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MEMORANDUM FOR: Elizabeth Shelburne, Chief
Public Document Room Branch
Division of Rules and Records
Office of Administration and Resource Management

FROM: Clark Prichard
Waste Management Branch
Division of Engineering
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SUBJECT: REGULATORY ANALYSIS FOR PROPOSED PART 61 AMENDMENTS

The notice of proposed rulemaking on Part 61 which was published in the Federal Register on May 18, 1988 (53 FR 17709) states that the enclosed Regulatory Analysis will be available in the Public Document Room. Please make the necessary arrangements. Thank you.

~~Original Signed By:~~

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Enclosure: As stated

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REGULATORY ANALYSIS
PROPOSED PART 61 AMENDMENTS
IN LIEU OF REVISION OF THE HLW DEFINITION

I. STATEMENT OF THE PROBLEM

10 CFR Part 60 is the basis for NRC regulation of high level radioactive waste (HLW) in geologic repositories. Part 60 contains a definition of what constitutes high level waste for the purposes of the rule. The Nuclear Waste Policy Act of 1982 (NWPA) also contains a definition of high level waste, one that differs from the Part 60 definition. The NWPA definition is as follows;

- a. The highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and
- b. Other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation.

The issue at hand is whether or not to revise the definition in Part 60 to conform with that in the NWPA, and if not, what other action should be taken. Adoption of the NWPA definition would involve Commission action to decide if and how "sufficient concentrations" in clause a. of the NWPA definition should be interpreted; and in regard to clause b., how to determine what "other highly radioactive material" requires "permanent isolation."

The waste classification system presently defines HLW by source; HLW includes spent nuclear fuel and waste generated from reprocessing spent fuel. Low level radioactive waste (LLW) is defined as any waste not considered HLW. There is no upper limit to what constitutes LLW. The Commission's regulations for disposal of waste in 10 CFR 61 classify some LLW as either Class A, Class

B, or Class C. However, some LLW has radionuclide concentrations which are greater than the upper limits of Class C LLW. These wastes are referred to as "above Class C waste." Above Class C wastes currently consist of a variety of waste streams generated by industrial, medical, and utility operations. The majority of future above Class C waste is expected to come from the decommissioning of nuclear power plants. By volume, the amount of above Class C LLW is not now, and is not expected to be, more than a few percent of total LLW. By activity however, it is significant.

On February 27, 1987 the Commission published an advance notice of proposed rulemaking on the definition of HLW (52 FR 5992). The advance notice (ANPR) outlined a tentative approach to defining HLW, and requested public comment on this approach and the general issues involved in revising the definition of HLW. NRC received 94 public comment letters from a wide range of commentors; States and Indian Tribes, other Federal agencies, utility groups, environmental and public interest groups, and others. The comments were such that the NRC staff has modified the approach outlined in the ANPR.

Public comments on the 8 specific questions posed in the ANPR, and on other issues, were very extensive, involving complex technical and legal issues. Many commentors expressed concern that a revision would allow some wastes which are now classified as HLW to be classified as LLW under a revised definition. Another issue receiving heavy comment was the proposed criterion for classifying material as HLW under Clause (b) of the NHPA. The Commission proposed to define waste as high level if it was both highly radioactive and required permanent isolation. Specific concentration limits for radionuclides were proposed to define highly radioactive material, and a set of risk based analyses was proposed to determine which highly radioactive waste required permanent isolation.

Commentors offered a wide range of alternative criteria for defining HLW, some of which were more conservative than that proposed in the ANPR, and some less conservative. Many comments argued that waste which was either highly radioactive or long lived should be HLW. On the other hand, some comments supported the view that the proposed concentration limits were too

conservative, and would result in material not really needing permanent isolation going to the geologic repository.

II. OBJECTIVE

This rulemaking would clarify the system of radioactive waste management. It would ensure that disposal options for radioactive waste are consistent with public health and safety.

Revision of the definition of HLW or of Part 61 would not affect the responsibilities of States for managing radioactive waste. The Low Level Radioactive Waste Policy Amendments Act of 1985 established the responsibilities of States and the Federal government for waste management. States are only responsible for commercially generated Class A, B, and C low level waste, as defined in Part 61. With the exception of NARM, the Federal government is responsible for all other wastes, whether they are classified as high level waste or low level waste. Revision of the definition of HLW would also not alter the authority, previously established by the Energy Reorganization Act of 1974, for NRC licensing of DOE waste facilities. As NRC is not presently authorized to regulate naturally occurring or accelerator produced materials (NARM), there would be no effect on these wastes.

III. ALTERNATIVES

(1) MAKE NO CHANGE IN THE DEFINITION OF HLW BUT REQUIRE DISPOSAL OF ALL ABOVE CLASS C WASTE IN A GEOLOGIC REPOSITORY OR APPROVED ALTERNATIVE

This alternative would continue the status quo, so that Part 60 kept the original definition of HLW. This definition would differ from the definition of HLW in the Nuclear Waste Policy Act (NWPA). There would be no Commission guidance given as to Clause B of the NWPA definition, which empowers the Commission to add to reprocessing waste and spent fuel such other highly radioactive waste which requires permanent isolation. Rather, all above Class C waste would remain classified as LLW.

The Federal government would have responsibility for management and disposal of all HLW in the Part 60 definition plus all above Class C waste. It would have to develop special facilities to dispose of this above Class C LLW, or decide to place it in the geologic repository along with HLW. DOE has stated in its recent report to Congress on management of above Class C LLW that it needs an NRC decision on how much of this above Class C waste, if any, will be classified as HLW. DOE maintains that its plans for management of radioactive wastes cannot proceed apace without an NRC decision on this point.

Given the current institutional setup of the waste management system, establishing a precise numerical definition of HLW now would not solve any pressing problem. Given the complexities of developing a concentration-based classification system, this would be a major commitment of resources. It does not seem worthwhile to carry out this task, the outcome of which would affect only a relatively small volume of waste. However, in the absence of any revision, the Commission could require that all above Class C waste be sent to a geologic repository, unless alternative proposals are approved by the Commission. Requiring repository disposal would allow the DOE program for disposal of above Class C waste to proceed. Additional legislation may be needed to provide a funding mechanism for covering the costs of disposal of these wastes.

The argument can be made that this alternative would result in some waste not needing permanent isolation to be disposed of in a repository. This may be true, but would not necessarily result in an additional cost burden. The total volume of above Class C LLW is expected to be approximately 2,000 cubic meters from now through the year 2020, an amount of waste which is very small relative to the total volume of LLW generated. The choice to be made among disposal options is between emplacing above Class C material in a geologic repository, or developing a new facility to dispose of these wastes. The latter could be very costly. For the present and immediate future, it seems most effective from the viewpoint of public policy to utilize geologic repository disposal.

This alternative is the recommended one.

(2) PROCEED WITH DEFINING HLW USING THE APPROACH OUTLINED IN THE ANPR

This alternative would involve completion of NRC staff activities to establish a waste classification system like that advanced in the ANPR. NRC staff would continue to carry out technical studies to determine concentration limits for radionuclides in other non-reprocessing highly radioactive wastes that require permanent isolation. Highly radioactive would be defined by the Commission's Part 61 upper limits for Class C LLW. The technical studies to determine which of these wastes needs permanent isolation would assume reference with a hypothetical "intermediate" waste facility, and consist of performance modeling of this facility combined with a variety of waste streams. Waste types which were determined to exceed postulated release limits through performance assessment modeling would be classified as HLW. Disposal of these wastes would be in a geologic repository or equivalent in terms of permanently isolating the waste from the environment.

Waste types which, through the same type of modeling, were determined not to exceed the postulated release limits would be classified as LLW. However, as the Federal government is responsible for management of above Class C LLW, DOE would have to dispose of this above Class C LLW in an appropriate facility.

For reprocessing waste, the ANPR offered two options; (1) Treat Clause A of the NWPA definition as if it referred to all reprocessing wastes which have historically been considered HLW (a so-called "source based" definition), or (2) interpret the language of Clause A to call for Commission determination of what concentrations reprocessing waste must have to be determined to be HLW.

The advantage of this alternative is that, when option (2) for Clause A is chosen, waste classification across the board would be based on risk. This type of definition reflects the preferred methodology of waste classification when viewed from a theoretical approach.

A major disadvantage, when this alternative is considered in the context of the waste management system, is the lack of any currently available disposal facility for disposal of above Class C LLW. This raises a number of concerns. Performance assessment modeling referred to above would have to be based upon some arbitrary theoretical "intermediate" facility, which may never be built. Any facility that is developed may have completely different characteristics,

invalidating the results of the modeling. The waste classification question would thus be reopened.

Another disadvantage would be the complexity of the task and the necessary commitment of NRC resources.

(3) DEFINE HLW AS ALL REPROCESSING WASTE, AND ALL NON-REPROCESSING WASTE ABOVE CLASS C, BUT RETAINING FLEXIBILITY FOR FUTURE RECLASSIFICATION

Alternative (3) is to consider all non-reprocessing waste with concentrations greater than Class C LLW as HLW. All reprocessing waste now classified as HLW would remain HLW. However, this alternative would retain the flexibility to reclassify some of this waste in the face of future developments.

For reprocessing waste, keep all waste presently considered HLW in the HLW category. Incidental wastes from reprocessing, now considered non-HLW, would remain in that category. For non-reprocessing waste, waste presently classified as above Class C LLW would be HLW. The Commission's regulations would allow for case-by-case reclassification of some waste. Those seeking reclassification to dispose of wastes using technologies which are newly developed would have to justify their requests with technical studies which clearly demonstrate that the isolation capability of the chosen technology is adequate.

The major drawback to this alternative is that labeling above Class C waste as HLW would make it subject to a number of regulations really meant for much more hazardous waste.

IV. IMPACTS OF THE RECOMMENDED ALTERNATIVE

The recommended approach would have essentially no major impacts on the management of reprocessing wastes as it retains the status quo. Some positive impacts on the public and DOE could accrue from promulgating the rulemaking, as it should reduce uncertainty as to classification of reprocessing wastes.

For non-reprocessing wastes there would be no impact on State responsibilities. For DOE, some additional amount of above Class C LLW would go to a repository for disposal (assuming no alternative proposal is approved by the Commission). The cost of this, relative to alternatives should not be significant.