



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

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10 CFR 20.2002

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South Texas Project
Units 1 and 2
Docket No. STN 50-498 and STN 50-499
Response to End of Enforcement Discretion and
Request for Approval of Alternate Disposal Procedures for Very Low-Level Radioactive Material

- References:
1. Letter from M. Murray, STPNOC, to B. Holian, NRC; "STPNOC Agreement for Disposal of Very Low-Level Radioactive Material;" August 14, 2018; (NOC-AE-18003591); (ML18226A352)
 2. Letter from C.G. Erlanger, NRC to G.T. Powell, STPNOC; "South Texas Project, Units 1 and 2 – Response to the August 14, 2018, Letter on the Disposal of Very Low-Level Radioactive Material and Exercise of Enforcement Discretion (EPID L-2018-LRO-0032);" October 31, 2018; (AE-NOC-18003147); (ML18260A250)
 3. Letter from B. Pham, NRC, to G.T. Powell, STPNOC; "South Texas Project, Units 1 and 2 – End of Enforcement Discretion Related to Alternate Disposal Procedures for Very Low-Level Radioactive Material;" August 10, 2021; (AE-NOC-21003328); (ML21180A195)

Pursuant to 10 CFR 20.2002, STP Nuclear Operating Company (STPNOC) is requesting approval of an alternate disposal procedure for very low-level radioactive material. Specifically, STPNOC is requesting approval of its current disposal practice for VLLW, undertaken pursuant to a long-standing agreement with the State of Texas. STPNOC's current disposal practices present very low risk to the public and the environment.

In August 2018, STPNOC submitted a letter to the NRC (Reference 1) describing the existing agreement between STPNOC and the State of Texas for disposal of Very Low-Level Waste (VLLW). In October 2018, the NRC responded to the STPNOC letter (Reference 2) stating that the NRC acknowledged the agreement between STPNOC and the State of Texas; however, permission for this disposal practice is required per 10 CFR 20.2002. In Reference 2, the NRC exercised enforcement discretion for past non-compliance with 10 CFR 20.2002 to allow STPNOC to continue the current disposal practice until the NRC determined a resolution path for addressing this issue.

On August 10, 2021, the NRC provided STPNOC an evaluation of regulatory options and determined that continuing to exercise enforcement discretion was no longer appropriate (Reference 3).

There are no commitments in this letter.

Please contact Walter Fulton at (361) 972-4349 or me at (361) 972-4778 for questions regarding this matter.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 11/4/2021

Respectfully,



Kimberly A. Harshaw
Executive VP and CNO Acting

Enclosure: Alternate Disposal Procedure Request

cc:

ATTN: Document Control Desk
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Alternate Disposal Procedure Request

STPNOC is located entirely in the State of Texas and Texas is an Agreement State. STPNOC requested and obtained permission from the State of Texas for the current disposal method for specific very low-level waste (VLLW) containing radionuclide concentrations and quantities below the limits specified in the Texas Administrative Code (TAC) in a Class 1 or 2 landfill facility within the State of Texas. Specifically, the Texas Commission on Environmental Quality (TCEQ) concurred with STPNOC's request.

As stated in 10 CFR 20.2002, licensees may apply to the NRC for approval of proposed procedures to dispose of licensed material by providing the following information for NRC review:

- (a) A description of the waste containing licensed material to be disposed of, including the physical and chemical properties important to risk evaluation, and the proposed manner and conditions of waste disposal; and
- (b) An analysis and evaluation of pertinent information on the nature of the environment; and
- (c) The nature and location of other potentially affected licensed and unlicensed facilities; and
- (d) Analyses and procedures to ensure that doses are maintained As Low As Reasonably Achievable (ALARA) and within the dose limits in this part [10 CFR 20].

Each of these elements is addressed below.

(a) A description of the waste containing licensed material to be disposed of, including the physical and chemical properties important to risk evaluation, and the proposed manner and conditions of waste disposal;

Description of the Waste

The VLLW consists of dewatered sludge, ion exchange and other purification media, ventilation filtration media, and soil and similar waste streams.

Physical and Chemical Properties

STPNOC conservatively calculated the total area of VLLW deposited from calendar years 2015 through 2017 to be approximately 1000 square meters. This area was derived by taking the total disposed volume and distributing it over a 15-centimeter-thick slab for modeling.

The total average activity concentrations are less than 5 pico-curies per gram for all licensed material associated with this request.

Proposed Manner and Conditions of Disposal

The proposed manner of disposal of the VLLW is near-surface disposal in a Class 1 or Class 2 landfill facility. This is the current STPNOC practice, and it is consistent with the determination STPNOC obtained from the TCEQ for disposal of VLLW in these facilities within the State of Texas. Waste is disposed in accordance with TCEQ criteria for concentrations and activity limits.

VLLW delivered to the landfill is distributed by heavy equipment and overlaid with a minimum cover of 15 centimeters of uncontaminated soil either immediately or by the end of the day. No waste is left uncovered. STPNOC waste is not comingled with the waste of any other facility.

Only waste that is determined to be non-hazardous as defined by the United States Environmental Protection Agency (EPA) in 40 CFR Part 261 or industrial waste defined as Class 1 or 2 can be disposed of in this landfill facility.

(b) An analysis and evaluation of pertinent information on the nature of the environment;***Nature of the Environment***

The current landfill site is a flat-lying, partially wooded area. The site soil is sandy clay loam and the site is well drained and serviced by a perimeter ditch system to control run-off. Typical water well depths in the area are greater than 400-500 feet. Site operations include:

- Maintenance of right-of-way to the landfill,
- management of run-off,
- minimization of erosion and correction of settlement issues, maintenance of the leachate operating system and groundwater monitoring system, and
- maintenance and operation the perimeter landfill gas monitoring system and landfill gas collection system.

Considerations for Future Disposal Site Use

TCEQ regulations, specifically TAC 30 §330.463, requires post-closure care maintenance to commence immediately upon completion of final closure requirements set forth in the facility Final Closure Plan.

Post-closure care maintenance will continue for a period of 30 years unless the TCEQ approves a period of a different duration. Post-closure care maintenance consists of:

- Retaining the right of entry and maintain all right-of-way to the closed landfill.
- Conducting site inspections, a minimum of semiannually after closure.
- Conducting maintenance and/or remediation activities, as needed, to maintain the integrity and effectiveness of the final cover, site vegetation, and drainage control systems. Vegetation is maintained on the final cover to provide a minimum of 90 percent coverage.
- Managing surface run-on and run-off to minimize the erosion of the final cover system.
- Correcting the effects of settlement, subsidence, ponded water, erosion, or other events or failures in-as-much as these situations are detrimental to the integrity of the closed landfill.
- Maintaining and operating the leachate collection system in accordance with TAC 30 §330.331 and 30 §330.333 and the EPA's Design Criteria (i.e., less than 1 foot of leachate over the liner, or approved equivalent design).

(c) The nature and location of other potentially affected licensed and unlicensed facilities;

The current landfill site is bordered by commercial development and wooded areas. The nearest residential communities are approximately 275 meters from the site.

(d) Analyses and procedures to ensure that doses are maintained ALARA and within the dose limits in this part.***Dose Analyses – Dose to a Facility Worker***

Facts and assumptions for the analysis for the annual calculated dose to an individual facility worker are as follows:

- The data was generated using the RESRAD-ONSITE version 6.5 computer code. RESRAD-ONSITE was designed at Argonne National Laboratory for estimating radiation doses to an individual located on top of radioactively contaminated soils and the code is designated by the Department of Energy in Order 458.1 for the evaluation of radioactively contaminated sites.
- STPNOC calculated the direct radiation dose to a worker using a slab source calculation. For this calculation, STPNOC assumes the worker stands in the center of a 15-centimeter-thick circular slab with an 18-meter radius that is uniformly contaminated with material of the aggregate activity of three years. The material is covered by 15 centimeters of uncontaminated soil.

- The radionuclide concentrations used are based on the STPNOC nuclide concentrations shipments for 2015 through 2017. To provide a conservative margin, the hypothetical dose calculation conservatively assumed all three years of material were deposited simultaneously.
- All exposure pathways are modeled for a 50-year dose contribution.
- The largest contributor of dose to a facility worker is from external radiation from the material (soil). The external dose is calculated using the radioactive concentrations found in the soil and adjusted by the dose conversion factors found in Federal Guidance Report 12 (EPA 1993).
- Dose to an individual on-site facility worker would be less than 1 mrem for a 2000-hour work year.

Dose Analyses – Annual Dose Rate to Members of the Public

Facts and assumptions for the analysis for the annual calculated dose rate to members of the public are as follows:

- RESRAD OFFSITE version 4.0 was used in this analysis to determine the all-pathway doses to members of the public, using the same parameters as RESRAD ONSITE.
- The closest residential dwelling to the active disposal site is approximately 275 meters away.
- Dose to a member of the public for one year at the site's boundary (approximately 100 meters from the source) would be less than 1 mrem.

Dose Analyses – Annual Dose to a Material Shipment Driver

Facts and assumptions for the STPNOC analysis for the annual calculated dose to a material shipment driver are as follows:

- To determine a worst-case annual dose for a shipment driver, STPNOC assumes six shipments, each transported 60 miles from the STP to the disposal site.
- The dose to the driver was calculated two meters from the source.
- Dose to a material shipment driver over the period of one year would be less than 1 mrem.

Dose Analyses - Conclusions

The STPNOC analyses indicates that for the quantities of VLLW disposed of by STPNOC in a Class 1 or Class 2 landfill facility, the risk to the public is very low. The estimated dose is significantly less than the 0.1 rem (100 mrem) dose limit for the public specified in 10 CFR 20.1301 and the 5 mrem per year guideline discussed in NUREG-1757, Volume 1.

It is reasonable to assume that the quantity and activity of the VLLW that STPNOC disposes at a Class 1 or 2 landfill facility will remain similar to these values in future years.

Future Use Considerations

Future use of disposal facilities could include residential construction. Doses to members of the public would be similar to those of site workers at the 30-year period. Direct radiation dose to a member of the public who occupied the center of the slab (used to calculate direct worked dose) would receive an annual dose of less than 1 mrem per year if residence began at the 30-year mark.

Doses to members of the public occupying subsurface structures, such as basements, are not considered. Soil and subsurface conditions in South Texas are not suitable for below grade structures without significant, expensive, civil engineering interventions. Most residential and commercial construction will avoid installation of basements in the region for this reason.

Doses from drinking water wells are considered to be negligible. Typical water well depths for the South Texas coastal counties are greater than 400 feet. Further, residential developments are more likely to source water from Municipal Utility Districts that take water from a variety of sources including rivers and wells. Dose from drinking water would be negligible.

Procedures and processes

STPNOC samples, analyzes, and classifies VLLW prior to shipment to ensure the radionuclide content is below both concentration limits and total activity limits. Disposal facility procedures prevent comingling of waste and ensure that migration of waste is minimized.

STPNOC programmatic controls ensure continued compliance with the requirements of the State of Texas agreement. The radionuclide quantity and activity of VLLW disposed of by STPNOC will continue to meet the activity limits established by the State of Texas and 10 CFR 20.

Conclusion

STPNOC's current and proposed disposal procedures pose negligible risk to members of the public. Calculation of doses by accepted methods demonstrate that doses to workers at the disposal site and delivery truck drivers are a small fraction of limits set by EPA and NRC. Doses to members of the public from all pathways can be considered negligible.

STPNOC procedures ensure VLLW is sampled and properly classified prior to shipment. Disposal facility procedures prevent comingling of waste and ensure that migration of waste is minimized.