

UNITED STATES NUCLEAR REGULATORY COMMISSIONDUKE POWER COMPANYDOCKET NOS. 50-369 AND 50-370NOTICE OF ENVIRONMENTAL ASSESSMENT AND FINDING OFNO SIGNIFICANT IMPACT

The U.S. Nuclear Regulatory Commission (the Commission or staff) is considering approval of a procedure to dispose of certain very low level radioactive waste pursuant to 10 CFR 20.302 proposed by Duke Power Company (the licensee) for the William B. McGuire Nuclear Station, Units 1 and 2, located in Mecklenburg County, North Carolina.

ENVIRONMENTAL ASSESSMENT

Identification of Proposed Action: The proposed action would approve the periodic removal and relocation of sludge consisting of slightly contaminated water treatment residues from the initial holdup pond of the wastewater treatment system and the disposal of this sludge at a state-approved landfarming site contiguous to the McGuire Station site. The sludge (residues) would be spread about six inches deep over a surface area of no more than one acre each year to dry and then incorporated into the underlying six inches of soil. After incorporation, a covering of topsoil would be applied as needed to support establishment of a year-round vegetative cover. The proposed action is in accordance with the licensee's request by letter dated June 18, 1984, as supplemented July 18, 1984.

The Need for the Proposed Action: Water treatment systems needed to support operation of nuclear power plants create residues containing low-levels of radio-

activity or other contaminants which require periodic disposal. Sanitary, potable, and demineralized water systems at McGuire Nuclear Station are supplied with water that has been filtered through diatomaceous earth (DE) pressure filters. There are two DE filters, each with a capacity of 750 gpm for 24 hours, but normal filtered water usage requires operation of one filter at 750 gpm approximately 6 hours per day. The filters are backwashed as needed. With each backwash, 0.15 cubic yard of spent DE is flushed to the conventional wastewater treatment system.

The McGuire condensate demineralization system, which removes impurities from the steam cycle water, consists of four mixed bed demineralizer filters that use powdered ion-exchange resin. Under normal operation, three condensate demineralizers are operated continuously and each cell is backwashed every 10 days. With each backwash, 0.67 cubic yard of spent resin is flushed to the conventional wastewater treatment system.

Raw water intended for condensate makeup at McGuire is pretreated to remove chlorine and organic material. Two 270 ft³ beds of organic removal type activated charcoal are used for this purpose and generate approximately 540 ft³ of spent charcoal per year.

All non-radioactive McGuire Station waste streams, except sanitary waste, are routed to the conventional wastewater treatment system, which uses sedimentation, chemical addition, and aeration to treat the wastewater prior to discharge to the Catawba River via the National Pollutant Discharge Elimination System (NPDES) discharge point. Primary sedimentation occurs in the initial holdup pond, a 200,000-gallon concrete basin. Spent powdered resin, charcoal, and DE accumulate in this pond and must be removed periodically to maintain proper

settling and retention of wastewater, thus enabling the system to comply with its NPDES permit limits for Total Suspended Solids of 30 mg/l daily average concentration and 100 mg/l daily maximum concentration.

The sludge collected in the initial holdup pond is a semi-solid mixture of powdered resins, diatomaceous earth and associated residues. The resins are styrene divinylbenzene polymers and contain the ions removed in the condensate demineralization system. The radioactivity concentrations of the sludge are very low, consisting of Co-58 and Co-60, about 0.12 pCi/cm³ of each. The volume of sludge being generated per year is projected to range from 8,500 to 13,500 cubic feet with a total activity of 0.05 mCi of Co-58, and 0.05 mCi of Co-60.

Environmental Impacts of the Proposed Action:

A. Licensee's Procedures to Minimize Potential Adverse Environmental Impact

The environmental assessment by the staff recognizes the following aspects of the licensee's procedures for transportation, disposal and administration to minimize or preclude potential adverse environmental impacts:

Transportation Procedure

- To remove this sludge, the pond shall be drained and the sludge dredged from the bottom and moved by dump truck to the disposal site.
- The sludge shall be transported to or from the disposal site in such a way that liquid or solid spills will be kept to a minimum.
- The preparation and shipment of radioactive material shall be in accordance with Station health physics procedures and Station directives.

Disposal Procedure

- During and after the disposal process, access to the proposed disposal site shall be controlled. Proper warnings shall be maintained as

described in the stat. Landfarming Permit for Water Treatment Residues (7641R2, September 7, 1984).

- The waste sludge (water treatment residues) shall be spread on the surface of the proposed disposal site over an approximate area and depth of one acre and six inches, respectively.
- The sludge shall be incorporated approximately six inches into the soil after drying to the extent practical.
- A suitable year-round vegetative cover shall be established and maintained after the waste has been incorporated and covered with topsoil as needed to support this vegetative cover.
- The workers handling the waste disposal shall be dressed and trained in accordance with Station health physics procedures and Station directives.

Administration Procedure

- The waste volume of each batch disposed shall be estimated and documented and records maintained.
- For each batch of waste generated, a composite sample from different locations shall be taken for radiological analysis, and results shall be documented and records maintained. The analysis of the sludge shall be obtained before it is transferred, and no batch shall be landspread if its average Co-60 content exceeds 0.5 pCi/cm^3 .
- The total accumulated waste volume and radioactivity inventories shall be documented and records maintained.
- The disposal rates shall be limited to 500 cubic yards per year (6 inches on no more than one acre each year).

- Provisions shall be taken and maintained to prevent wind erosion and surface runoff from conveying pollutants from the waste material application disposal area onto the adjacent property.
- Upon retirement, the site shall be covered with topsoil, as necessary to support revegetation, and grassed.
- The operational procedure to minimize the risk of unexpected or hazardous exposures shall follow the guidelines provided by System Health Physics Manual and Station directives on radiation exposure control and radioactive material control. All radioactive-waste release and disposal operations shall be performed under the technical guidance and review of the Station Health Physicist.

B. Radiological Impacts

Licensee's analyses of the sludge indicate that the content of licensed material is only about 0.12 pCi Co-58 and 0.12 pCi Co-60 per cubic centimeter. The staff's evaluation of potential gamma radiation exposure from such material is that a person spending 2000 hours per year in an effectively infinite area of such contamination would receive a dose less than 1.0 mrem/year. Incorporating the sludge in the underlying soil and/or covering it with topsoil would reduce the exposure rate from the contamination. Such an exposure rate is, in any case, insignificant compared to the background exposure from naturally occurring radioisotopes in average soils.

The staff also estimated potential doses from ingestion of vegetables grown in such contamination; the largest potential organ dose would be less than 0.1 mrem/year.

Similarly, the staff estimated that a worker inhaling airborne dust with such contamination levels would receive a maximum dose to the lung much less than 0.1 mrem per year even if exposed 2000 hours per year to ten times the EPA Total Suspended Particulates standard of 260 g/m³, all respirable. Doses to other internal organs would be smaller.

The staff also judges, based on the information furnished in the licensee's letter of June 18, 1984, relative to the hydrology and geology of the site and on the control measures proposed, that the proposed disposal would not create any significant radiological contamination hazard for either surface water or groundwater users.

Because the doses estimated by the staff are so small, even though made with conservative assumptions, the staff also judges that the proposed disposal would be acceptable if the concentrations of licensed material in the sludge were as much as ten times higher. In application of the principle of keeping radiation exposures as low as reasonably achievable, the staff, as noted above, would condition approval such that the concentration of Co-60 in sludge to be landspread would be limited to 0.5 pCi/cm³ or less.

Based on review and evaluation of the proposed disposal, the staff concludes that:

- (1) The radiation risks to workers involved in the disposal would be small compared to the routine occupational exposures at the McGuire Nuclear Station.
- (2) The possible radiation risks to members of the general public as a result of such disposal would be well below regulatory limits and small in comparison to the doses they receive each year from natural background radiation.

The staff further notes that at such very low levels of radioactivity, no change in decommissioning aspects of the facility and only insignificant changes in the handling or transport of radioactive material (sludge) would be associated with this proposed action.

C. Non-radiological Impacts

Because of the characteristics of the disposal location selected and the controls imposed by the permit from the State of North Carolina, no impact would be expected on utilized supplies of groundwater or surface waters.

Because of the water-retaining characteristics of the material to be spread, impacts associated with inhalation of windblown material (dust) will be minimal. The chance of exposure of members of the public to any inhalation effect is further reduced by the licensee's control of access to the site.

D. Land Use Impacts

The proposed landfarming site is located northwest of the McGuire conventional treatment system outside the security fence but within the company controlled area. It is about 1700 feet due west of the Unit 1 turbine building. The entry to the area is controlled by fencing and is accessible only from the station site. The proposed disposal site is approximately 600 feet long and 450 feet wide, and is used for deposition of soil removed during construction activities at McGuire Nuclear Station.

The proposal by the licensee is to landfarm not more than one acre per year with sludge. After the sludge has been incorporated into the underlying six inches of soil, the disturbed site will be covered with topsoil as needed to support vegetation and a suitable year-round vegetative cover will be established and maintained. This process will continue periodically until the

remaining available disposal site area has been depleted. Upon retirement, the disposal site will be covered with topsoil, if needed to support vegetation, and grassed.

The staff finds that the changes in land usage from disposal of excess soil material during construction at the site to use as a landfarming site for disposal of very low level radioactivity waste, as proposed by the licensee, would not significantly alter the character or appearance of the temporarily disturbed disposal site.

Alternatives to the Proposed Action: An alternative to landfarming would be landfilling. Because the sludge is slow to dry, it is unsuitable for landfilling, where the waste must be covered with soil the same day it is deposited. It is preferable to landspread the sludge at a suitable site and incorporate it into the soil after it has dried.

The "no action" alternative is essentially the same as that associated with denial of the licensee's request for approval; namely that other, more costly alternatives for disposal of the sludge would be necessary to support continued plant operation. The licensee estimates that this sludge (10,000 ft³), if packaged and disposed of as radioactive waste, would cost approximately \$750,000 without solidification, and would cost more than \$1,140,000 if solidification were required depending on radioactive waste packaging and waste form requirements. The actual burial space would be more than 12,000 ft³ in the licensed radioactive waste burial site. Considering the generation rate of this type of waste (8,500 to 13,500 ft³ per year), the total cost saving using the proposed landfarming procedure could range from \$620,000 to \$1,500,000 per year with a burial site space saving of 10,000 to 15,000 cubic feet per year.

The "no action" alternative also entails increased risks during transportation associated with off-site shipments, whereas transport for the proposed action is for short distances entirely within controlled access areas.

Alternative Use of Resources: The principal action involving use of resources not previously considered in connection with the Final Environmental Statement for Operation of McGuire Nuclear Station, Units 1 and 2, or its Addendum, is a minor change in land use associated with operating support of the facility. As noted above, this change in land usage is insignificant. As further noted above, the change also involves a minor addition to the operational radiological monitoring and recordkeeping program during plant operation.

Agencies and Persons Consulted: The staff reviewed the licensee's request and has not consulted other agencies or persons.

FINDING OF NO SIGNIFICANT IMPACT: The Commission has determined not to prepare an environmental impact statement for the proposed action.

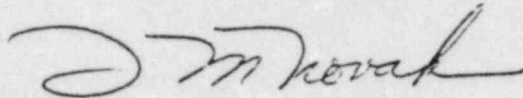
Based upon this environmental assessment, we conclude that the proposed action will not have a significant effect on the quality of the human environment.

For further details with respect to this action, see the request for approval dated June 18, 1984, with its July 18, 1984, supplement, which is available for public inspection at the Commission's Public Document Room, 1717

H Street, N.W., Washington, D. C. and at the Atkins Library, University of North Carolina, Charlotte (UNCC Station), North Carolina 28242.

Dated at Bethesda, Maryland, this 23rd day of October 1984.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "T M Novak".

Thomas M. Novak, Assistant Director
for Licensing
Division of Licensing
Office of Nuclear Reactor Regulation