January 29, 2001

Mr. William P. Dornsife
Vice President-Nuclear Affairs
Waste Control Specialist, LLC
1710 W. Broadway
Andrews, Texas 79714

SUBJECT: SITE VISIT SUMMARY REPORT SUPPORTING REQUEST TO REVIEW AND APPROVE AN EXEMPTION FROM 10 CFR PART 70 (TAC 52048)

Dear Mr. Dornsife:

On December 5 and 6, 2000, Nuclear Regulatory Commission staff met with representatives from Waste Control Specialist, LLC and the Texas Department of Health to discuss your exemption request. Enclosed is a copy of the site visit report. During the site visit, you committed to providing additional information to support your request. These are summarized as "Action Items" in the attached site visit report. Your prompt and complete response to the additional information needs will help expedite review of your request.

If you have any questions regarding the above, please contact Tim Harris of my staff at (301) 415-6613.

Sincerely,

/RA/

Thomas H. Essig, Chief
Environmental and Performance
Assessment Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Site Visit Report

cc: Richard Ratliff, Texas Health Department

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SITE VISIT REPORT

Date: December 5 - 6, 2000

Place: Waste Control Specialist Facility
Andrews County, Texas

Purpose: To visit the site and gather information on site operations to support request for an exemption from 10 CFR Part 70

Attendees: Bill Dornsife, Vice President - WCS
Scott Nicholson, General Manager - WCS
David Kania, Radiation Safety Officer - WCS
Greg Broda, Radiation Operation Supervisor - WCS
Pete Myers - Texas Department of Health (TDH)
Eric Skotak - TDH
Tim Harris - Nuclear Regulatory Commission
Meraj Rahimi - Nuclear Regulatory Commission

Discussion:

On December 5, 2000, the site visit started with Mr. Harris providing an overview of the process that would be followed in reviewing Waste Control Specialist's (WCS) exemption request. Specifically, the exemption would be in the form of an order to WCS that would exempt it from licensing under 10 CFR Part 70 for possession of special nuclear material (SNM) greater than the mass limits specified in 10 CFR Part 150. This process involves continual coordination with the State of Texas, which reviewed the process prior to the site visit. WCS provided a package that contained several documents to aid in an understanding of the site licensing and operation. These included the following: a Management Schematic (Attachment 1), Licensing and Treatment Schematic (Attachment 2), and WCS Audit Information Report, dated March 2000 (Attachment 3). WCS is licensed by the Texas Natural Resources Conservation Commission to treat and dispose of hazardous waste. WCS is also licensed by the Texas Department of Health, Bureau of Radiation Control (TDH) to treat mixed waste (i.e., waste that contains both hazardous and radioactive material). The mixed waste is treated by WCS and shipped off site for disposal. WCS provided a discussion of the TDH license limits for the different Categories of radioactive material {under Texas regulations plutonium is Category I, uranium-233 is Category II and uranium-235 is Category III}. WCS provided a general discussion of the different treatment technologies it uses for mixed waste processing. A detailed discussion of each technology is provided later in the site visit report.

A discussion of the waste acceptance criteria process followed, and WCS provided a copy of its Waste Acceptance Criteria (Attachment 4). Waste generators complete a profile form (Attachment 5). The profile is reviewed by its personnel responsible for both radioactive and hazardous material. In addition, WCS reviews some profiles with respect to the exempt material standards outlined in Texas Guidance for Determining That Material is Exempt from Regulation (Attachment 6). Because this process would be similar to that used to review SNM waste profiles, staff reviewed several profiles. The documentation of WCS's review and approval did not appear sufficient to support the exemption request. We discussed the need

for additional documentation of the profile review to support a potential exemption. WCS also provided a copy of Container Inventory (Attachment 7) and the Inventory, Shipment & Processing spreadsheet (Attachment 8). The group discussed the types and forms of SNM waste that WCS had received.

The group then toured the facilities. This tour included the container storage building, the bin storage area, and the mixed waste processing building. During the tour several inconsistencies in WCS's September 25, 2000, letter were noted. The letter discusses the fire suppression system in the container storage building as being both water and foam sprinkler system. This building has a foam (non-water) sprinkler system with fire hose cabinets that use on-site water. In addition, the letter indicates a license amendment to enlarge and modify the existing treatment building was under review. This amendment has been approved (amendment 12) and the treatment building has been upgraded. The facility also has a radiological laboratory with a gamma spectroscopy system, proportional counter, and a liquid scintillation counter.

Following the site tour, the group discussed the current practices in relation to possible allowable SNM concentration limits. Because concentration will be the primary criticality safety control, processes and practices that redundantly provide confidence that these concentration limits will not be exceeded are desirable. WCS proposed modifying its current practices to include on-site concentration verification and enhanced review of waste profiles, generator characterization information, and measurement methods of SNM isotopes. These commitments are discussed further as "Action Items" below.

On December 6, 2000, the discussion focused on the mixed waste treatment technologies. WCS treats mixed waste using several technologies including (1) in-drum stabilization, (2) shredding, (3) deactivation, (4) neutralization, and (5) macro encapsulation with cement. WCS is also permitted by TDH to perform compaction using a Ramflat compactor. WCS is also considering adding a solvated electron technology (SET) system and macro encapsulation using low density polyethylene. The SET is authorized in the TDH license for pilot testing.

The stabilization is accomplished with mixing paddles where reagents are added to the waste drum. This process results in an increase in waste volume; thereby, reducing the concentration of radionuclides in the waste. Stabilization is also performed in large (40 yd^3) mixing pans using a clam-shell on a hydraulic arm. Reagents were limited to the following: ferrous sulfate, ferrous sulfide, portland cement, sodium hypochlorite, sodium tri,poly-phosphate, Metaplex II (attapulgite-type clay), hexaderyl mescaptan, lime, and sodium hydroxide.

Shredding is typically performed on debris-like material including concrete, metal, and plastic. This process only changes the dimension of the waste and does not change the radionuclide concentration.

Neutralization is typically performed on acidic liquid or solubilized waste prior to stabilization. This process involves the addition of chemicals to neutralize the acids in the waste. These chemical processes can be exothermic, resulting in the off-gassing of vapors, and can lead to a reduction of the waste mass and an increase in radionuclide concentration.

Attendees then discussed the HEPA filtration system, the dust collection system and bag house. Materials collected by the dust collection system are disposed of as secondary waste. The HEPA filtration system is monitored using vacuum gauges. There is no monitoring of

isotope accumulation on the filter. When the filter ceases to be effective, it is replaced and the spent filter is radiologically tested and disposed of off-site as low-level waste.

Deactivation is typically performed on reactive or oxidizer waste streams. The process includes the mixing of reagents with the waste and can be done either in the waste container or mixing pan. This process typically does not result in excessive heat or volume reduction.

WCS provided an equipment brochure for the SET (Attachment 9). The system consists of a 1000 gallon tank with a waste capacity of 250 gallons. Liquid sodium and ammonia are added to the constant-stir batch tank. The system operates at 260^{o} F, and the pressure is varied to off-gas and recover the ammonia after treatment. The operation does not result in a volume or radionuclide concentration change.

WCS also indicated that it may explore macro encapsulation using low density polyethylene. However, no additional information was provided regarding this technology. WCS also indicated that it may consider batch or continuous melters in the future. Because this technology is known to dramatically increase radionuclide concentration and use of the technology was speculative, NRC staff decided to exclude it from consideration relative to the exemption request.

Action Items:

1. WCS should provide additional information to support the proposed condition 6 in its letter dated September 25, 2000. This information should clearly and concisely describe how WCS will review and document the waste description (profile), generators waste characterization summary, and uniformity description. In addition, WCS should provide supporting information on how it will review and document the generators determination of manifest SNM concentrations.

2. WCS should provide proposed procedures for testing in-coming SNM waste. This would include, at a minimum, the testing frequency, sampling methods for the various waste materials, and analytical methods. A discussion of the types of testing for the various SNM isotopes including precision and accuracy of the data obtained should be provided. In addition, any additional Quality Assurance commitments should be documented.

3. WCS should review the reagents used in stabilization above and confirm that the list is complete.