



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

MEMORANDUM FOR: H. R. Denton, Director, Office of Nuclear Reactor Regulation
FROM: D. G. Eisenhut, Acting Director, Division of Operating Reactors
SUBJECT: LETTER TO LICENSEES ON SOLID RADWASTE

As a result of closings at Beatty, Nevada and Richland, Washington, Barnwell, S. C. is the only commercial low-level radioactive waste burial site accepting wastes from power reactors. The State of South Carolina, in renewing their license to operate Barnwell, intends to place more restrictive limitations on both the total volume and the waste forms to be accepted for burial at Barnwell. The NRC staff (NMSS, assisted by EEB and ETSB) had extensive discussions with the South Carolina State authorities which, we believe, resulted in reasonable waste form restrictions and implementation schedules to permit operating reactors to comply in an orderly fashion. Enclosure 2 is a trip report on a recent meeting with the South Carolina State authorities. Enclosed is a letter to all power reactor licensees informing them of the changes that the State of South Carolina has made to the Barnwell site licensee (enclosure 1). Although the conditions and their interpretations are more restrictive than previous practices, we believe that they are feasible and accomplishable by the reactor licensees.

To meet those more restrictive conditions, the power reactor licensees have to implement a number of improvements on the waste forms for shipment. These action items are described in the enclosed letter (enclosure 1). Except for the request for the safety analysis of mobile solidification systems for those licensees who have or expect to modify their FSAR systems to contract for mobile solidification systems, a response from the licensees is not required. However, it should be understood that in order to continue the availability of waste burial facilities, the action items in the letter have to be implemented by the licensees.

We have learned that the Governors of the three states with commercial low-level waste burial sites are going to meet with Chairman Hendrie on November 6 concerning low level radwaste disposal. The items addressed in the enclosed letter should be useful for him to discuss the improvements the NRC expects power reactor licensees to implement. The implementation of these items in the enclosure 1 letter demonstrates NRC action to implement the South Carolina licensing conditions and demonstrates to Washington and Nevada the NRC concern and action on this matter.

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Contact:

H. R. Denton

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DOR intends to send enclosure 1 to power reactor licensees via the mass mailing system. In addition, we plan to brief an AIF committee of power reactor licensees of these developments on November 1, 1979.

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Division of Operating Reactors

Enclosures:
As stated

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Enclosure 1

LWR Licensee:

Subject: Low Level Radioactive Waste Disposal

Recent developments at commercial low level waste burial sites have substantially impacted waste disposal operation. At present, Barnwell, S. C., operated by Chem-Nuclear Systems, Inc., is the only site open for low-level radioactive waste disposal. The license to operate the facility at Barnwell has been recently revised by the State of South Carolina to further limit the volume of waste buried and to upgrade the integrity of the waste form received at the site. The enclosed license and accompanying letter from the State of South Carolina to the site licensee, Chem-Nuclear Systems, Inc., describes the restrictions to be adhered to for the wastes received at the site. NRC licensees are required by Commission regulations to assure that wastes prepared for shipment are in a form that the South Carolina licensee is permitted to receive under applicable South Carolina regulations as well as meeting all pertinent NRC and DOT transportation regulations.

The closure of low-level radioactive waste burial sites in Washington and Nevada and the strict enforcement of license conditions at Barnwell have resulted from the States' dissatisfaction with the events that have occurred with solid radwastes from waste generators including power reactors. Consequently, improvements will have to be made to comply with the State license.

NRC OIE Bulletin No. 79-19, Packaging of Low Level Radioactive Waste for Transport and Burial, has already been sent to you regarding this matter. You should

review your system and operating procedures to assure the strict adherence to the revised South Carolina license conditions and their interpretation as indicated by the enclosure. The following areas are of particular concern to South Carolina and should be acted upon accordingly:

1) Free Liquids in Wastes Leaving Reactor Site

Solid radioactive wastes leaving the reactor site for burial should contain no detectable free liquids as defined by Appendix 2 of ANSI/ANS 55.1-1979. This requirement is applicable to both dewatered resins and spent filter media as well as solidified wastes at the time of waste shipment departing from the reactor site.

2) Free Liquids in Wastes on Arrival at the Burial Site

You should be able to provide assurance that all wastes, except for those solidified by urea-formaldehyde (UF), do not contain more than trace quantities of non-corrosive free liquids upon arrival at the burial site. South Carolina has defined trace quantities as no more than 0.5% of, or one gallon in, the container volume, whichever is less. Non-corrosive means conformance with 10 CFR 71.31 and 49 CFR 173 and other DOT regulations such that there should be no significant chemical, galvanic or other reaction with the packaging components.

For wastes presently solidified by UF systems, you should be able to provide assurance that the amount of free liquid does not exceed 1% of the volume of the container upon arrival at the burial site and that the free liquids are noncorrosive with respect to the burial package.

3) Future Free Liquids Requirements

Effective January 1, 1981, all waste packages upon arrival at the burial site shall contain no more than trace quantities of non-corrosive free liquids. For those wastes currently solidified by UF systems, you should prepare to meet this requirement as soon as feasible and before January 1, 1981. Present methods of waste solidification by UF systems do not provide assurance that the waste packages on arrival at the burial site contain no more than trace quantities of non-corrosive free liquids.

4) Requirements on Spent Resins and Filter Media

Effective July 1981, spent resins and filter media with radioactivity levels above 1 $\mu\text{Ci/cc}$ of isotopes with half-lives greater than 5 years must be stabilized by solidification or an equivalent method such as packaging dewatered resins in a high integrity container (e.g., reinforced concrete). You should prepare to implement and meet this requirement. Your implementation plan should include methods to provide assurance that lower activity resins and filter media that you intend to dewater and ship do not contain activity levels exceeding 1 $\mu\text{Ci/cc}$ for radioisotopes with half lives greater than 5 years.

The revised South Carolina license for Chem-Nuclear Systems, reduces the volume of waste allowed to be buried at Barnwell. This and the current developments in Nevada and Washington results in a shortage of low level waste disposal capacity. Consequently, licensees should take positive steps to minimize the volume of waste produced. To this end, each licensee should implement a program to minimize the generation of radioactive solid wastes (e.g., waste segregation) and implement methods to reduce the volumes of waste which can not be eliminated. (e.g., use of trash compactors).

The revised South Carolina requirements on waste forms may necessitate the use of mobile or temporary solidification systems. Regulations require that any changes to your solidification systems differing from your FSAR submitted for the issuance of your Operating License be reviewed in accordance with 10 CFR Part 50.59. According to this regulation, an internal safety evaluation has to be prepared prior to making the facility modification. With respect to future changes in solidification systems, copies of the safety evaluations along with any additional supporting documentation concerning the safety adequacy of any mobile or temporary solidification systems shall be submitted to the NRC. In addition, the appropriate revision to the Process Control Program (PCP) required under the Radiological Effluent Technical Specifications shall be submitted for review. Your PCP should be based on data or tests which demonstrate not only that complete solidification of liquid wastes takes place, but also that no free standing liquid exists in any waste container leaving your site. The PCP should also be based on data or tests that demonstrate that your waste will have no free standing liquid in excess of the burial ground license requirements at time of burial and that any trace quantities of liquid are non-corrosive. These submittals (the safety evaluation and the revised PCP) should be made prior to the operation of your modified systems.