, the Commission will, where appropriate, use the rulemaking process to seek resolution of issues where a licensing proceeding might otherwise encounter difficulties due to ambiguity regarding acceptable assessment methods. Nevertheless, the data available at the time of licensing will inevitably be imperfect. It is therefore essential that every effort be made by DOE—and by any other party that develops data which it may propound at a hearing—to use careful methods to enhance, and document, the trustworthiness of the evidence which it may submit.

III. EPA Assurance Requirements

EPA's regulations (40 CFR 191.14) include certain "assurance requirements" designed, according to the rule, to provide the confidence needed for long-term compliance with the containment requirements. As noted by EPA in its preamble, the Commission took exception to the inclusion of these provisions in the regulations. The Commission viewed the assurance requirements as matters of implementation that were not properly part of the EPA's authorities assigned by Reorganization Plan No. 3 of 1970. In response to this concern, the two agencies have agreed to resolve this issue by NRC's making appropriate modifications to Part 60, reflecting the matters addressed by the assurance requirements, and by EPA's declaration

that those requirements would not apply to facilities regulated by the Commission. The following discussion sets forth the Commission's views with respect to each of the EPA assurance requirements and identifies the proposed rule changes that are deemed to be appropriate under the circumstances.

EPA Assurance Requirement 40 CFR 191.14(c). Active institutional controls over disposal sites should be maintained for as long a period of time as is practicable after disposal; however, performance assessments that assess isolation of the wastes from the accessible environment shall not consider any contributions from active institutional controls for more than 100 years after disposal.

Analysis and Proposed Changes. The Commission's existing provisions (§ 60.52) related to license termination will determine the length of time for which institutional controls should be maintained, and there is therefore no need to alter Part 60 to reflect this part of the assurance requirement.

The second part of this assurance requirement would require that "active" institutional controls be excluded from consideration (after 100 years) when the isolation characteristics of a repository are assessed. It has always been the intent of Part 60 not to rely on remedial actions (or other active institutional controls) to compensate for a poor site or inadequate engineered barriers. However, in the definition of "unanticipated processes and events," Part 60 expressly contemplates that, in assessing human intrusion scenarios, the Commission would assume that "institutions are able to assess risk and to take remedial action at a level of social organization and technological competence equivalent to, or superior to, that which was applied in initiating the processes or events concerned" (emphasis added). Therefore, it might appear at first examination that Part 60 is at odds with the EPA assurance requirements.

Although both the EPA regulation and Part 60 refer to "remedial action," the action being considered is not the same. The EPA assurance requirement deals with a planned capability to maintain a site and, if necessary, to take remedial action at a site in order to assure that isolation is achieved. The Commission agrees that such capability should not be relied upon. The extent to which corrective action may be taken after an unanticipated intrusion occurs is an entirely different matter. The Commission may wish to consider, for example, the extent to which the application of the limited societal response capability assumed by the rule

(e.g., sealing boreholes consistent with current petroleum industry practice) could reduce the likelihood of releases exceeding the values specified in the containment requirements or could eliminate certain hypothetical scenarios such as systematic and persistent intrusions into a site.

Subject to the comments above, the Commission concurs with the EPA's definitions of "active" and "passive" institutional controls, as well as the principle that ongoing, planned, active protective measures should not be relied upon for more than 100 years after permanent closure. We are therefore proposing to include EPA's definitions, together with a new section (§ 60.114) which would expressly provide that active (or passive) institutional controls shall not be deemed to assure compliance with the containment requirements over the long term. Some activities which arguably fall within EPA's definition of "active institutional controls" (e.g., remedial actions and monitoring parameters related to geologic repository performance) are relevant to assessing the likelihood and consequences of processes and events affecting the geologic setting. We are proposing, also in § 60.114, to allow such activities to be considered for this purpose. We regard this as being fully consistent with the thrust of the EPA position.

EPA Assurance Requirement 40 CFR 191.14(b). Disposal systems shall be monitored after disposal to detect substantial and detrimental deviations from expected performance. This monitoring shall be done with techniques that do not jeopardize the isolation of the wastes and shall be conducted until there are no significant concerns to be addressed by further monitoring.

Analysis and Proposed Changes. Part 60 currently requires DOE to carry out a performance confirmation program which is to continue until repository closure. Part 60 does not now require monitoring after repository closure because of the likelihood that post-closure monitoring of the underground facility would degrade repository performance. The Commission recognizes, however, that monitoring such parameters as regional ground water flow characteristics may, in some cases, provide desirable information beyond that which would be obtained in the performance confirmation program, and the Commission is proposing to require such monitoring when it can be accomplished without adversely affecting repository performance.

The proposed requirement for post-permanent closure monitoring requires that such monitoring be continued until

termination of a license. The Commission intends that a repository license not be terminated until such time as the Commission is convinced that there is no significant additional information to be obtained from such monitoring which would be material to a finding of reasonable assurance that long-term repository performance would be in accordance with the established performance objectives.

A number of changes in Part 60 are proposed to reflect these views with respect to post-closure monitoring. First, a new section (§ 60.144) would provide for the performance confirmation program, already required by Subpart F of Part 60, to include a program of post-closure monitoring. Second, the licensing findings required at the time of license termination (§ 60.52(c)) would specifically be related to the results available from the post-closure monitoring program. Third, DOE would be required to provide more detailed information concerning its plans for post-closure monitoring in its original application (§ 60.21(c)) and when it applies to amend its license prior to permanent closure (§ 60.51(a)).

EPA Assurance Requirement 40 CFR 191.14(c). Disposal sites shall be designated by the most permanent markers, records, and other passive institutional controls practicable to indicate the dangers of the wastes and their location.

Analysis and Proposed Changes. The existing provisions of 10 CFR Part 60 already required that DOE take the measures set out in this assurance requirement. For further information, refer to § 60.21(c)(8) (requirement that license application describe controls to regulate land use), § 60.51(a)(2) (information to be submitted, prior to permanent closure, with respect to land use controls, construction of monuments, preservation of records, etc.), and § 60.121 (requirements for ownership and control of interests in land).

EPA Assurance Requirement 40 CFR 191.14(d). Disposal systems shall use different types of barriers to isolate the wastes from the accessible environment. Both engineered and natural barriers shall be included.

Analysis and Proposed Changes. This is another provision that is already inherent in Part 60. Nevertheless, in order to avoid any possible doubt in this regard, a new paragraph (§ 60.113(d)) would be added to state explicitly that the geologic repository shall incorporate a system of multiple barriers, both engineered and natural.

Questions might arise regarding the types of engineered or natural materials

or structures which would be considered to constitute "barriers," as required by this new language. In this connection, the Commission notes that § 60.2 now contains this definition: "Barrier" means any material or structure that prevents or substantially delays movement of water or radionuclides" (emphasis added). Thus, consistent with the approach endorsed by EPA, the Commission considers that the new paragraph to be added to § 60.113 will confirm its commitment to a multiple barrier approach as contemplated by section 121(b)(1)(B) of the Nuclear Waste Policy Act.

EPA Assurance Requirement 40 CFR 191.14(e). Places where there has been mining for resources, or where there is reasonable expectation of exploration for scarce or easily accessible resources, or where there is a significant concentration of any material that is not widely available from other sources, should be avoided in selecting disposal sites. Resources to be considered shall include minerals, petroleum or natural gas, valuable geologic formations, and ground waters that are either irreplaceable because there is not reasonable alternative source of drinking water available for substantial populations or that are vital to the preservation of unique and sensitive ecosystems. Such places shall not be used for disposal of the wastes covered by this Part [40 CFR Part 191] unless the favorable characteristics of such places compensate for their greater likelihood of being disturbed in the future.

Analysis and Proposed Changes. Part 60 contains provisions that, in large part, are equivalent to this assurance requirement. See § 60.122(c)(17), (18), and (19). The existing regulation does not, however, address "a significant concentration of any material that is not widely available from other sources."

The Commission believes that there is merit in having the presence of such concentrated materials evaluated in the context of the licensing proceeding. It is, after all, quite possible that the economic value of materials could change in the future in a way which might attract future exploration or development detrimental to repository performance. By adding an additional "potentially adverse condition" to those already set out in the regulation, DOE would be required to identify the presence of the materials in question and evaluate the effect thereof on repository performance, as specified in § 60.122(a)(2)(ii). It should be noted that the presence of potentially adverse conditions does not preclude the selection and use of a site for a geologic repository, provided that the conditions have been evaluated and demonstrated not to compromise performance.

EPA Assurance Requirement 40 CFR 191.14(f). Disposal systems shall be selected so that removal of most of the wastes is not precluded for a reasonable period of time after disposal.

Analysis and Proposed Changes. The Commission understands that the purpose of this assurance requirement is to discourage or preclude the use of disposal concepts such as deep well injection for which it would be virtually impossible to remove or recover wastes regardless of the time and resources employed. (This provision is thus significantly different from the Commission's retrievability requirement.) For a mined geologic repository—which is the only type of facility subject to licensing under 10 CFR Part 60—wastes could be located and recovered (i.e., "removed," in the sense that EPA is using the term), albeit at high cost, even after repository closure. A repository would therefore meet this assurance requirement, and no further statements on the subject in Part 60 are indicated.

Petition for Rulemaking. The Commission calls to the attention of all interested parties a pending petition for rulemaking submitted by the States of Nevada and Minnesota which deals, in large part, with the matters addressed by section III of this notice. All relevant comments received by the Commission in response to the notice of receipt of the petition for rulemaking (published in the Federal Register on December 19, 1985, 50 FR 51701) will be considered along with comments received in response to this notice. It should be noted that the Commission's present proposal conforms to the approach which was discussed with EPA during the course of its rulemaking. The petition for rulemaking follows the same language very closely, but does suggest certain modifications. The Commission would be particularly interested in comments addressed to the respective merits of the language proposed herein and that proposed by the States of Nevada and Minnesota.

The Commission further notes that EPA has provided it with copies of comments regarding the assurance requirements that were received during the 40 CFR Part 191 rulemaking. These comments are available for inspection in the Commission's public document room.

IV. Section by Section Analysis of Proposed Conforming Amendments

The Commission considers that the simplest and most useful way to amend Part 60 for consistency with the EPA standards would be to incorporate directly within Part 60 all the

substantive requirements of the environmental standards promulgated by EPA, modified as necessary to conform to the terminology currently used in Part 60. The following paragraphs present a section-by-section analysis of the NRC's proposed conforming amendments to Part 60.

Section 60.1 Purpose and scope.

This paragraph is analogous to EPA's 40 CFR 191.01 and 191.11 which state the applicability of the EPA standards. Part 60 is, however, a more specific regulation than the EPA standards in that it addresses only deep geologic repositories used for disposal of high-level radioactive wastes, while the EPA standards apply to other disposal methods and certain other types of radioactive wastes. No changes are proposed for § 60.1, but the Commission notes that any regulations developed in the future for alternative disposal methods or for other types of wastes will incorporate any applicable provisions of the EPA standards.

Section 60.2 Definitions.

New definitions of several terms are proposed for incorporation within § 60.2. These are taken directly from the EPA standards (or from 40 CFR Part 190) and are needed for purposes of implementation. These added terms are:

- (1) Active institutional control
- (2) Community water system
- (3) Passive institutional control
- (4) Significant source of groundwater
- (5) Special source of groundwater
- (6) Transmissivity
- (7) Uranium fuel cycle

In addition, the definition of "controlled area" and the related definition of "accessible environment" in the EPA standards are different from those currently in Part 60. The Commission proposed to revise its current definitions to conform to EPA's wording. In the case of "accessible environment," the change is merely editorial. The amendments to the definition of "controlled area" are also largely editorial, except for the specification of extent—i.e., that the controlled area is to encompass "no more than 100 square kilometers" and to extend "horizontally no more than five kilometers in any direction from the outer boundary of the original location of the radioactive wastes."

The Commission has reviewed this aspect of the EPA definition in the light of the policies which it articulated when the final technical criteria of 10 CFR Part 60 were adopted. One of these policies was that the controlled area "must be small enough to justify confidence that

the monuments will effectively discourage subsurface disturbances." The prior rule would have authorized the establishment of a controlled area well over 300 square kilometers (about 75,000 acres) in size. While we would not deny the abstract possibility that effective controls could be instituted even over an area of that magnitude, we have much greater confidence that DOE would be able to demonstrate an ability to discourage subsurface disturbances over an area of more limited extent. It is our judgment that the 100 square kilometers that EPA has adopted, after consultation with the NRC staff, represents an appropriate limitation.

The other policy related to the definition of the "controlled area" is that it must allow the isolation capability of the rock surrounding the underground facility to be given appropriate weight in licensing reviews. This isolation capability is measured in two ways. First, it is to be taken into account in determining whether releases of radionuclides to the accessible environment are within the limits specified in the "containment requirements" (40 CFR 191.13). Second, under § 60.113(a)(2), the isolation capability of the geologic setting must be such that the pre-waste-emplacment groundwater travel time along the fastest path of likely radionuclide travel from the disturbed zone to the accessible environment shall be a specified period (generally, 1000 years).

The Commission anticipates that adoption of the EPA terminology will have little effect on achievement of the containment requirements inasmuch as the controlled area is allowed a horizontal extent as large as five kilometers (presumably in the direction of radionuclide travel). Nor does the Commission anticipate that the limitation will make it impracticable to achieve a demonstration of compliance with the groundwater travel time performance objective. When the Commission adopted Part 60, it observed that the "accessible environment" might be larger (and, of course, the "controlled area" might therefore be smaller) than would be the case under the EPA standards then being considered (48 FR 28202). EPA has not moved in the direction of eliminating this difference, and the Commission's amendment, for this reason, represents no important change.

The proposed reduction in the maximum allowable extent of the controlled area (i.e., distance to the accessible environment) requires additional discussion to clarify the Commission's concepts of "disturbed

zone" and "groundwater travel time." Groundwater travel time from the edge of the disturbed zone to the accessible environment is one of the criteria which the Commission identified, at the time of proposed rulemaking, as providing confidence that the wastes will be isolated for at least as long as they are most hazardous (46 FR 35280, 35281, July 8, 1981). As noted above, this objective concerns travel time from the edge of the disturbed zone rather than from the edge of the underground facility. The Commission selected the disturbed zone for the purpose of determining the groundwater travel time since the physical and chemical processes which isolate the wastes are "especially difficult to understand in the area close to the emplaced wastes because that area is physically and chemically disturbed by the heat generated by those wastes." *Ibid.*

One potential type of effect which could alter local groundwater flow conditions is thermal buoyancy of groundwater. Because buoyancy effects could extend over significant distances (see, e.g., M. Gordon and M. Weber, "Non-isothermal Flow Modeling of the Hanford Site," available in the NRC Public document room) and because the Commission is proposing to reduce the maximum allowable distance to the accessible environment, it is particularly important to emphasize that the Commission did not intend such effects to serve as the basis for defining the extent of the disturbed zone. The Commission recognizes that such effects can be modeled with well developed assessment methods, and therefore were not the type of effects for which the disturbed zone concept was developed. Any contrary implication in our statement of considerations at the time the technical criteria were issued in final form (see 48 FR 28210) should be disregarded. (The staff is currently developing Generic Technical Positions discussing the disturbed zone and groundwater travel time. These technical positions will be publicly available prior to promulgation of these proposed amendments in final form, and will illustrate how the staff intends to approach these two concepts.)

Four other terms defined by EPA deserve additional discussion here.

The EPA standards contain a definition of the term "transuranic radioactive waste." The Commission does not use this term in Part 60 and thus has no need to define it there. All radioactive waste stored or disposed of at a geologic repository licensed under Part 60—including transuranic radioactive waste—would be subject to

the requirements of the EPA standards as applied by the rules proposed herein.

EPA defines the terms "storage" and "disposal" to mean retrievable storage and permanent isolation, respectively. Under Part 60, on the other hand, the term "storage" is used in the sense of section 202 of the Energy Reorganization Act of 1974 (42 U.S.C. 5842) to refer to both long-term storage and disposal of wastes. The difference in EPA and NRC usage has no effect upon application of the EPA standards at NRC-licensed geologic repositories.

The Commission has recently defined "groundwater," for purposes of Part 60, to include all water which occurs below the land surface (50 FR 29841, July 22, 1985), while the EPA standards use the term to mean water below the land surface in a zone of saturation (emphasis added). The EPA standards use the term only in connection with the more specifically defined terms "significant source of groundwater" and "special source of groundwater." Thus, it is possible to identify "significant" or "special" sources of groundwater unambiguously with either definition of the term "groundwater," and the Commission therefore proposes to retain its current definition of the term.

Section 60.21 Content of application.

Paragraph (c)(1)(ii)(C) now requires a license application to include certain evaluations of the performance of a proposed geologic repository for the period after permanent closure. The Commission proposes to add an additional sentence to this paragraph requiring that the results of these analyses be incorporated into an overall probability distribution of cumulative releases to the extent practicable. This reflects the language of EPA's definition of "performance assessment."

The Commission also proposes to add a new paragraph to § 60.21 requiring submittal of a general description of the program for post-permanent closure monitoring of the geologic repository. (See the discussion (section III) regarding the EPA assurance requirements—specifically 40 CFR 191.14(b).)

Section 60.51 License amendment for permanent closure.

Paragraph (a)(1) currently requires that an application to amend a license for permanent closure must include a description of the program for post-permanent closure monitoring of the geologic repository. The Commission proposes to revise this paragraph to specify in more detail the information to be submitted, including descriptions of

the parameters to be monitored and the length of time for which the monitoring is to be continued. (See also the preceding discussion regarding 40 CFR 191.14(b).)

Section 60.52 Termination of license.

The Commission proposes to add a new condition for license termination which would explicitly require that the results available from post-permanent closure monitoring confirm the expectation that the repository will comply with the performance objectives of Part 60. (See also the preceding discussion regarding 40 CFR 191.14(b).)

Section 60.101 Purpose and nature of findings.

The EPA standards use the phrase "reasonable expectation" to describe the required level of confidence that compliance will be achieved with the provisions of the standards. The Supplementary Information accompanying the EPA standards contrasts the concept of "reasonable expectation" with the reasonable assurance standard that is used by the Commission in dealing with other licensing actions. The Commission has considered adopting EPA's "reasonable expectation" concept, but has decided that doing so would result in a needless, and potentially confusing, proliferation of terms. Instead, the Commission proposes to expand the current discussion of "reasonable assurance" in § 60.101 to make clear its belief that the level of confidence associated with the term, when used in connection with the long-term issues involved in repository licensing, is the same as that sought by EPA in its use of the term "reasonable expectation."

Section 60.111 Performance of the geologic repository operations area through permanent closure.

Paragraph (a) currently requires compliance with "such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency." The Commission proposes to replace this wording with the specific dose limits promulgated by EPA in 40 CFR 191.03(a) of its standards. The proposed wording would apply the dose limits to any member of the public outside the geologic repository operations area, consistent with EPA's phrase "any member of the public in the general environment."

The EPA provision includes wording that requires reasonable assurance of compliance with the dose limits. In Part 60, Subpart B now specifies the findings that must be made by the Commission

for issuance of a license, including a finding of reasonable assurance of compliance with the performance objective of § 60.111. Because Part 60 already requires that findings be made with reasonable assurance, it is unnecessary to repeat such a requirement within this proposed performance objective.

One additional amendment, unrelated to the EPA standards, is being proposed for § 60.111. The current wording of this section now requires that the geologic repository operations area be designed so that radiation exposures, radiation levels, and releases of radioactive materials "will at all times be maintained within the limits specified in Part 20 . . ." (emphasis added). The words "at all times" were intended to emphasize the need to design the geologic repository operations area so that any waste retrieval found to be necessary in the future could be carried out in conformance with the radiation protection requirements of 10 CFR Part 20. In order to clarify the meaning of the phrase "at all times," the Commission is proposing to revise this wording to read "will at all times, including the retrievability period of § 60.111(b), be maintained within the limits specified in Part 20 . . ."

Section 60.112 Overall system performance objective for the geologic repository after permanent closure.

The current wording of this section now refers to "such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency." The Commission proposes to replace this wording with the specific provisions promulgated by EPA in 40 CFR 191.13, 191.15 and 191.16 of its standards, reworded as appropriate for incorporation into Part 60.

As discussed previously, the Commission proposes to revise the language of § 60.101 to make clear that its concept of the phrase "reasonable assurance" in Part 60 closely parallels the meaning intended by "reasonable expectation" in the EPA standards. Inasmuch as the findings to be made by the Commission must be made with "reasonable assurance," there is no need to use the term "reasonable expectation" in the specific standards.

EPA requires that cumulative releases of radioactivity to the environment be evaluated on the basis of "performance assessments." This concept already is built into the structure of Part 60. As discussed previously, however, the Commission is proposing an addition to § 60.21 which would specifically require

a license application to incorporate the results of analyses, as stated by EPA, in an overall probability distribution of cumulative releases to the extent practicable.

The individual and groundwater protection requirements of the ERA standards refer to "undisturbed performance" of a disposal system, where "undisturbed performance" is defined to mean "the predicted behavior of a disposal system, including consideration of the uncertainties in predicted behavior, if the disposal system is not disrupted by human intrusion or the occurrence of unlikely natural events." The Commission considers undisturbed performance, as defined by EPA, to be equivalent to performance in the absence of "unanticipated processes and events," as currently defined in Part 60. The Commission is proposing to use the current Part 60 terminology rather than introduce a new term from the EPA standards.

Section 60.113 Performance of particular barriers after permanent closure.

Section 60.113 specifies performance objectives for individual barriers of a geologic repository, and permits the Commission to approve or specify specific numerical requirements on a case-by-case basis. The Commission considers that § 60.113 clearly requires use of both engineered and natural barriers. Nevertheless, in order to avoid any possible confusion regarding the provisions of § 60.113(b), the Commission proposes to add additional clarifying language to this section making it clear that a repository must incorporate a system of multiple barriers, both engineered and natural. (See the preceding discussion in section III regarding the EPA assurance requirements—specifically 40 CFR 191.14(d).)

Paragraph (b)(1) of § 60.113 now refers to "any generally applicable environmental standard for radioactivity established by the Environmental Protection Agency." The Commission proposes to replace this wording with a direct reference to the overall system performance objectives of § 60.112.

Section 60.114 Institutional control.

The Commission proposes to add a new § 60.114 to Part 60 to clarify its views regarding reliance on institutional controls. (See the preceding discussion in Section III regarding 40 CFR 191.14(a).)

Section 60.115 Release limits for overall system performance objectives.

The Commission proposes that the table of release limits (and accompanying notes) in Appendix A of the EPA standards be added to Part 60 in a new § 60.115.

Section 60.122 Siting criteria.

Part 60 contains provisions related to the presence of economically valuable mineral resources at a repository site. Part 60 does not, however, address deposits of materials which, though of limited economic value, are not reasonably available from other sources. Because the economic value of materials could change in the future, the Commission proposes to add an additional potentially adverse condition to Part 60 related to significant concentrations of material that is not reasonably available from other sources.

EPA used the term "widely available." The Commission believes that an additional consideration—the practicality of obtaining materials from alternative sources—is also germane, and the Commission is therefore proposing the phrase "reasonably available" for this potentially adverse condition. (See also the preceding discussion in section III regarding 40 CFR 191.14(e).)

Section 60.144 Monitoring after permanent closure.

Part 60 currently requires DOE to carry out a performance confirmation program which is to continue until repository closure. Part 60 does not now require monitoring after repository closure because of the likelihood that post-closure monitoring of the underground facility would degrade repository performance. The Commission proposes to add a new § 60.144 to Part 60 which would require post-closure monitoring of repository characteristics provided that such monitoring can be expected to provide material confirmatory information regarding long-term repository performance and provided that the means for conducting such monitoring will not degrade repository performance. (See the preceding discussion in section III regarding 40 CFR 191.14(b).)

Environmental Impact

Pursuant to section 121(c) of the Nuclear Waste Policy Act of 1982, this proposed rule does not require the preparation of an environmental impact statement under section 102(2)(C) of the National Environmental Policy Act of 1969 or any environmental review under

subparagraph (E) or (F) of section 102(2) of this Act.

Paperwork Reduction Act Statement

The information collection requirements contained in this proposed rule are of limited applicability and affect fewer than ten respondents. Therefore, Office of Management and Budget clearance is not required pursuant to the Paperwork Reduction Act of 1980 (44 U.S.C. 3501 et seq.).

Regulatory Flexibility Act Certification

In accordance with the Regulatory Flexibility Act of 1980 (5 U.S.C. 605(b)), the Commission certifies that this rule, if adopted, will not have a significant economic impact on a substantial number of small entities. The only entity subject to regulation under this rule is the U.S. Department of Energy, which does not fall within the scope of the definition of "small entities" set forth in the Regulatory Flexibility Act.

List of Subjects in 10 CFR Part 60

High-level waste, Nuclear power plants and reactors, Nuclear materials, Penalty, Reporting and recordkeeping requirements, Waste treatment and disposal.

Backfitting Requirements

The provisions of 10 CFR 50.109 on backfitting do not apply to this rulemaking because the rule is not applicable to production and utilization facilities licensed under 10 CFR Part 50.

For the reasons set out in the preamble and under the authority of the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, the Nuclear Waste Policy Act of 1982, and 5 U.S.C. 553, the NRC is proposing to adopt the following amendments to 10 CFR Part 60.

PART 60—DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES

1. The authority citation for Part 60 continues to read as follows:

Authority: Secs. 51, 53, 62, 63, 65, 81, 161, 182, 183, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); secs. 202, 206, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5848); secs. 10 and 14, Pub. L. 95-601, 92 Stat. 2951 (42 U.S.C. 2021a and 5851); sec. 102, Pub. L. 91-190, 83 Stat. 653 (42 U.S.C. 4332); sec. 121, Pub. L. 97-425, 96 Stat. 2228 (42 U.S.C. 10141).

For the purposes of sec. 223, 68 Stat. 958, as amended (42 U.S.C. 2273), §§ 60.71 to 60.75 are issued under sec. 181o, 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

2. Section 60.2 is amended by revising the definitions of "accessible

environment" and "controlled area" and by adding seven new definitions in alphabetical order as follows:

§ 60.2 Definitions.

"Accessible environment" means: (1) The atmosphere, (2) land surfaces, (3) surface waters, (4) oceans, and (5) all of the lithosphere that is beyond the controlled area.

"Active institutional control" means: (1) Controlling access to a disposal site by any means other than passive institutional control, (2) performing maintenance operations or remedial actions at a site, (3) controlling or cleaning up releases from a site, or (4) monitoring parameters related to disposal system performance.

"Community water system" means a system for the provision to the public of piped water for human consumption, if such system has at least 15 service connections used by year—round residents or regularly serves at least 25 year-round residents.

"Controlled area" means: (1) A surface location, to be identified by passive institutional controls, that encompasses no more than 100 square kilometers and extends horizontally no more than five kilometers in any direction from the outer boundary of the underground facility, and (2) the subsurface underlying such a surface location.

"Passive institutional control" means: (1) Permanent markers placed at a disposal site, (2) public records and archives, (3) government ownership and regulations regarding land or resource use, and (4) other methods of preserving knowledge about the location, design, and contents of a disposal system.

"Significant source of groundwater" means: (1) An aquifer that: (i) is saturated with water having less than 10,000 milligrams per liter of total dissolved solids; (ii) is within 2,500 feet of the land surface; (iii) has a transmissivity greater than 200 gallons per day per foot, provided that any formation or part of formation included within the source of groundwater has a hydraulic conductivity greater than 2 gallons per day per square foot; and (iv) is capable of continuously yielding at least 10,000 gallons per day to a pumped or flowing well for a period of at least a year; or (2) an aquifer that provides the primary source of water for a

community water system as of November 18, 1985.

"Special source of groundwater" means those Class I groundwaters identified in accordance with the Environmental Protection Agency's Ground-Water Protection Strategy published in August 1984 that: (1) Are within the controlled area encompassing a disposal system or are less than five kilometers beyond the controlled area; (2) are supplying drinking water for thousands of persons as of the date that the Department chooses a location within the area for detailed characterization as a potential site for a disposal system (e.g., in accordance with section 112(b)(1)(B) of the NWPA); and (3) are irreplaceable in that no reasonable alternative source of drinking water is available to that population.

"Transmissivity" means the hydraulic conductivity integrated over the saturated thickness of an underground formation. The transmissivity of a series of formations is the sum of the individual transmissivities of each formation comprising the series.

"Uranium fuel cycle" means the operations of milling of uranium ore, chemical conversion of uranium, isotopic enrichment of uranium, fabrication of uranium fuel, generation of electricity by a light-water-cooled nuclear power plant using uranium fuel, and reprocessing of spent uranium fuel, to the extent that these directly support the production of electrical power for public use utilizing nuclear energy, but excludes mining operations, operations at waste disposal sites, transportation of any radioactive material in support of these operations, and the reuse of recovered non-uranium special nuclear and by-product materials from the cycle.

3. Section 60.21 is amended by revising paragraph (c)(1)(ii)(C), redesignating the existing paragraphs (c)(9) through (c)(15) as paragraphs (c)(10) through (c)(16) and adding a new paragraph (c)(9).

§ 60.21 Content of application

- (c) * * *
(1) * * *
(ii) * * *

(C) An evaluation of the performance of the proposed geologic repository for the period after permanent closure, assuming anticipated processes and events, giving the rates and quantities of releases of radionuclides to the

accessible environment as a function of time; and a similar evaluation which assumes the occurrence of unanticipated processes and events. In making such evaluations, estimated values shall be incorporated into an overall probability distribution of cumulative release to the extent practicable.

(9) A general description of the program for post-permanent closure monitoring of the geologic repository.

4. Section 60.51 is amended by revising paragraph (a)(1) to read as follows:

§ 60.51 License amendment for permanent closure.

(a) * * *
(1) A detailed description of the program for post-permanent closure monitoring of the geologic repository in accordance with § 60.144. As a minimum, this description shall:
(i) Identify those parameters that will be monitored;
(ii) Indicate how each parameter will be used to evaluate the expected performance of the repository; and
(iii) Discuss the length of time over which each parameter should be monitored to adequately confirm the expected performance of the repository.

5. Section 60.52 is amended by designating current paragraph (c)(3) as paragraph (c)(4) and by adding a new paragraph (c)(3) as follows:

§ 60.52 Termination of license.

(c) * * *
(3) That the results available from the post-permanent closure monitoring program confirm the expectation that the repository will comply with the performance objectives set out at § 60.112 and § 60.113; and

6. Section 60.101 is amended by revising paragraph (a)(2) to read as follows:

§ 60.101 Purpose and nature of findings.

(a) * * *
(2) While these performance objectives and criteria are generally stated in unqualified terms, it is not expected that complete assurance that they will be met can be presented. A reasonable assurance, on the basis of the record before the Commission, that the objectives and criteria will be met is the general standard that is required. For § 60.112, and other portions of this subpart that impose objectives and criteria for repository performance over long times into the future, there will

inevitably be greater uncertainties. Proof of the future performance of engineered barrier systems and the geologic setting over time periods of many hundreds of thousands of years is not to be had in the ordinary sense of the word. For such long-term objectives and criteria, what is required is reasonable assurance, making allowances for the time period, hazards, and uncertainties involved, that the outcome will be in conformance with those objectives and criteria. Demonstration of compliance with such objectives and criteria will involve the use of data from accelerated tests and predictive models that are supported by such measures as field and laboratory tests, monitoring data and natural analog studies. Demonstration of compliance with the performance objectives of § 60.112 will also involve predicting the likelihood and consequences of events and processes that may disturb the repository. Such predictions may involve complex computational models, analytical theories and prevalent expert judgment. Substantial uncertainties are likely to be encountered and sole reliance on numerical predictions to determine compliance may not be appropriate. In reaching a determination of reasonable assurance, the Commission may supplement numerical analyses with qualitative judgments including, for example, consideration of the degree of diversity or redundancy among the multiple barriers of a specific repository.

7. In § 60.111, paragraph (a) is revised to read as follows:

§ 60.111 Performance of the geologic repository operations area through permanent closure.

(a) *Protection against radiation exposures and releases of radioactive material.* The geologic repository operations area shall be designated so that until permanent closure has been completed:

(1) The annual dose equivalent to any member of the public outside the geologic repository operations area, resulting from the combination of (i) discharges of radioactive material and direct radiation from activities at the geologic repository operations area and (ii) uranium fuel cycle operations, shall not exceed 25 millirems to the whole body, 75 millirems to the thyroid, and 25 millirems to any other critical organ.

(2) Radiation exposures and radiation levels, and releases of radioactive materials to unrestricted areas, will at all times, including the retrievability period of § 60.111(b), be maintained

within the limits specified in Part 20 of this chapter.

8. Section 60.112 is revised to read as follows:

§ 60.112. Overall system performance objective for the geologic repository after permanent closure.

The geologic setting shall be selected and the engineered barrier system and the shafts, boreholes and their seals shall be designed:

(a) So that, for 10,000 years following permanent closure, cumulative releases of radionuclides to the accessible environment, from all anticipated and unanticipated processes and events, shall:

- (1) Have a likelihood of less than one chance in 10 of exceeding the quantities calculated in accordance with § 60.115.
- (2) Have a likelihood of less than one chance in 1,000 of exceeding ten times the quantities calculated in accordance with § 60.115.

(b) So that for 1,000 years after permanent closure, and in the absence of unanticipated processes and events, the annual dose equivalent to any member of the public in the accessible environment does not exceed 25 millirems to the whole body or 75 millirems to any critical organ. For the purpose of applying this paragraph, all potential pathways from the geologic repository to people shall be considered, including the assumption that individuals consume 2 liters per day of drinking water from any significant source of groundwater outside of the controlled area.

(c) So that for 1,000 year after permanent closure, and in the absence of unanticipated processes and events:

(1) Except as provided in paragraph (c)(2) of this section, the radionuclide concentrations averaged over any year in water withdrawn from any portion of a special source of groundwater do not exceed:

- (i) 5 picocuries per liter of radium-226 and radium-228;
- (ii) 15 picocuries per liter of alpha-emitting radionuclides (including radium-226, and radium-228 but excluding radon); or
- (iii) The combined concentrations of radionuclides that emit either beta or gamma radiation that would produce an annual dose equivalent to the total body or any internal organ greater than 4 millirems per year if an individual consumed 2 liters per day of drinking water from such a source of groundwater.

(2) If any of the average annual radionuclide concentrations existing in a

special source of groundwater before construction of the geologic repository operations area already exceed the limits in paragraph (c)(1) of this section, the increase, caused by the geologic repository, in the existing average annual radionuclide concentrations in water withdrawn from that special source of groundwater does not exceed the limits specified in paragraph (c)(1) of this section.

9. In § 60.113, paragraph (b)(1) is revised and a new paragraph (d) is added to read as follows:

§ 60.113 Performance of particular barriers after permanent closure.

(b) . . .
(1) The overall system performance objectives of § 60.112.

(d) Notwithstanding the provisions of paragraph (b) of this section, the geologic repository shall incorporate a system of multiple barriers, both engineered and natural.

10. A new § 60.114 is added to read as follows:

§ 60.114 Institutional control.

Neither active nor passive institutional control shall be deemed to assure compliance with the overall system performance objectives set out at § 60.112 for more than 100 years after permanent closure. However, the effects of institutional control may be considered in assessing, for purposes of that section, the likelihood and consequences of processes and events affecting the geologic setting.

11. A new § 60.115 is added to read as follows:

§ 60.115 Release limits for overall system performance objective.

The following table shall be used to make the calculations referred to in paragraph (a) of § 60.112.

TABLE 1.—RELEASE LIMITS FOR OVERALL SYSTEM PERFORMANCE OBJECTIVE
(Cumulative Releases to the Accessible Environment for 10,000 Years After Disposal)

Radionuclide	Release limit per 1,000 MTHM or other unit of waste (see notes) (curies)
Americium-241 or 243	100
Carbon-14	100
Cesium-135 or 137	1,000
Iodine-129	100
Neptunium-237	100
Plutonium-238, 239, 240 or 242	100
Radium-226	100

TABLE 1.—RELEASE LIMITS FOR OVERALL SYSTEM PERFORMANCE OBJECTIVE—Continued
(Cumulative Releases to the Accessible Environment for 10,000 Years After Disposal)

Radionuclide	Release limit per 1,000 MTHM or other unit of waste (see notes) (curies)
Strontium-90	1,000
Technetium-99	10,000
Thorium-230 or 232	10
Tin-126	1,000
Uranium-233, 234, 235, 238 or 238	100
Any other alpha-emitting radionuclide with a half-life greater than 20 years	100
Any other radionuclide with a half-life greater than 20 years that does not emit alpha particles	1,000

Application of Table 1

Note.—Units of Waste. The Release Limits in Table 1 apply to the amount of wastes in any one of the following:

(a) an amount of spent nuclear fuel containing 1,000 metric tons of heavy metal (MTHM) exposed to a burnup between 25,000 megawatt-days per metric ton of heavy metal (MWd/MTHM) and 40,000 MWd/MTHM;

(b) the high-level radioactive wastes generated from reprocessing each 1,000 MTHM exposed to a burnup between 25,000 MWd/MTHM and 40,000 MWd/MTHM;

(c) each 100,000,000 curies of gamma or beta-emitting radionuclides with half-lives greater than 20 years but less than 100 years (for use as discussed in Note 5 or with materials that are identified by the Commission as high-level radioactive waste in accordance with part (B) of the definition of high-level waste in the Nuclear Waste Policy Act (NWPA));

(d) each 1,000,000 curies of other radionuclides (i.e., gamma or beta-emitters with half-lives greater than 100 years or any alpha-emitters with half-lives greater than 20 years) (for use as discussed in Note 5 or with materials that are identified by the Commission as high-level waste in accordance with part (B) of the definition of high-level waste in the NWPA); or

(e) an amount of transuranic (TRU) wastes containing one million curies of alpha-emitting transuranic radionuclides with half-lives greater than 20 years.

Note 2.—Release Limits for Specific Disposal Systems. To develop Release Limits for a particular disposal system, the quantities in Table 1 shall be adjusted for the amount of waste included in the disposal system compared to the various units of waste defined in Note 1. For example:

(a) If a particular disposal system contained the high-level wastes from 50,000 MTHM, the Release Limits for that system would be the quantities in Table 1 multiplied by 50 (50,000 MTHM divided by 1,000 MTHM).

(b) If a particular disposal system contained three million curies of alpha-emitting transuranic wastes, the Release Limits for that system would be the quantities in Table 1 multiplied by three (three million curies divided by one million curies).

(c) If a particular disposal system contained both the high-level wastes from 50,000 MTHM and 5 million curies of alpha-

emitting transuranic wastes, the Release Limits for that system would be the quantities in Table 1 multiplied by 55:

$$\frac{50,000 \text{ MTHM}}{1,000 \text{ MTHM}} + \frac{5,000,000 \text{ curies TRU}}{1,000,000 \text{ curies TRU}} = 55$$

Note 3.—Adjustments for Reactor Fuels with Different Burnup. For disposal systems containing reactor fuels (or the high-level wastes from reactor fuels) exposed to an average burnup of less than 25,000 MWd/MTHM or greater than 40,000 MWd/MTHM, the units of waste defined in (a) and (b) of Note 1 shall be adjusted. The unit shall be multiplied by the ratio of 30,000 MWd/MTHM divided by the fuel's actual average burnup, except that a value of 5,000 MWd/

MTHM may be used when the average fuel burnup is below 5,000 MWd/MTHM and a value of 100,000 MWd/MTHM shall be used when the average fuel burnup is above 100,000 MWd/MTHM. This adjusted unit of waste shall then be used in determining the Release Limits for the disposal system.

For example, if a particular disposal system contained only high-level wastes with an average burnup of 3,000 MWd/MTHM, the unit of waste for that disposal system would be:

$$1,000 \text{ MTHM} \times \frac{(30,000 \text{ MWd/MTHM})}{(5,000 \text{ MWd/MTHM})} = 6,000 \text{ MTHM}$$

If that disposal system contained the high-level wastes from 60,000 MTHM (with an average burnup of 3,000 MWd/MTHM), then the Release Limits for that system would be the quantities in Table 1 multiplied by ten:

$$\frac{60,000 \text{ MTHM}}{6,000 \text{ MTHM}} = 10$$

which is the same as:

$$\frac{60,000 \text{ MTHM}}{1,000 \text{ MTHM}} \times \frac{(5,000 \text{ MWd/MTHM})}{(30,000 \text{ MWd/MTHM})} = 10$$

Note 4.—Treatment of Fractionated High-Level Wastes. In some cases, a high-level waste stream from reprocessing spent nuclear fuel may have been (or will be) separated into two or more high-level waste components destined for different disposal systems. In such cases, the implementing agency may allocate the Release Limit multiplier (based upon the original MTHM and the average fuel burnup of the high-level waste stream) among the various disposal systems as it chooses, provided that the total Release Limit multiplier used for that waste stream at all of its disposal systems may not exceed the Release Limit multiplier that would be used if the entire waste stream were disposed of in one disposal system.

Note 5.—Treatment of Wastes with Poorly Known Burnups or Original MTHM. In some cases, the records associated with particular high-level waste streams may not be adequate to accurately determine the original metric tons of heavy metal in the reactor fuel

that created the waste, or to determine the average burnup that the fuel was exposed to. If the uncertainties are such that the original amount of heavy metal or the average fuel burnup for particular high-level waste streams cannot be quantified, the units of waste derived from (a) and (b) of Note 1 shall no longer be used. Instead, the units of waste defined in (c) and (d) of Note 1 shall be used for such high-level waste streams. If the uncertainties in such information allow a range of values to be associated with the original amount of heavy metal or the average fuel burnup, then the calculations described in previous Notes will be conducted using the values that result in the smallest Release Limits, except that the Release Limits need not be smaller than those that would be calculated using the units of waste defined in (c) and (d) of Note 1.

Note 6.—Use of Release Limits to Determine Compliance with § 60.112(c). Once release limits—for a particular system

have been determined in accordance with Notes 1 through 5, these release limits shall be used to determine compliance with the requirements of § 60.122(a) as follows. In cases where a mixture of radionuclides is projected to be released to the accessible environment, the limiting values shall be determined as follows: For each radionuclide in the mixture, determine the ratio between the cumulative release quantity projected over 10,000 years and the limit for that radionuclide as determined from Table 1 and Notes 1 through 5. The sum of such ratios for all radionuclides in the mixture may not exceed one with regard to § 60.112(a)(1) and may not exceed ten with regard to § 60.112(a)(2).

For example, if radionuclides A, B and C are projected to be released in amounts Q_A , Q_B , Q_C and if the applicable Release Limits are RL_A , RL_B and RL_C , then the cumulative release over 10,000 years shall be limited so that the following relationship exists:

$$\frac{Q_A}{RL_A} + \frac{Q_B}{RL_B} + \frac{Q_C}{RL_C} < 1$$

12. In § 60.122, paragraph (c) is amended by redesignating the current paragraphs (c)(18) through (c)(24) as paragraphs (c)(19) through (c)(25) and by adding a new paragraph (c)(18) to read as follows:

§ 60.122 Siting criteria

• • • • •

(c) • • • • •

(18) The presence of significant concentrations of any naturally-occurring material that is not reasonably available from other sources.

13. A new § 60.144 is added to read as follows:

§ 60.144 Monitoring After permanent closure.

A program of monitoring shall be conducted after payment closure to monitor all repository characteristics which can reasonably be expected to provide material confirmatory information regarding long-term repository performance, provided that the means of conducting such monitoring will not degrade repository performance. This program shall be continued until termination of license.

Dated at Washington, DC this 13th day of June 1986.

For the Nuclear Regulatory Commission.
Samuel J. Chilk,
Secretary of the Commission.
[FR Doc. 86-13925 Filed 6-18-86; 8:45 am]
BILLING CODE 7890-01-M

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 71

[Airspace Docket No. 86-AWA-26]

Proposed Alteration of VOR Federal Airways—MO

Correction

In FR Doc. 86-11994, beginning on page 19359 in the issue of Thursday, May 29, 1986, make the following correction:

§ 71.123 [Corrected]

On page 19360, in the first column, under the heading V-504—[Revised], in the fourth line, "C24" should read "042".

BILLING CODE 1506-01-M

14 CFR Part 71

[Airspace Docket No. 86-AWA-16]

Proposed Alteration of VOR Federal Airways; Southeastern United States

Correction

In FR Doc. 86-11599 beginning on page 18898 in the issue of Friday, May 23, 1986, make the following correction:

§ 71.123 [Corrected]

On page 18897, in the second column, under the heading V-54—[Amended], in the eighth line, after "including" insert "a N".

BILLING CODE 1506-01-M

FEDERAL TRADE COMMISSION

16 CFR Part 13

[Docket No. 9174]

Warner Communications, Inc., et al. and Polygram Records, Inc.; Proposed Consent Agreements With Analysis To Aid Public Comment

AGENCY: Federal Trade Commission.

ACTION: Proposed consent agreements.

SUMMARY: In settlement of alleged violations of Federal law prohibiting unfair acts and practices and unfair methods of competition, these consent agreements, accepted subject to final

Commission approval, would require, among other things, two New York City record companies to obtain prior FTC approval before acquiring any interest in major record companies and to notify the FTC about distribution agreements planned with those companies.

DATE: Comments must be received on or before August 18, 1986.

ADDRESS: Comments should be addressed to: FTC/Office of the Secretary, Room 136, 6th St. and Pa. Ave. NW., Washington, DC 20580.

FOR FURTHER INFORMATION CONTACT: FTC/L-501, James C. Egan, Jr., Washington, DC 20580. (202) 254-6024.

SUPPLEMENTARY INFORMATION: Pursuant to section 6(f) of the Federal Trade Commission Act, 38 Stat. 721, 15 U.S.C. 46 and § 3.25(f) of the Commission's rules of practice (16 CFR 3.25(f)), notice is hereby given that the following consent agreements containing consent orders to cease and desist, having been filed with and accepted, subject to final approval, by the Commission, have been placed on the public record for a period of sixty (60) days. Public comment is invited. Such comments or views will be considered by the Commission and will be available for inspection and copying at its principal office in accordance with § 4.9(b)(14) of the Commission's rules of practice (16 CFR 4.9(b)(14)).

List of Subjects in 16 CFR Part 13

Major record companies, Trade practices.

[Docket No. 9174]

In the matter of Warner Communications Inc., a corporation, et al., Warner Bros. Records, Inc., a corporation, Chappell & Co., Inc., a corporation, and Polygram Records, Inc., a corporation.

Agreement Containing Consent Order

The agreement herein, by and between Warner Communications Inc. and Warner Bros. Records, Inc. by their duly authorized officers, and counsel for the Federal Trade Commission, is entered into in accordance with the Commission's Rules governing consent order procedures. In accordance with those rules the parties hereby agree that:

1. Respondents, Warner Communications Inc., and Warner Bros. Records, Inc. are corporations organized and existing under the laws of the State of Delaware with offices at 75 Rockefeller Plaza, New York, New York 10019.

2. Respondents admit all jurisdictional facts set forth in the Commission's complaint in this proceeding.

3. Respondents waive:

- (a) Any further procedural steps;

- (b) The requirement that the Commission's decision contain a statement of findings of fact and conclusions of law;

- (c) All rights to seek judicial review or otherwise to challenge or contest the validity of the order entered pursuant to this agreement; and

- (d) Any claim under Equal Access to Justice Act.

4. This agreement shall not become a part of the public record of the proceeding unless and until it is accepted by the Commission. If this agreement is accepted by the Commission, it will be placed on the public record for a period of sixty (60) days and information in respect thereto publicly released. The Commission thereafter may either withdraw its acceptance of this agreement and so notify the respondents, in which event it will take such action as it may consider appropriate, or issue and serve its decision in accordance with the terms of this agreement in disposition of the proceeding.

5. This agreement is for settlement purposes only and does not constitute an admission by respondents that the law has been violated as alleged in the complaint issued by the Commission.

6. This agreement contemplates that, if it is accepted by the Commission, and if such acceptance is not subsequently withdrawn by the Commission pursuant to the provisions of Section 3.25(f) of the Commission's Rules, the Commission may without further notice to respondents: (1) Issue its decision containing the following order to cease and desist in disposition of the proceeding, and (2) make information public in respect thereto. When so entered, the order shall have the same force and effect and may be altered, modified or set aside in the same manner and within the same time provided by statute for other orders. The order shall become final upon service. Delivery by the U.S. Postal Service of the decision containing the agreed-to-order to respondents' address as stated in this agreement shall constitute service. Respondents waive any right they might have to any other manner of service. The complaint may be used in construing the terms of the order, and no agreement, understanding, representation, or interpretation not contained in the order or in the agreement may be used to vary or to contradict the terms of the order.

7. Respondents have read the complaint and the order contemplated hereby. They understand that once the order has been issued, they will be required to file one or more compliance

FROM Robert P. Cranwell Sandia Nat'l Lab		DATE OF DOCUMENT 7/15/86	DATE RECEIVED 7/EX	NO WMSG-622
TO Walton Kelly		LTR XX	MEMO	OTHER XX
CLASSIF		ORIG.	CC	OTHER
POST OFFICE		ACTION NECESSARY <input checked="" type="checkbox"/>		CONCURRENCE <input type="checkbox"/>
REG. NO.		NO ACTION NECESSARY <input type="checkbox"/>		COMMENT <input type="checkbox"/>
DESCRIPTION (Must Be Unclassified)		FILE CODE: 426.1	DATE ANSWERED BY 7/31/86	
ENCLOSURES		REFERRED TO	DATE	RECEIVED BY
REMARKS		P. Justus, WMG	7/17	<i>[Signature]</i>
Ticket closed out by a letter to Dr. Siegel on 86/07/24. RW				7/17