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copy

Mr. James R. Curtiss
Commissioner
U.S. Nuclear Regulatory Commission
1717 H Street, N.W.
Washington, D.C. 20555

Dear Mr. Curtiss:

Enclosed for you consideration are the comments of the American Mining Congress relative to the Nuclear Regulatory Commission's developing policy relating to nonproliferation of small waste disposal sites for wastes from in situ uranium mining operations. We would appreciate your sharing these comments with other interested Commissioners.

If I can answer any questions with respect to this matter, or otherwise be of assistance, please call me at 202/861-2876.

Yours very truly,

James E. Gilchrist
Vice President

Enclosure

Comments of the American Mining Congress

on NRC's Policy Regarding
Nonproliferation of Small Waste Disposal Sites Contained
in Criterion 2, Appendix A, 10 CFR Part 40

In September of 1980, the Nuclear Regulatory Commission (NRC) published its final Generic Environmental Impact Statement (GEIS) on uranium milling. NUREG - 0706. The conclusions reached by NRC in developing the GEIS provided the basis for revisions to NRC regulations for control and disposal of by-product material at uranium mill tailings facilities. The requirements for decommissioning and final disposal at mill tailings sites are stated primarily as "performance criteria" (GEIS Vol. I at 1) and are included in Appendix A, to 10 CFR Part 40. Criterion 2 of Appendix A addresses nonproliferation of small waste disposal sites as follows:

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

The language of Criterion 2 makes it clear that on-site disposal is not forbidden depending on site-specific factors -- e.g. the nature of the waste and the cost and impacts of transport. This built-in flexibility is consistent with NRC's general approach to the Appendix A criteria. In developing the various performance criteria contained in Appendix A, NRC concluded that "given the highly site-specific nature of environmental impacts that can occur and in view of the importance of the tailings disposal problem, each licensing action calls for a thorough environmental assessment." GEIS Vol. II at 2. It is also consistent with the 1982 amendments to § 84 of the Atomic Energy Act of 1954, as amended, which provides that a "licensee may propose alternatives to specific requirements adopted and enforced by the Commission under this Act. Such alternative proposals may take into account local or regional conditions, including geology, topography, hydrology and meteorology." 42 U.S.C. 2014 (c).

Criterion 2 was developed out of NRC concern that a multitude of small disposal sites "would increase potential population exposures (e.g. from radon exhalation), the likelihood of human intrusion, and the burdens of ongoing government surveillance." GEIS Vol. II at A-66. While it was not unreasonable for NRC to have been concerned about overtaxing its regulatory oversight capability in 1980 as a result of potentially large numbers of small disposal sites, it is important now to reconsider the implamentation of Criterion 2 in light of current conditions. This requires review of some of the critical assumptions that underlie NRC's 1980 determinations.

In developing the overall (generic) assessment of uranium milling, the GEIS, of necessity, relied upon then current nuclear power projections and resulting uranium production projections to assess the overall impact of uranium milling. The GEIS assumed that there would need to be milling capacity "equivalent to about 55 model mills [(1800 MT/day 2000 ST/day)] by the year 2000." GEIS Vol. I at 3-14; see also 3-11, 3-9. Analysis of the impact of these assumptions on NRC's 1980 conclusions provides a basis for re-evaluating the approach to implementing Criterion 2 in light of existing conditions.

First, assuming NRC would have been required to license, decommission and decontaminate large numbers of major milling operations between 1980 and the year 2000, there would have been a significant impact on the Commission's regulatory oversight capability.

Second, the addition of 55 new mills, even as older mills would have been phased out, would have assured a large supply of available tailings impoundments into which in situ wastes could have been placed. Based on the demographics of uranium production in 1980, this would have meant a large concentration of mills in the western portion of the country where in situ production has been and is currently located. This in turn would have meant access to a large number of disposal facilities within reasonable proximity for wastes from almost any in situ operation. The availability of a large number of options for an in situ operator would have provided the presumed ALARA benefits of off-site disposal -- that is, nonproliferation of many small sites, assurance that wastes would not have to be transported great distances at unreasonable cost because of the relative proximity to disposal facilities and the potential cost benefits associated with competition between mill operators for waste disposal opportunities. It would also have provided long term assurance of the availability of disposal capacity well into the twenty-first century.

The nonproliferation policy of Criterion 2 must now be re-examined in light of current circumstances, both with respect to uranium production and uranium mill tailings disposal

capacity. At the present time, it appears that in situ uranium mining may represent as much as 50% of uranium production in the U.S. in the next 10 years. The GEIS estimated that in situ mining would produce on the order of about 10 to 10.5% of the uranium to be produced in the U.S. during the 1990s. GEIS, Vol. 1 at 3-9. The GEIS's projected 55 new uranium mills by the year 2000 has not materialized and in fact, existing mill tailings disposal capacity is rapidly disappearing. As a result of the glut of uranium production in anticipation of increased nuclear power needs that have not yet materialized, since 1980 the uranium production industry has suffered severe economic hardship and has shrunk to a mere shadow of its 1980 self. Currently there are only two mills operating with several on standby and many mills are proceeding to final reclamation. It seems highly unlikely at this point in time that <u>any</u> new milling facilities will be constructed in the near future. Thus at a time when in situ production is increasing and in situ wastes will thereby increase as well, the capacity to dispose of that waste is rapidly disappearing. Indeed, as a result of EPA's CAA regulations which require inactive mill tailings sites to complete final closure by December 1992 (albeit an impossible task), final closure of inactive tailings facilities is likely to be accelerated.

In situ uranium production should, if anything, be encouraged by the regulatory process and not hindered by it. In situ uranium production is attractive from several perspectives. First, it can produce uranium at lower costs than conventional mining and milling facilities and, therefore, to the extent that uranium will continue to be needed for nuclear power and for national defense purposes, offers a stable long term production capability. Second, in situ production is considerably less intrusive to the surrounding environment than conventional mining and milling and presents considerably reduced potential occupational and safety hazards to workers. Third, in situ production is not only less environmentally intrusive, it also produces a much smaller volume of by-product waste, thereby avoiding the necessity of the large scale disposal impoundments necessary to accommodate the volume of tailings produced from typical U.S. ore grades by conventional mining and milling.

In summary, while there will be a continuing need for uranium production for the foreseeable future, there are no

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[1] In saying this AMC does not mean to imply that the regulatory process should hinder the future development of many conventional uranium mining and milling facilities. First, many uranium deposits are not susceptible to in-situ production and, second, given the comprehensive regulatory programs in place for conventional facilities, adequate protection of public health and the environment can be assured.

indications that a dramatic increase in capacity, particularly conventional capacity, is likely. Therefore, there will not only not be hundreds of small production sites, there will also not be a large number of conventional mining and milling facilities developed. Thus NRC's regulatory oversight resources will not likely be overburdened by allowing on-site disposal at in situ production facilities. Additionally, conventional mill tailings disposal capacity for in situ produced wastes are likely to decrease dramatically in the coming decade. Indeed, it is possible that by the end of this decade, there will be only one facility available for disposal of in situ wastes (the proposed Envirocare facility) unless on-site disposal is permitted at in situ production sites. The specter of a single disposal site option as a result of NRC relying on an outdated policy with respect to on-site disposal raises a host of questions and issues for in situ producers and NRC.

A number of factors in addition to those referenced above support reconsideration of the bases for addressing proposals to dispose of in situ wastes on-site:

1. Site Characteristics

Even given the same total production of pounds of uranium, the waste volume generated from an in situ facility is much smaller than that from a conventional mill. An in situ disposal area will most likely be on the order of 1 percent of that required by a similar size conventional disposal facility producing at similar levels. For example, an in situ facility producing one million pounds of uranium per year would require a disposal facility that would occupy less than five acres.

With a smaller facility, siting problems become less pronounced. A smaller volume of waste makes it easier to develop below grade disposal facilities (the "prime option" for uranium mill tailings impoundments) because siting is less difficult, due to the need for less disruption of surface and subsurface area. Costs are correspondingly smaller. In situ producers often operate "satellite" extraction facilities but maintain one main or central mill-type final processing facility where wastes from all facilities could be consolidated for disposal, again because of the small volume of wastes. Another option might involve pooling the resources of a group of operators located in relative physical proximity to deposit waste at a single disposal site for all of the different facilities; or to license one facility to develop a disposal facility, which is larger than necessary to accommodate its own waste recognizing that other nearby operators will utilize the facility for waste disposal. In any event, the number of sites would be relatively limited and would be small in size by comparison to the 55 projected model mill tailings facilities, thus not overburdening NRC's regulatory oversight capability.

2. Waste Characterization

As noted in 1 above, the size of the site will be considerably smaller than a conventional mill tailings facility as a result of the smaller amount of waste generated. For example, the quantity to be generated during the entire life of one in situ project is estimated to be 2,395 yds^3 including materials generated during decommissioning. Typically, a very limited volume of by-product solid waste is produced at in situ facilities (approximately 5 yds^3/mo). This can be readily distinguished from the thousands of tons per day of such waste that can be produced at a conventional facility.

The waste material consists of sludges from filtering ion exchange resin, ore zone sand produced from wells, sludge from processing wellfield purge (or bleed) fluids, surface contaminated objects such as pipes, filters and pumps, perhaps some mildly contaminated soils (most probably in the range of 6-50 pCi/gm radium-226). Additionally, the material in question will be dry when it is disposed of in contradiction to materials contained in mill tailings disposal facilities. This should greatly reduce and/or eliminate potential groundwater contamination problems. The material presumably would be treated and equipment decontaminated to minimize, to the extent practicable, the total quantity of material requiring disposal.

It is also important to recognize that the activity of the wastes from an in situ facility is significantly less than the activity associated with materials in a conventional mill tailings impoundment. As noted above, there may be some mildly contaminated soils in the range of 6 to 50 pCi/gram radium-226 compared with the larger quantity of wet materials in the range of 200-400 pCi/gram typically found in conventional tailings impoundments.

3. Off-Site Disposal Problems

On-site disposal will be less expensive than off-site disposal. Transportation/disposal charges required to put the material in a commercial facility such as Envirocare run approximately \$50/ft^3. Envirocare's baseline price is \$28/ft^3 versus current disposal costs of \$100-\$125/yd^3. This translates to a difference of \$3.79/ft^3 versus \$28/ft. For an in situ facility that produces 2,000/yd^3, the difference in the cost of disposal would be about \$1.5 million <u>without</u> transportation costs.

The operator will have no means of controlling costs for off-site disposal and will be subject to potentially major cost escalation for disposal if, in the end, there is only one site to which material can be taken for disposal or if it must be taken (if accepted) to a low-level waste disposal facility. If NRC's

policy fosters the development of a disposal monopoly, it will have to consider intruding into the marketplace by imposing some sort of cost controls or rate structure for such a facility -- a troublesome and contentious prospect for all involved.

Even though the quantity of wastes from in situ facilities is small by comparison with conventional milling operations, trucking the waste generated from an increasing number of in situ facilities across public highways significantly increases the potential impact on the environment and the potential public health hazards. NRC's GEIS numbers indicate that, based on published accident statistics, trucking 2,500/yd^3 from sites in Texas to a disposal facility in Utah would result in one truck accident for every such shipment. (NUREG-0706, Vol. 1 at 7-8.) Thus, particularly where the distances involved are significant, requiring off-site disposal runs directly counter to the ALARA principle.

4. Benefits of Operator Control

The owner/operator/licensee of an in situ production operation has responsibility under the license to assure that his waste is disposed of in accordance with appropriate regulatory requirements and, indeed, is interested in disposing of that waste in a fashion that does not expose him to long term liability. On-site disposal assures operator control and responsibility for waste disposal. It assures operator control of the costs associated with such disposal and removes the operator from the risk of dealing with another entity whose improper operation or unsafe or unscrupulous practices may result in potential long term liability for the in situ producer. One has only to look at the horrendous situation at the Maxey Flats, Kentucky low level waste disposal site wherein licensees who delivered waste to the facility in accordance with their licenses and paid for disposal are now subject to Superfund liability for the costs of closure at that site.

Additionally, as a practical matter, it is politically more acceptable for companies to take care of their own waste problems in an area where they provide jobs generating the wastes. The operator has responsibility for control of public relations with respect to waste disposal and, if it is not managed appropriately, the operator will suffer the consequences.

Finally, on-site disposal provides the operator with long term assurance that disposal capacity will be available. Currently NRC is requiring licensees to enter into contracts for disposal, although it is recognized by both the operator and NRC, that these contracts can be valid only if the tailings facility is open to receive additional materials at the time the operator needs to dispose of wastes. At some point in time, options may disappear for in situ producers and it would be preferable to

them to take responsibility for and to thereby have assurance of final disposal capacity.

5. Compliance with NRC Long-Term Disposal Goals

As the language of Criterion 2 indicates and the GEIS makes explicit, above ground wastes from in situ operations are not "required to be relocated." GEIS Vol. I at A-80. As the staff noted (in addressing necessity for institutional control measures at deep well disposal sites), requirements for "annual site surveillance, long term surveillance fees and land ownership transfer can be waived on an individual case basis." Id. at A-65. Similarly, the policy favoring relocation in order to avoid proliferation of small disposal sites may be waived if it is impracticable or the advantages of on-site disposal clearly outweigh the benefit of reducing perpetual surveillance obligations. Id. at A-80. To achieve the goals set forth in Criterion 2, NRC must now place a higher value on the conditions referenced above (i.e. the likely availability of disposal capacity and the unlikely proliferation of a significant number of production sites) in its evaluation equation for assessing proposals for on-site disposal.

In situ producers believe that, based on site-specific topographical, geological and hydrogeological conditions, relatively small below grade disposal sites can be constructed in an economically and environmentally sound manner. Below grade disposal of dry waste in a double lined facility with a compacted clay cap would comply with NRC's "prime option" contained in Criterion 3 for below grade disposal. It would also reduce concerns associated with the necessity for intensive long term surveillance. Below grade disposal would present a considerably reduced profile than would an above grade and much larger tailings impoundment and significantly reduce the impact of potential wind and water erosion or a catastrophic flood event.

The title to the property could be deeded to the state or federal government since, arguably, this would be a "disposal facility" in the same fashion that a tailings impoundment is a disposal facility. Although NRC has previously concluded that the Uranium Mill Tailings Radiation Control Act "does not allow for government acquisition of other than final tailings disposal sites." GEIS, Vol. II at A-123. It is also worth noting that the Low-Level Radioactive Waste Policy Act makes no provision for government ownership of low-level waste sites which have been mentioned as an option for disposal. In any event, the property can be appropriately fenced, warning markers provided and title restrictions placed in local land records. As a practical matter, however, if the disposal facility is far enough below the surface and covered by compacted clay and topsoil, it will easily satisfy both the 20 pCi/m^2/sec standard for radon emissions and the 5 pCi/g radium standard for the 200-1,000 year period, thus

essentially limiting long term surveillance to the bare minimum.

The end result would be a facility that is less subject to natural forces, that is just as difficult to access by human intrusion (assuming that large scale and intentional intrusion could never be protected against either at a mill tailings site or a smaller disposal site) and that requires limited long term surveillance.

In summary, AMC believes that the policy emphasis against a proliferation of smaller by-product waste disposal sites set forth in Criterion 2 in 1980 is no longer viable under current, and reasonably foreseeable, uranium production scenarios in the United States. NRC will not be faced with the proliferation of large, conventional uranium production facilities assumed when Criterion 2 was developed. As a result, NRC's regulatory oversight resources will not be severely strained by adopting a more lenient approach to licensing small on-site disposal facilities at in situ production sites. Additionally, NRC's long term disposal criteria can be more than adequately met at such sites, disposal will be cost effective and protective of public health, and disposal capacity for in situ wastes can be assured.

CONGRESSIONAL CORRESPONDENCE SYSTEM
DOCUMENT PREPARATION CHECKLIST

This checklist is to be submitted with each document (or group of Qs/As) sent for entering into the CCS.

1. BRIEF DESCRIPTION OF DOCUMENT(S) LTR to Craig Thomas

2. TYPE OF DOCUMENT ✓ Correspondence ____ Hearings (Qs/As)

3. DOCUMENT CONTROL ____ Sensitive (NRC Only) ✓ Non-Sensitive

4. CONGRESSIONAL COMMITTEE and SUBCOMMITTEES (if applicable)

_____ Congressional Committee

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5. SUBJECT CODES

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6. SOURCE OF DOCUMENTS

(a) ____ 5520 (document name _____

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8. COMMENTS

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