NUCLEAR MANAGEMENT AND RESOURCES COUNCIL

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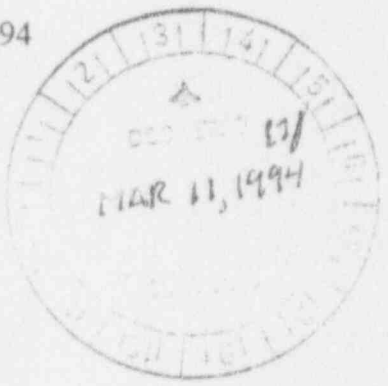

Mr. Samuel J. Chilk
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555

ATTENTION: Docketing and Service Branch

SUBJECT: Comments on Staff Draft for Developing Radiological Criteria for Decommissioning

Dear Mr. Chilk:

These comments are submitted by the Nuclear Management and Resources Council (NUMARC)[1] on behalf of the nuclear power industry in response to the *Federal Register* notice (February 2, 1994, 59 Fed. Reg. 4868) announcing the availability of the staff draft of a proposed rule on radiological criteria for decommissioning and requesting comments. The nuclear power industry is pleased to have another opportunity to provide constructive input to NRC on development of these criteria based on our actual experience in performing decontamination and planning for decommissioning. Considerable industry resources have been dedicated to providing input to the NRC throughout the enhanced participatory rulemaking on site cleanup criteria including participation in the workshops NRC held and preparing and submitting detailed comments on the NRC's issues paper, the workshops and the scoping document for the staff draft GEIS. In addition to the following general comments, detailed comments are provided as an enclosure.

Based on industry's review, the staff draft provides no evidence that this standard would achieve any significant improvement in public health and safety. However, as proposed it will have a large impact on the costs our rate payers will bear without a

[1] NUMARC is the organization of the nuclear power industry that is responsible for coordinating the combined efforts of all utilities licensed by the NRC to construct or operate nuclear power plants, and of other nuclear industry organizations, in all matters involving generic regulatory policy issues and on the regulatory aspects of generic operational and technical issues affecting the nuclear power industry. Every utility responsible for constructing or operating a commercial nuclear power plant in the United States is a member of NUMARC. In addition, NUMARC's members include major architect/engineering firms and all of the major nuclear steam supply system vendors.

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commensurate benefit to public health and safety. These large costs will be required to demonstrate compliance with an unreasonable goal with no commensurate benefit to the objective of safe and reasonable cleanup. To summarize, the staff chose an extremely low dose limit, added requirements below the dose limit to reduce dose further to background levels, included materials released in effluents over the life of the facility, added duplicative requirements for waste and contamination minimization when industry's performance in these areas has been outstanding, and made consideration of realistic land use so onerous that for all intents and purposes it is unavailable. In addition, the impact of the rule will be largely defined by guidance documents that the NRC has not provided and has not committed to provide within the timeframe of the proposed rule.

The technical and practical considerations provided to NRC by workshop participants are seriously lacking in the formulation of the radiological criteria for decommissioning. The staff draft sets up expectations for cleanups to levels that are not technically achievable, nor desirable in terms of impacts of cleanup measures and requires exorbitant resources to attempt to demonstrate compliance. Section 20.1402 of the staff draft describes the goal to be, "to reduce the concentration of each radionuclide which could contribute to residual radioactivity at the site to a level which is indistinguishable from background." The goal of having each radionuclide be indistinguishable from background, "a zero dose goal," will become the de facto limit. Establishing a zero dose standard from licensed material is counterproductive to NRC's stated objective for this rulemaking: "providing a clear and consistent basis for determining the extent to which radioactive contamination must be removed or reduced."

The capabilities for state of the art instrumentation and statistical analysis procedures in NUREG 5849, NRC's recent guidance for the termination survey, equate to doses of no less than 10 mrems per year for most cases, for the easy to detect radionuclides. Yet the staff draft goes beyond this lower limit of compliance demonstration and requires ALARA and attainment of a goal of cleaning a site until radioactive material is indistinguishable from background on a radionuclide by radionuclide basis. The public process accompanying decommissioning will interpret this "goal" as the legal dose limit. NRC's failure to address the technical limitations of compliance demonstration will require each licensee to explain these technical realities to the public in the context of their own site cleanups. Such a standard so frustrates practical cleanup that it could be considered an abrogation of the agency's statutory responsibility for protection of public health and safety, which includes standards for the safe and timely decommissioning of nuclear facilities.

The staff draft revisits residual contamination from effluents released in accordance with approved and carefully monitored and documented programs used during plant operation to assure public health and safety. The definition, coupled with the de facto requirement to reduce the concentration of each radionuclide to a level indistinguishable from background, could be interpreted as requiring the licensee to identify single atoms of licensed material over square miles of areas potentially affected by effluents. No evidence is provided that NRC anticipates these releases have resulted or could result in accumulations beyond the effects envisioned in the original environmental impact statements, or might be of a magnitude which would approach the 15 mrem/year dose limit proposed.

The staff draft makes several references to planned regulatory guidance on compliance and implementation methods for assessing dose from concentrations or surface measurements, and for meeting the return to background goal. These methodologies are critical to demonstrating compliance and can substantially affect practical implementation of the regulation. For the rulemaking process to be meaningful, it is imperative that the staff draft guidance is issued concurrently with the proposed rule and provided for public comment.

The staff draft fails to address technical and practical consideration in numerous other areas. For example, the staff draft's unrealistic thresholds for application, and onerous requirements for getting public input effectively preclude realistic consideration of land uses in establishing cleanup levels. The staff draft also would overlay requirements for waste minimization and contamination control where strong economic incentives, NRC guidance and state requirements already drive performance in these areas to optimal levels.

The commercial nuclear power industry believes that a dose limit based on the recommendations of nationally and internationally recognized experts in radiation protection, the National Council on Radiation Protection and Measurements (NCRP) and the International Commission on Radiological Protection (ICRP) -- 100 mrems/year, used in combination with a process that evaluates potential cleanup activities at a site on the basis of their providing overall benefit and risk reduction, i.e., ALARA -- is the optimum approach to setting protective, practical criteria. If it is necessary to adopt EPA's straight dose limit approach, then a limit of 30 mrems/year should be chosen. This value corresponds to the limits of detectability for direct exposure measuring equipment, i.e., approximately 5μR/hr x 6000 hour occupancy equals 30 mrems/year. These approaches permit concentrating money and effort on cleanup and not compliance demonstration, which offers no ultimate benefit to society.

NUMARC strongly urges the NRC to develop a technically based and practically implementable rule. Such a rule will protect public health and safety, will be measurable and verifiable and will permit sites to be cleaned up in a cost effective manner such that they will be made available for further beneficial uses to society. NUMARC appreciates the opportunity to submit the enclosed detailed comments. If we can be of any assistance to you as you review our comments, please do not hesitate to contact Lynnette Hendricks, John Schmitt or me.

Sincerely,

Thomas E. Tipton

TET/LH:plg
Enclosure

NUCLEAR POWER INDUSTRY COMMENTS ON RADIOLOGICAL CRITERIA FOR DECOMMISSIONING

Standard Lacks a Sound Technical Basis

The NRC staff acknowledged in the cover letter transmitting the staff draft to participants and interested parties "...it is not possible to accommodate all of the specific viewpoints presented, given the large range of views and opinions offered." The staff draft does not have a sound technical basis and ignores the recommendations scientific bodies (such as the International Commission on Radiological Protection (ICRP). ICRP Report Number 60 recommends that intervention activities such as site cleanups should have a goal of "...doing the most overall good considering all types of costs, impacts and benefits." ICRP even goes so far as to recommend waiving the 100 mrem annual dose limit for members of the potentially exposed public when considering appropriate remediation actions in order to achieve "...doing the most overall good..." because the "countermeasures forming the program of intervention, which always have some disadvantages, should be justified in the sense that they should do more good than harm." By contrast the staff draft has reduced flexibility to optimize actions to maximize benefits by reducing the public dose limit to 15 mrems/year. The staff draft then reduced the limit even further by requiring ALARA activities below 15 mrems/year with the goal of achieving return to background on a radionuclide-by-radionuclide basis and 3 mrem/year from radionuclides distinguishable from background radiation[1]. Consequently, the end result is not a standard that would permit cleaning up sites to safe levels that are measurable and verifiable and permit doing the most overall good in the process.

NRC's Hybrid Radiation Protection System Foregoes Advantages of Traditional Approaches

The staff draft contains parts of the NRC's traditional worker and public protective criteria based on recommendations of national and international radiation protection experts, the ALARA approach. But, the staff draft also incorporates the lower dose limits associated with EPA's traditional system of straight dose limits based on "acceptable risk." In addition the staff draft establishes return to background de facto limits. The staff draft is an unusual hybrid that has lost the benefits of both of the two systems

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[1]NUMARC is unable to determine the NRC's intent regarding application of the "goals" concept because the rule requires meeting both of two conditions that are contradictory. Namely, condition (1) states each radionuclide should be reduced to concentrations indistinguishable from background, yet condition (2) states the total effective dose equivalent from all radionuclides distinguishable from background must not exceed 3 mrem/year. By using multichannel spectrometry and long counting times for environmental samples, power plant radionuclides are not indistinguishable from background concentrations unless they are present in concentrations equating to doses of much less than 1 mrem/year. Consequently, for the purposes of these comments NUMARC is assuming that meeting the goal equates to a zero dose standard for nuclear power plants.

commonly used, i.e., the NRC's traditional use of national and international radiation protection expert's recommendations of 100 mrems/year plus ALARA to permit flexibility to optimize actions taken to maximize benefits, and the EPA's approach of using a straight dose limit which offers simplicity, "get there and you're done." Under the staff draft the utility is never done because the goals of return to background and 3 mrems/year will be de facto limits. Even if this were not the case, as shown in the example below under "Costs of Compliance Dwarf Benefits...," a formal ALARA optimization process required under 30 mrems/year is not meaningful at such low doses. In addition, the staff draft hybrid approach to radiation protection creates yet another system of regulating radiation exposure of the public. This can only result in confusion. Problems for the regulatory agencies are also anticipated as they attempt to determine equivalency where statutory programs overlap.

The commercial nuclear power industry believes that a dose limit based on the recommendations of nationally and internationally recognized experts in radiation protection, the National Council on Radiation Protection and Measurements (NCRP) and the ICRP -- 100 mrems/year, used in combination with a process that evaluates potential cleanup activities at a site on the basis of their providing overall benefit and risk reduction, i.e., ALARA -- is the optimum approach to setting protective, practical criteria. A screening level of 25 mrems/year should be employed to ensure that if the dose to the average member of the critical group exceeds 25 mrems/year, no member of the group will be exposed in excess of 100 mrems/year. This position is comparable to the position of the Health Physics Society (HPS).

If it is necessary to adopt EPA's straight dose limit approach, then a limit of 30 mrems/year should be chosen. EPA recently summarized the basis for regulating exposure to radioactive materials in EPA 402-R-94-005, "The Radiation Site Cleanup Regulation, An Interim Progress Report," February 1994. EPA states that its radiation protection regulations, including Superfund, correspond to risk limits in the range of 1 E-2 to 1 E-4. Using the 30 year period of exposure that EPA applies to Superfund, a 30 mrem/year standard results in a risk of about 5 E-4 which is comparable to values employed in several EPA regulatory programs for radioactive material. This value corresponds to the limits of detectability for direct exposure measuring equipment, i.e., approximately 5μR/hr x 6000 hour occupancy equals 30 mrems/year. This approach permits concentrating money and effort on cleanup and not analysis and cost demonstration, which offer no ultimate benefit to society.

Codifying a Goal in the Regulations

NRC should not codify a goal in the regulations. By codifying a goal, it will become the limit one has to demonstrate compliance to following cleanup. NRC should state in the preamble to the final rule that the goal of ALARA is ideally to reduce doses to

background whenever this can be accomplished with reasonable measures, i.e., optimize the benefits. The Health Physics Society's Position Paper on return to background provides an analysis of the variability in background radiation and concludes that "For purposes of lifetime risk, a site-specific dose rate of 10-30 mrems/year greater than the regional average is well within the natural variations of background and should be considered equivalent to background and without demonstrable increased risk." (February 1994 edition of the HPS Newsletter). These should be the values NRC recognizes as indicative of background variation, not 3 mrem/year.

Inclusion of Residuals of Part 20 Effluents Has No Health and Safety Benefit and Is Unbounded

The staff draft's definition of "residual contamination" includes radioactivity from all licensed and unlicensed sources discharged from the site in accordance with 10 CFR Part 20. This definition, coupled with the de facto requirement to reduce the concentration of each radionuclide to a level indistinguishable from background, could be interpreted as requiring the licensee to identify single atoms of licensed material over square miles of areas potentially affected by effluents. The Environmental Impact Statement for these facilities considered the accumulation of slight amounts of licensed material in the environment as a result of 40 years of legally permitted discharges. The NRC action to broadly include such discharges under the decommissioning rule after specifically permitting them under the terms of the original license would be irresponsible regulation. The staff draft does not provide any justification for the need to consider these discharges in terms of public health and safety. Were public health and safety to be an issue in exceptional circumstances, the NRC currently has the authority to evaluate and take action where unforeseen mechanisms have led to a buildup of materials in the environment that would pose an unacceptable risk to members of the public.

A Meaningful Rulemaking Process Requires Interpretive Guidance Be Available Concurrent With The Regulations Being Proposed

The staff draft refers to several guidance documents that NRC will publish to define acceptable methods for performing analyses to comply with the standard. This includes guidance for: converting from concentrations of radionuclides to dose, evaluating alternate risks and costs when making the ALARA analyses, choosing scenarios and defining the critical group for exposure determinations, and determining if the return to background goal has been met. Each of these guidance documents can have a significant effect on the actual level of cleanup required to meet the regulation. Consequently, a meaningful rulemaking process that accurately considers costs and impacts vs. benefits in setting the criteria, must make this guidance available in the time frame of the proposed rule. The comments provided herein in response to the staff draft are done in keeping with the intent of NRC's providing the staff draft of a proposed rule

for input by interested parties. These comments are hampered by lack of the necessary guidance at this time. When the proposed rule is issued for comment, it is imperative that the associated guidance be issued concurrently to provide constructive review and input and for the public comment process to be meaningful.

Standard is Not Cost Beneficial

Executive Order 122866, September 30, 1993, "Regulatory Planning and Review," directs that "Each agency shall assess both the costs and the benefits of the intended regulation and, recognizing that some costs and benefits are difficult to quantify, propose or adopt a regulation only upon a reasoned determination that the benefits of the intended regulation justify its costs." Individual rulemakings by agencies responsible for public health and safety offer an important opportunity for the government to exercise resource accountability to the public. The agency must avoid causing exorbitant resources to be expended on marginal or negligible improvement in public health and safety. In this staff draft this important responsibility has not been upheld. In its position paper on returning sites to background, the Health Physics Society (HPS) states "Unless tangible health benefits are attained, the cleanup costs that would be redistributed to the general public through taxes and increased consumer prices may cause more pubic harm than good" (HPS Newsletter, February 1994).

There is little evidence in the staff draft that any meaningful assessment was made of benefits vs. costs, even in a qualitative sense. The staff chose an extremely low dose limit, added requirements below the dose limit to reduce dose further to background levels, included materials released in effluents over the life of the facility, added duplicative requirements for waste and contamination minimization when industry's performance in these areas has been outstanding, and made consideration of realistic land use so onerous that for all intents and purposes it is unavailable. We strongly encourage meaningful cost benefit assessment for these proposals be included in the draft GEIS when it is made available to the public. References made to the GEIS in the staff draft are not encouraging. The staff draft fails to recognize that for site cleanup situations contamination is already in place, and in many cases it would require extreme measures be taken to achieve cleanup and compliance demonstration for no commensurate improvement in public health and safety. This is certainly true in every case for "return to background levels." This approach is counter to NRC's own initiative to reduce regulatory requirements that are marginal to safety.

Costs of Compliance Demonstration Dwarf Benefits at Doses Below 30 mrems/year

The proposal would place "goals" of return to background and 3 mrems/year in the regulations. The return to background and 3 mrem/year goals will become the de facto limits. It is not possible to demonstrate compliance with the return to background goal

for decommissioning. Demonstrating compliance with the 3 mrem/year dose goal will not be feasible in most cases. Requiring demonstration of compliance to any value below 15 mrems/year is waste of resources. For example: it is anticipated that the number of individuals exposed at decommissioned sites is not likely to be large. Assume 25 people occupy the site after cleanup for applying the most conservative agricultural residence scenarios. If the dose to all 25 individuals was reduced from 15 mrems/year down to 3 mrems/year, the total dose saved over a 30-year residency is 9.0 rem. The cost of a formal ALARA analysis for a nuclear power plant site to examine appropriate actions would likely cost upwards of $100,000, resulting in a dollar per person rem cost of $11,000 without considering the additional non-radiological risks and costs of any remediation necessary to reduce doses to 3 mrems/year, and additional costs of demonstrating compliance to 3 mrems/year.

The waste of resources associated with demonstrating compliance with the proposed dose values is significant when one considers the cost of radiation surveys to determine whether cleanup has been accomplished. Recent estimates by shut down plants of the cost of performing the final survey to demonstrate compliance with current criteria (approximately 10-15 mrem/year) range from 6 to 12 million dollars. Compliance demonstration for the return to background and 3 mrems/year would drastically raise the cost of the final survey (presuming it was achievable, it is not possible for the return to background goal). The largest share of the cost of the final survey comes from technician time, on the order of 50 workers for 15 months, to take the 100,000's of measurements necessary to demonstrate compliance. Compared with current requirements, each measurement would take approximately ten times longer to demonstrate meeting the 3 mrem/year criterion (because counting times increase exponentially in order to discriminate smaller amounts of licensed material from background radiation and instrument "noise"). Consequently, the cost increases incurred by rate payers could be in the $50 to $100 million range. These increases are unjustified based on dose/risk reduction. Considering only the cost of the final survey, the dollars per person-rem would be greater than 5 million dollars for the 25 residents scenario described above. By contrast cleanup to levels equating to 3 mrem/year might be achieved by ALARA, i.e., by taking all reasonably achievable actions to reduce doses, under NRC's current system of protection. While the same level of cleanup might be achieved under both systems, under the ALARA system money and effort would be concentrated on cleanup and not analysis and compliance demonstration which offer no ultimate benefit to society. The NRC's decision to regulate below a 30 mrem/year dose limit does not meet the intent of the Executive Order as discussed above.

Thresholds for Reopening Are Not Based on Appropriate Health and Safety Objectives

The staff draft states once a license is terminated in accordance with criteria in the rule, the Commission would require additional cleanup only if, based on new

information, "it determines that residual radioactivity remaining at the site could result in significant public or environmental harm." The threshold for revisiting a site should be based on two criteria: 1) that the site poses significant public or environmental harm (not just that it has the potential to result in harm); and 2) that the benefits of the additional cleanup efforts outweigh all impacts and costs, non-radiological and radiological, of the added cleanup. Only significant improvements in safety that are overall beneficial should be adopted.

Standard Precludes Recognizing Realistic Land Uses

NRC's proposal does not permit recognizing realistic uses of the land in determining cleanup required to meet the standard because several inappropriately high thresholds are applied to restricted site release. The licensee must demonstrate that cleanup to unrealistic uses are not technically achievable, are prohibitively expensive or would result in net public or environmental harm and provide funds so an independent third party could carry out any necessary control and maintenance. The licensee must also establish a site specific advisory board with poorly defined functions (see comments below) and must provide the board's recommendations on the licensee's proposed analysis along with disposition of the board's advise in the submitted decommissioning plan. This is in addition to the public access to the decision making through the current NRC decommissioning approval process. By comparison, EPA (in the Interim Progress Report mentioned above) states the draft policy on future uses of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) sites is that "the current use should be assumed to be the likely future use in the absence of persuasive evidence to the contrary."

Each threshold for restricted use is excessive with regard to retention of sites by utilities for future use in electricity generation. Sites with valuable infrastructures (e.g., transmission right of way) in place for electricity generation and transmission may not be turned over for residential occupancy. While cleanup, for example removing large volumes of slightly contaminated soils, may be technically achievable and not prohibitively expensive in the context of the total assets of a utility, it would nevertheless be fiscally irresponsible to ask rate payers to pay millions of dollars to remove and dispose of soil when the exposure scenarios underpinning exposure calculations will not occur. A utility should not be required to establish a fund for an independent third party to carry out control and maintenance of the property when the utility still owns the property and has business incentives to care for and secure the property. A facility faced with this situation might be inclined to go into SAFSTOR to partially offset costs of senseless remediation, but still would incur millions of dollars of additional cost to the rate payers in the process.

The net result of the many excessive and unworkable features of the staff draft for restricted release will be to discourage timely cleanup, and to impose cleanup criteria inappropriate to actual use of the site with an associated large waste of resources.

The Site Specific Advisory Board is Unnecessary

The site specific advisory board represents a poorly defined, unnecessary and potentially obstructionist approach to what could be accomplished with processes already in place. For example, many communities already have land use planning committees or boards constituted of elected officials, empowered to represent the local populace in accordance with local laws, to address the types of issues the staff draft would assign to the site specific advisory board. The NRC has not identified the shortcomings of its present process of obtaining public input that the proposed board would correct. In fact, as proposed, the board is just an additional layer of input to the NRC without any identified value added to the process.

Due to the varied nature and complexity of facility decontamination, the diverse composition of communities in the vicinity of the sites, and the different history of community/industry relations on issues prior to site cleanup, it is neither desirable nor feasible to delineate in NRC's rules the form or scope of community involvement in evaluating land use options.

Requirements for Contamination and Waste Minimization are Unnecessary

The staff draft proposal includes requirements for minimizing contamination, facilitating decommissioning and minimizing the generation of waste at three junctures in site operations: the start up licensing phase, any time substantial modifications are made, and within three years of the effective date of the rule. Industry believes (other than for the requirement to consider designs that facilitate minimizing contamination prior to initial licensing) the requirements solve no problem and should not be imposed because they will divert resources from successful existing programs to activities to pursue compliance demonstration with needless requirements.

Although NRC states they are aiming these requirements at addressing sites on their problem list, they are ignoring the significant economic incentives in the form of expensive cleanups and waste disposal fees that have come into play over the 30 years since many of those problem facilities were licensed to operate. For example, the extremely effective economic incentives have reduced waste volumes significantly and the NRC has guidance and states have rules in place already requiring waste minimization. As reflected in the 1992 performance indicators for the U.S. nuclear utility industry, the volume of low-level solid radioactive waste per unit has been reduced from 950 m^3 to 219 m^3 and 500 m^3 to 87 m^3 from 1980 to 1992 for BWRs and PWRs

respectively. Current ALARA and worker protection programs at utilities effectively address contamination control to minimize plant and site contamination. The additional decommissioning contamination and waste minimization requirements would result in significant resource expenditures to revise and maintain procedures and to perform the required yearly ALARA analysis. The proposed requirements add another layer of complexity and control over an area that is already covered by market forces and other requirements to reduce contamination and worker doses. Overlaying requirements where performance is already ensured is poor regulatory practice, is unjustifiable and violates NRC's own "Principles of Good Regulation" which states "Regulatory activities should be consistent with the degree of risk reduction achieved." As a minimum the addition of these requirements should be subjected to the agency's policy for backfit analysis.

Grandfathering Clause Also Applies to SAFSTOR Option

The staff draft includes a grandfathering provision that states the new rules will not apply to sites already covered by a decommissioning plan approved by the Commission. Industry agrees with NRC's inclusion of this provision. It is reasonable and in keeping with the objective of these criteria. It is imperative that licensees have access to the applicable site release criteria at the time they are planning and collecting funds for the decommissioning in order that the proper plans are made and the proper amount of funds are set aside. To do otherwise could cause licensees to spend large amounts of resources developing plans that will need to be substantially revised and to potentially collect insufficient funds from those rate payers that received the benefits of the power generation. Since knowing the cleanup criteria is so critical to this process, the rule should be clarified to state explicitly that the grandfathering provision also applies to facilities who have chosen to decommission under the SAFSTOR option. To do otherwise could result in a situation where the utility has insufficiently funded decommissioning and 30-60 years have gone by since the rate payers enjoyed the benefits of the power, resulting in a very inequitable distribution of costs among past and current rate payers.