

(20.2002) or part 61. Part 61 provides regulations for the disposal of radioactive waste received from others, while § 20.302 (20.2002) allow for disposal by a licensee of licensed material in a manner not otherwise authorized in the regulations.

Since the material proposed for disposal in tailings impoundments will be received from licensees other than the impoundment owner, 10 CFR part 61 is the appropriate regulation for such disposal. Disposal under § 20.302 has been used by licensees to dispose of their own wastes onsite. It does not preclude disposal of radioactive waste received from others. Section 20.2002 (in the new part 20), however, specifically limits disposals under that Part to licensed material generated in the licensee's activities, so it could not be used for the disposals discussed in this paper. The new Part 20 became effective on June 20, 1991, with discretion by licensees to defer implementation until January 1, 1993 (however, the Commission has under consideration a proposal to change the discretionary implementation date to January 1, 1994).

Thus, in order to allow disposal of non-11e.(2) byproduct material at a tailings impoundment, either a part 61 review would have to be performed and a license under 10 CFR part 61 would have to be issued to the mill operator, or an exemption to such a review and license would have to be granted. The part 61 license to allow disposal of the non-11e.(2) byproduct material in the tailings impoundment would be in addition to the amendment to the part 40 license authorizing receipt of the material.

The basic objectives of parts 40 and 61 are the same; protection of public health and safety and the environment by disposal that controls and isolates the wastes for long periods of time. Part 61.6 of title 10 allows for exemptions from the requirements of Part 61 if such an exemption will not endanger life or property. In order to avoid separate part 40 and 61 reviews and licenses for the disposal of non-11e.(2) byproduct material in tailings impoundments, an exemption under Part 61.6 will be granted for each such proposed commingling that meets all of the other requirements discussed in this analysis. The basis for such an exemption is that the proposed disposal will not endanger life and property by virtue of its meeting the criteria discussed in this analysis (which includes demonstrating that the reclamation and closure criteria in appendix A to part 40 will be met).

### 7. Results of Staff Analysis

NRC staff identified the following course of action with respect to requests for direct disposal of non-11e.(2) byproduct material in tailings impoundments:

1. Each proposal will be treated on its individual merits.
2. The guidance discussed in section 5, will be followed. Specifically, for each such co-disposal request, the staff will:
  - a. Reject the request if the non-11e.(2) byproduct material is NARM waste.
  - b. Determine whether the request is for bulk material contaminated with low concentrations of source material. If the request is for byproduct material or SNM, determine if there is a compelling reason, such as an immediate health and safety concern, to grant the request. If so, a specific request for approval by the Commission will be prepared.
  - c. Determine whether the proposed disposal will cause significant additional effects to public safety, health and the environment.
  - d. Determine whether the proposed disposal will compromise the reclamation of the tailings impoundment by determining whether compliance with the reclamation and closure criteria stated in 10 CFR part 40, appendix A, will be ensured.
  - e. Not approve the request if the non-11e.(2) byproduct material contains hazardous constituents regulated under RCRA.
  - f. Notify DOE (with an opportunity to provide comments) if the staff intends to approve the proposed disposal.
  - g. The licensee must provide documentation showing approval by the Regional LLW Compact in whose jurisdiction the waste originates as well as approved by the Compact in whose jurisdiction the disposal site is located.
3. Approval of the request will be accomplished through an amendment to the part 40 license of the impoundment owner.

### Part B—Position and Guidance on the Use of Uranium Mill Feed Materials Other Than Natural Ores

Staff reviewing licensee requests to process alternate feed material (material other than natural ore) in uranium mills should follow the guidance presented below. Besides reviewing to determine compliance with appropriate aspects of appendix A of 10 CFR part 40, the staff should also address the following issues:

#### 1. Determination of Whether the Feed Material Is Ore

For the tailings and wastes from the proposed processing to qualify as 11e.(2) byproduct material, the feed material must qualify as "ore." In determining

whether the feed material is ore, the following definition of ore must be used:

Ore is a natural or native matter that may be mined and treated for the extraction of any of its constituents or any other matter from which source material is extracted in a licensed uranium or thorium mill.

#### 2. Determination of Whether the Feed Material Is Mixed Waste

**Note to Federal Register notice readers:** For further explanation of this complex issue, see the discussion section of the Staff Analysis that follows.

If the proposed feed material were hazardous or mixed waste, it would be subject to EPA regulation under RCRA. To avoid the complexities of NRC/EPA dual regulation, such feed material will not be approved for processing at a licensed mill. If the licensee can show that the proposed feed material would not be a hazardous or mixed waste, if not proposed for processing at the mill, this issue is resolved.

Feed material exhibiting only a characteristic of hazardous waste (ignitable, corrosive, reactive, toxic) would not be regulated as hazardous waste and could therefore be approved for recycling and extraction of source material. However, this does not apply to residues from water treatment, so acceptance of such residues as feed material will depend on their not being hazardous or mixed waste. Additionally, if proposed feed material contained a waste listed under Subpart D (261.30-33) of 40 CFR, it would be a hazardous waste and should not be approved.

#### 3. Determination of Whether the Ore Is Being Processed Primarily for Its Source-Material Content

For the tailings and waste from the proposed processing to qualify as 11e.(2) byproduct material, the ore must be processed primarily for its source-material content. There is concern that wastes that would have to be disposed of as radioactive or mixed waste would be proposed for processing at a uranium mill primarily to be able to dispose of it in the tailings pile as 11e.(2) byproduct material. In determining whether the proposed processing was primarily for the source-material content or for the disposal of waste, either of the following tests can be used:

- a. *Co-disposal test.* Determine if the feed material would be approved for disposal in the tailings impoundment under the guidance contained in the July 27, 1988, memorandum from Hugh L. Thompson to Robert D. Martin, or subsequent revisions (e.g., as described

in Part A of this notice). If it would, it can be concluded that if a mill operator proposes to process it, the processing is primarily for the source-material content. The material would have to be physically and chemically similar to 11e.(2) byproduct material and not be subject to RCRA or other EPA hazardous-waste regulations, as discussed in Part A.

b. *Licensee certification test.* If the licensee certifies under oath or affirmation that the feed material: (1) is being reclaimed or recycled in accord with RCRA, or does not contain RCRA hazardous waste; and (2) is to be processed primarily for the recovery of uranium and for no other primary purpose, it can be accepted.

If it can be determined, using the aforementioned guidance, that the proposed feed material meets the definition of ore, that it will not introduce a hazardous waste not otherwise exempted, and that the primary purpose of its processing is for its source-material content, the request can be approved.

#### **NRC Staff Analysis of the Use of Uranium Mill Feed Materials Other Than Natural Ores**

##### *1. Introduction*

The Nuclear Regulatory Commission (NRC) and Agreement States have received, and in some cases approved, requests to allow a uranium mill to process feed material that was not natural (native, raw) uranium ore and dispose of the resulting waste in the facility's tailings impoundment. In those cases, the feed material was generally either processing wastes from other extraction procedures or the residues from mine-water treatment. These requests were handled on a case-by-case basis, and approvals were based on the interpretation that the proposed feed material was refined or processed ore. This designation of the feed material as ore is critical to the determination of disposal methods. This stems from the definition under section 11e.(2) of the AEA, which limits byproduct material origin to "ore processed primarily for its source material content."

If the alternate feed material does not meet the definition of ore, or is not processed primarily for its source material, there are two concerns. The first is that complicated, dual regulation of the tailings pile by both NRC and the Environmental Protection Agency (EPA) under RCRA could result. The second concern is that the requested activity might jeopardize the ultimate transfer of the reclaimed tailings impoundment to

the State or Federal Government for perpetual custody and maintenance.

During the past three years, several additional requests for approval of alternate feed materials have been received. Decisions on those requests are pending until development of a generic agency position. The analysis addresses the need for a definition of the term "ore" as used in the definition of byproduct material in the Uranium Mill Tailings Radiation Control Act of 1978 (UMTRCA), and for criteria to determine if mill-processing wastes from alternate feed material will meet the requirements for byproduct material under a 10 CFR part 40 license.

##### *2. Background*

The UMTRCA amended the AEA to include uranium and thorium mill tailings and other wastes from the milling process as material to be licensed by NRC. Specifically, the definition of byproduct material was revised in section 11e of the AEA by adding:

And (2) the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content.

Such byproduct material includes all the wastes resulting from the milling process, not just the radioactive components. In addition, title II of UMTRCA amended the AEA to explicitly exclude the requirement for EPA to permit 11e.(2) byproduct material under the RCRA. The definition and RCRA exemption of 11e.(2) byproduct material contrasts significantly with the situation for source material and low-level radioactive waste (LLW), where only the radioactive component is regulated under the authority of the AEA. EPA has to address hazardous constituents in those materials separately.

As a result of UMTRCA, the NRC amended 10 CFR Part 40, to regulate the uranium and thorium tailings and wastes from the milling processes. Thus, under normal operation, all tailings and wastes in an NRC or Agreement State licensed mill producing uranium or thorium are classified as "11e.(2) byproduct material," and are disposed of in tailings piles regulated under part 40. They are not subject to EPA regulation, under RCRA. However, if material that did not qualify as 11e.(2) byproduct material was placed in a mill's tailings impoundment, any hazardous constituents it contained could lead to regulation by EPA.

The UMTRCA also required either the United States, or the State in which the byproduct material has been disposed

of, to maintain long-term custody of, and surveillance over, the byproduct material and the land used for its disposal. The AEA currently designates the Department of Energy (DOE) as the Federal "custodial agency." However, the UMTRCA specifically referred only to 11e.(2) byproduct material, and contains no provision allowing for the transfer of custody or title of any other material. While the application of section 151(b) of the Nuclear Waste Policy Act could moot this issue in a specific case, it does not provide a legal basis for avoiding the labeling of a tailings disposal impoundment as either a mixed waste facility or a low-level waste disposal facility with the complex regulatory burdens these labels carry. One of the purposes of the guidance is to avoid these consequences.

The term "alternate feed materials" is used to indicate sources of uranium or thorium (throughout this analysis references to uranium mills or ore should be taken to apply to thorium mills or ore, also), for a mill, that are not natural ore (ore is not defined in the AEA nor in UMTRCA). NRC staff has approved requests, in the form of license amendments, to allow processing of alternate feed materials in uranium mills. The requested license amendments generally were to allow the mill to use feed materials that were either processing wastes such as those derived through the extraction of other elements, or the residues from mine-water treatment.

The following are examples of license amendments approved in the past:

##### *1. Processing Wastes From Other Operations*

The Rio Algom (Lisbon uranium mill in Utah) has had its source-material license amended several times in the period from 1982 to 1987, so the mill could receive alternate feed materials. The mill was authorized to use processing wastes from: a uranium hexafluoride conversion facility, a niobium-tantalum recovery facility, and from an yttrium-lanthanides recovery facility. The materials were radiologically consistent with the existing tailings, but, in the first example, the fluoride was in higher concentration (greater than one percent) than in the existing tailings. In 1987, NRC also authorized the Quivira Mining Company to process raffinate sludge from a uranium hexafluoride conversion plant. The uranium content of these wastes (the yttrium-lanthanides wastes averaged 1.17 percent and the uranium hexafluoride waste streams 0.6 to 6.7 percent) was higher than the average

natural ore processed in the United States.

## 2. Wastes From Treatment of Mine Water

Some mines have to be dewatered as the shafts or pits fill with ground-water. This water often contains dissolved constituents as a result of flow through and contact with ore bodies. It must therefore be treated before it can be discharged offsite. Treatment is often via ion-exchange columns which concentrate high levels of uranium on resins or the eluate. Several mills (Western Nuclear Inc., Split Rock, Wyoming, and Atlas Minerals Corp., Moab, Utah) have obtained license amendments and processed these residues/wastes through the mill.

The NRC staff approved the processing of these alternate feed materials, considering them to be refined and processed ore. This designation as ore is essential so that the residue from uranium processing can qualify as 11e.(2) byproduct material for the reasons stated earlier. With this interpretation, the resultant milling wastes were legitimately classified as 11e.(2) byproduct material.

However, because there is not a definition of ore in 10 CFR Part 40 and because of the potential policy issues involved in approving the processing of feed material other than natural ore, the staff has put recent requests on hold, pending establishment of an agency position.

## 3. Discussion

Uranium mills were designed and operated to process natural uranium-bearing rock (i.e., ore), usually mined nearby, in order to produce uranium (in the form of yellowcake). There usually was no question of other feed material or what constituted ore. However, there have been occasions when other material has been proposed for processing at uranium mills.

Mill tailings that meet the definition of 11e.(2) byproduct material must be stabilized in accordance with the criteria in appendix A of 10 CFR part 40, but are not subject to separate regulation as LLW or as hazardous waste under RCRA. The wastes and tailings produced in a uranium mill processing uranium-bearing rock from nearby mines would meet the definition of 11e.(2) byproduct material. However, it is not obvious, from the definition alone, whether wastes produced from processing feed material that is something other than rock mine from the earth meets the definition of 11e.(2) byproduct material.

Neither the AEA nor 10 CFR part 40 contains a definition of "ore" as it appears in the definition of 11e.(2) byproduct material. The term "unrefined and unprocessed ore" is, however, defined separately in part 40, in relation to the exemption in 10 CFR 40.13(b) for source material in ore, as:

Ore in its natural form prior to any processing, such as grinding, roasting or beneficiating, or refining.

The fact that the term "any ore", rather than "unrefined and unprocessed ore," is used in the definition of 11e.(2) byproduct material implies that a broader range of feed materials could be processed in a mill, with the wastes still being considered as 11e.(2) byproduct material.

Legislative history confirms the validity of a broad interpretation of the term "any ore." The definition of 11e.(2) byproduct material as originally presented in UMTRCA was:

The tailings or wastes produced by the extraction or concentration of uranium or thorium from any source material.

However, there was a concern that tailings resulting from the processing of ore containing less than 0.05 percent uranium (the minimum concentration that would still meet the definition of source material) would fall outside the definition. To preclude that possibility, it was suggested that the words "any ore processed primarily for its source material content" be substituted for "any source material."

In its decision in a case involving whether certain material in and near the West Chicago, Illinois, facility of Kerr-McGee Chemical Corporation (Kerr-McGee Corporation v. NRC, 903 F2d 1 (D.C. Cir. 1990) was 11e.(2) byproduct material or source material, the United States Court of Appeals arrived at a broad interpretation of the definition of byproduct material in which the concept of ore is not restricted to native rock. It also cited Chairman Hendrie's testimony before Congress that led to the wording that now exists, in the AEA, defining 11e.(2) byproduct material as establishing that a broad reading of the definition was in line with Congressional expectations.

The previous discussion leads to the conclusion that the term "ore" in the definition of 11e.(2) byproduct material can be applied to a broad spectrum of feed materials from which uranium or thorium is extracted. In view of the foregoing, NRC staff has recommended a definition of ore as follows:

Ore is a natural or native matter that may be mined and treated for the extraction of any of its constituents or any other matter

from which source material is extracted in a licensed uranium or thorium mill.

Two major considerations that went into this proposed definition of ore were:

1. It is broad enough to include a wide variety of feed materials.

2. The definition continues to be tied into the nuclear fuel cycle. Because the extraction of uranium in a licensed mill remains the primary purpose of processing the feed material, it excludes secondary uranium side-stream recovery operations at mills processing ore for other metals. Thus, tailings from such side-stream operations at facilities that are not licensed as uranium or thorium mills, would not meet the definition of 11e.(2) byproduct material.

Although the intent of Congress in defining 11e.(2) byproduct material appears to have been to encompass the wastes from all feed material processed primarily for its source-material content, two significant issues result from the proposed definition of ore.

Since some of the feed material could contain hazardous components, in addition to source material, the first significant issue is whether material that would otherwise have to be disposed of as hazardous waste can be processed in a uranium mill and disposed of in the tailings impoundment as 11e.(2) byproduct material. If such feed material were not processed at a uranium mill, it would be classified as mixed waste (radioactivity regulated under AEA, plus hazardous waste regulated by EPA) and would thus have to be disposed of in a mixed waste facility.

To determine if the feed material would be regulated as hazardous waste, one must first determine if it meets the definition of solid waste, since hazardous waste is a subset of solid waste, under RCRA. The EPA regulations that implemented RCRA state (40 CFR 261.1-261.4) that solid waste is any discarded material not excluded in the regulations and includes recycled material. A material is recycled if it is reclaimed. Reclaimed is defined as, " \* \* \* processed to recover a usable product \* \* \* " Since alternate feed material would be reclaimed at the mill, it would be considered solid waste. It also would be classified as byproduct, which EPA defines as, " \* \* \* not one of the primary products of a productive process \* \* \* " However, 40 CFR 261.2c(3) provides that byproducts that exhibit only a characteristic of hazardous waste (ignitable, corrosive, reactive, toxic) and that are being reclaimed are not regulated as hazardous waste. To support the "reclaimed" provision, it must be demonstrated that there is a known

market for the material and documentation provided, such as contracts showing that a second person uses the material as an ingredient in a production process. An exception to this exemption is sludge from a water treatment plant, so residues from mine-water treatment would not qualify.

Since feed material is being used as an ore from which a useable product (uranium) is to be extracted, it is being reclaimed and thus would meet the EPA exemption to regulation as characteristic hazardous waste, except if it were mine-water treatment residues.

The proposed feed material would still be hazardous waste if it contained a waste listed under subpart D (part 261.30-33) of the EPA regulations. It is unlikely that feed material for uranium mills would contain such substances. Assurances need to be provided that these proposed feed materials do not contain RCRA or TSCA listed hazardous wastes.

Constituents with hazardous characteristics that were in feed materials processed at a uranium mill would eventually end up in the tailings impoundment as 11e.(2) byproduct material. As such, they would be regulated under appendix A of 10 CFR part 40 which provides for monitoring and control of hazardous constituents. Thus, the ultimate fate of hazardous constituents that might be in uranium mill feed material would not escape regulatory oversight.

The second significant issue that must be addressed is the potential of converting material that would have to be disposed of as LLW or mixed waste into ore, for processing and disposal as 11e.(2) byproduct material. The possibility of converting such wastes to 11e.(2) byproduct material can be very attractive to owners of such material. This is because of the high cost of disposing of LLW and especially of mixed waste. An owner of such material could pay a mill operator substantially less to process it for its uranium content and dispose of the resulting 11e.(2) byproduct material than to dispose of the material as waste at an appropriate facility. Utah officials have already expressed concern over "sham disposal" (i.e., converting a mill into a LLW disposal site).

The proposed definition of ore would include any material from which source material is extracted in a licensed mill and would thus seem to allow such sham disposals. However the definition of 11e.(2) byproduct material requires that the ore be processed " \* \* \* primarily for its source material content" and thus would not permit such sham disposals. Material that was

processed primarily to convert what would have been LLW or mixed waste into 11e.(2) byproduct material would not meet the definition of 11e.(2) byproduct material.

Therefore, as part of its review of a licensee proposal to process material other than natural ore, the staff would have to determine whether the processing was primarily for the source-material content or for the disposal of waste. This determination would have to be made on a case-specific basis, but either of the following tests can be used:

1. *Co-disposal test*: If the feed material would be approved for disposal in the tailings impoundment, under the guidance contained in the July 27, 1988, memorandum from Hugh L. Thompson to Robert D. Martin, or subsequent revisions, it can be concluded that if a mill operator proposes to process it, the processing is primarily for the source-material content. The material would have to be physically and chemically similar to 11e.(2) byproduct material and not be subject to RCRA or other EPA hazardous-waste regulations, as discussed in this notice.

2. *Licensee certificate test*: If the licensee certifies under oath or affirmation that the feed material: (1) is being reclaimed or recycled in accord with RCRA, or does not contain RCRA hazardous waste; and (2) is to be processed primarily for the recovery of uranium and for no other primary purpose, it can be accepted.

#### 4. Results of Staff Analysis

The staff has determined to issue guidance on the definition of ore and on the issues related to feed material that could be considered waste. Although Agency guidance does not carry the weight of a regulation, the staff concludes that the time and resources required for rulemaking on the definition of ore would not be justified in this instance. There are only a few mills that are in active or standby status and that would be able to process alternate feed material, and it is estimated that the Agency would receive only one or two such requests a year. However, the staff will include the definition of ore the next time amendments to 10 CFR Part 40 are proposed.

Issuance of the guidance would also assist Agreement States. As a policy, the Agreement States are not required to adopt this guidance as a matter of compatibility. However, if an Agreement State implements a similar policy, the State will have some assurance that NRC will not question its policy in program reviews and in making the determination as required in 10 CFR

150.15a(a) prior to the State terminating the license.

Dated at Rockville, Maryland, this 7th day of May 1992.

For the Nuclear Regulatory Commission.

John Surmeier,

Chief, Uranium Recovery Branch, Division of Low-Level Waste Management and Decommissioning, Office of Nuclear Material Safety and Safeguards.

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[Docket No. 50-416]

### Entergy Operations, Inc.; Notice of Consideration of Issuance of Amendment to Facility Operating License, Proposed No Significant Hazards Consideration Determination, and Opportunity for Hearing

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. NPF-29, issued to Entergy Operations, Inc. (the licensee), for operation of the Grand Gulf Nuclear Station, Unit 1, located in Clairborne County, Mississippi.

The proposed amendment would increase the trip setpoints of four circuit breakers for the suppression pool makeup (SMPU) valves.

In response to NRC Generic Letter 89-10, the licensee has identified the need to replace four valve actuators for the SPMU valves with larger actuators. During the design change process, it was determined that the required larger valve actuator motors would require circuit breakers with higher trip setpoints. These trip setpoints are specified in the Technical Specifications (TS), and the licensee must request a TS change to permit the use of the higher trip setpoints. Allowing for the standard 30-day Federal Register notice would delay approval of the requested change beyond the scheduled end of the current refueling outage. The staff concludes that the licensee has provided an acceptable basis for its request and that exigent circumstances exist.

Before issuance of the proposed license amendment, the Commission will have made findings required by the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations.

The Commission has made a proposed determination that the amendment request involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 50.92, this means that operation of the facility in accordance with the proposed