TEXAS UTILITIES SERVICES INC.
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TXX-2946 January 31, 1979

Mr. R. Naventi
Licensing Project Manager
Light Water Reactors Branch No. 4
Division of Project Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

COMANCHE PEAK STEAM ELECTRIC STATION
NRC EFFLUENT TREATMENT SYSTEM BRANCH QUESTION
DOCKET NOS. 50-445 & 50-446
FILE NO. 10010

Dear. Mr. Naventi:

Enclosed is our initial response to ETSB question (Q320.8). As agreed, this is being transmitted to you by letter to expedite response time. This response will be retransmitted to the Commission in FSAR Amendment 4.

If you have any questions about this matter, please contact this office.

Sincerely,

E J Leonard

E. J. Leonard

EJL:tls
Enclosure
cc: H. C. Schmidt

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Q320.8 Your response to Question 320.7 on the solidification process control program and the parameters to be considered for the solidification of waste is not adequate. Provide more detail concerning the process control program including the following:

a. Data concerning the expected waste types to be processed. The process control program should be based on tests performed with simulated waste formulations based on the expected inputs. You should discuss how the process control program considers the chemical constituents of the waste stream, the pH of the waste stream, boric acid content, solids content of the waste, concentration and type of radwaste, curing time, etc.

b. Data concerning the solidification agents (UF + catalyst) to waste ratios to be used. The process control program should consider the correct ratios for the various input types and contaminant levels.

c. Data concerning the effects of various contaminants on the solidification process. Specifically, address oil and detergent content in wastes, lab chemicals, and non-depleted ion-exchange resins.

d. Discuss the experimental procedures to be used in your process control program. Discuss sampling of the waste input to the SRS as it relates to your process control program to assure a satisfactory solidified product. Where will the waste be sampled?

Discuss how the results of the process control program will be analyzed and used as operational considerations.

R320.8 See revised Section 11.4.

11.4 SOLID WASTE MANAGEMENT SYSTEM

The solid waste management system (SWMS) is designed to control, collect, handle, process, package, and temporarily store, prior to offsite shipment, solid radioactive waste generated as a result of normal operation, including anticipated operational occurrences. The SWMS is a major subsystem of the WPS. The SWMS consists of the Radioactive Waste Solidification System (RWSS) and the waste baling subsystem. The RWSS, located in the Fuel Building, is designed to serve Units 1 and 2. The waste baling subsystem has a baler located in each Containment Building and in the Fuel Building.

11.4.1 DESIGN BASES

11.4.1.1 Design Objectives

The design objectives of the RWSS and waste balers are to meet the requirements of 10 CFR Parts 20, 50, and 71 and United States Department of Transportation (DOT) Hazardous Materials Regulation 49 CFR Parts 170 through 178. The details of the RWSS and the baling subsystem are shown in ATCOR topical report no. 132A and Figure 11.4-2 respectively. 4 Q320.8

The RWSS is designed to safely package spent resins, spent filter cartridges, evaporator concentrates, reverse osmosis wastes, and chemical drain tank contents in 50-ft^3 containers with cement as the solidifying agent. 4 Q320.8

The baling subsystem uses a compactor type-baler to package low-radiation-level compressible wastes such as paper, disposable clothing, rags, towels, floor coverings, shoe covers, plastics, cloth smears, and respirator filters in 55-gal drums. These wastes are products of plant operation and maintenance.

The radiation exposure to operating personnel during any maintenance, decontamination, or normal operation is limited to 25 mrem/hr. Radiation monitoring is conducted as described in Section 11.5.

11.4.1.2 Design Criteria

The input to the SWMS is from various sources. The incompressible solids and liquids are solidified in disposable containers while the compressible solid wastes are collected and compressed (baled) into drums. The various sources, quantities, and activity levels are detailed in Table 11.4-1. Maximum volumes may be produced as a result of excessive equipment leakage, steam generator tube leakage, and so forth. Spent filter cartridges are expected to be changed once every two years.

The principal nuclides shipped from the plantsite include the following:

Iodine-131	Iron-59
Cesium-134	Manganese-54
Cesium-136	Manganese-56
Cesium-137	Molybdenum-99
Cobalt-58	Strontium-89
Cobalt-60	Strontium-90
Iron-55	Chromium-51
Hydrogen-3	

The seismic design classification of the Fuel building housing the SWMS is discussed in Section 3.2. The seismic design and equipment design codes for the RWWS components and piping are in accordance with ETSB. Technical position 11-1.

11.4.2 SYSTEM DESCRIPTION

11.4.2.1 Solidification System Description

Refer to ATCOR topical report 132A.

11.4.2.2 Spent Filter Cartridge Assembly Processing

A filter transfer cask and other accessory equipment are used to remove and transport spent filter cartridge assemblies from filter housings to the solidification area. The filter transfer cask is positioned alongside the filter compartment concrete shield plug of the filter to be changed. The shield plug is lifted and placed down beyond the work perimeter. The filter housing bolts are disengaged, and the filter housing head is moved to allow removal of the spent filter cartridge assembly. The filter transfer cask is moved until it is positioned so that the centerline of the cask is aligned with the centerline of the spent filter cartridge assembly. The filter transfer cask shield door or base is opened, and the integral hoist is lowered to engage the cartridge assembly. The grappled cartridge assembly is then raised into the shield cavity and the shield door closed to contain any liquids or particulates that may drip during transit. A monorail is used to move the filter transfer cask to the hatchway through which the cask is lowered until it is located above a waiting disposable container with shipping shield placed on a flat bed cart. When centered above the container opening, the contained spent filter cartridge assembly is lowered into the disposable container. The filter transfer cask is decontaminated in a manner allowing the decontamination water to enter the container. The flat bed cart is

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then moved to the solidification area where the container with shipping shield is transferred to the container filling position for solidification with additional radioactive waste and solidifying agent mixture.

11.4.2.3 Large Solid Waste Materials and Equipment

Large waste materials and special equipment that have been neutron activated during reactor operation (e.g., core components) are handled and packaged in a safe manner on a case-by-case basis.

11.4.2.4 Baling Subsystem Description

The process flow diagram of this subsystem is shown on Figure 11.4-2, and the physical layout is shown on Figure 1.2-15, 1.2-21 and 1.2-38.

Baling of compressible low-radiation-level solid wastes into drums is accomplished in the following manner.

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Solid wastes are inserted in an open drum. Subsequently, the drum is placed in the baler, and the shroud door is closed. An operator initiates the compaction process by positioning an up/down switch in the position thus energizing the hydraulic pump motor. The hydraulic pressure forces the ram down into the drum, thereby compressing the wastes. To retract the ram, the operator positions the switch in the up position. The shroud door is opened, and additional wastes are added to the drum. The cycle is repeated until the drum is full, the lid is installed, and the clamping ring is tightened. Drums are then stored pending shipment.

The Fuel Building baler's shroud is ducted to the plant ventilation system to remove dust or particles that may be emitted from the drum during compression of the wastes. The Containment balers are not ducted to the ventilation system; however, each baler has its own self contained exhaust air filtration system. The air filtration system

consists of a prefilter and a HEPA filter in series. This provision eliminates any potential hazard from airborne radioactivity. In addition, the assembly incorporates a fail-safe switch that does not permit baler operation with the baler door open.

11.4.2.5 Component Description

All components which are located in the Fuel Building are at elevations of 810, 822, and 840 feet. The Containment balers are at elevation 915 ft in each Containment.

Design parameters of the RWSS components are listed in ATCOR topical report No. 132A. Other associated components of the SWMS are as follows:

1. Containers

   The 50-ft^3, mild steel, disposable containers used for solidified wastes are of strong, tight construction, suitable for storage and disposal by burial. The containers are remotely capped and are equipped with remotely operated quick disconnect fittings on top to handle all fill, vent, and instrumentation connections. The containers are provided with the necessary lifting attachments, and a 4-in recess surrounds the disconnect fittings to arrest any accidental spills. 4 Q320.8

   The drum, used for dry solid waste, consists of a DOT-17H-55 gallon drum, drum lid, lid gasket, and closing ring. The drum is capped manually.

2. Shipping Shields

   The shipping shields are used to protect personnel from radiation exposure during shipment and other operational handling of the

filled containers. The shields have a lead core with inner and outer shells of steel and are designed to accommodate standard 50-ft disposable containers. Lifting devices are permanently attached to the shields and are capable of supporting 1-1/2 times the weight of the loaded shipping shield. Shields of the 4-in thick size are provided for in-plant use only.

3. Filter Transfer Cask

One filter transfer cask is provided to be used as a shielding and carrier vehicle to protect personnel from radiation exposure while transferring spent filter cartridges from the filter housing to the drumming area. Movement of the filter transfer cask is by a monorail. The cask is provided with a removable drip pan to collect any dripping liquid from the filter cartridges. The cask is designed with a stainless steel interior and flush connections located on the top of the cask to facilitate washdown and decontamination. The grapple assembly that is used to lift the filter cartridge is permanently attached to the inside of the cask. The grapple has a fail-safe feature which locks the filter in place in the event of power failure.

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4. Flat-Bed Cart

One rail-mounted flat-bed cart is provided to transport disposable containers with shipping shields between the hatchway *(for filter cartridges), the drumming, and the loading areas. *The cart has three individual drive systems: continuous forward *and reverse, creep forward and reverse, and manual emergency *override.

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5. Baler

The baler is a commercially available assembly used in conjunction with standard 55-gal drums which receive the low radiation level, solid, compressible wastes. Compaction of the wastes is performed after an amount of waste sufficient to fill a drum has been accumulated.

11.4.2.6 Other Design Features

1. Process Control Program

Refer to ATCOR topical report No. 132A.

2. Free Liquid

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Q320.8

Refer to ATCOR topical report No. 132A.

3. Overflow of Tanks

Refer to ATCOR topical report No. 132A.

4. Tanks Using Compressed Gases

Compressed gas is not directly used in any SWMS tank. However, the waste blending tank is vented to the plant ventilation system since bead resin slurry is transported to the waste blending tank from the spent resin storage tanks by means of nitrogen gas pressure. The volume and flow rate of the gas used for transferring one batch is estimated to be 1200 scf at 50 scfm, with two of batches per year. The expected radionuclide concentration of the vent gases will be negligible. The treatment provided (atmospheric cleanup system) for the vent gases is described in Section 9.4.

11.4.2.7 Packaging, Storage, and Shipment

1. Packaging

The SWMS product is a burial package which is classified as a special form of packaged hazardous material in accordance with 49 CFR Part 173. A DOT permit for each container is not required, since containers are shipped as a group enclosed within a lead shielding or overpack for which a DOT permit is obtained. The contents in the containers are solid; therefore, there is no danger of radioactive spills caused by dropping of containers.

2. Storage

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Sufficient storage capacity is provided for forty 50 ft containers and twenty-five 55-gal drums. Adequate shielding is supplied to reduce exposure to personnel outside the drumming station to approximately 10 mrem/hr. The locations of the solidification room and the drum storage area within the plant are shown on the general arrangement drawing, Figure 1.2-38. Storage time is a variable and depends on shipment schedules which the operating facility has contracted. Radioactive decay, as a function of the storage interval, is considered to be minimal, and credit for the decay is not taken during shielding calculations.

Prior to removal of a drum for shipment, drum smear samples are taken to determine the surface activity. If required, the drum surface is washed; the water is collected in a sump and later pumped to the LWPS. After washing, smear samples are taken again to determine if the desired decontamination has been achieved.

3. Shipment

Radwastes are stored in a designated storage area in the Fuel Building as shown on Figure 1.2-38. Shipment of the radwaste originates from the north end of the Fuel Building by either rail or truck. All radwaste shipments are in compliance with the regulatory standards and requirements of the NRC, DOT, and the Texas Regulations for Radiation Control, and are consistent with the methods discussed in Environmental Survey of Transportation of Radioactive Materials to and from Nuclear Power Plants and with the Draft Environmental Statement Concerning Proposed Rulemaking Action.

11.4.2.8 Instrumentation and Control

The instrumentation and controls of the RWSS are designed by the equipment supplier and are detailed in the ATCOR topical report 132A. 4 Q320.8

11.4.2.9 Safety Evaluation

This RWSS and the balers are not safety-related and cannot affect the safe shutdown of the plant or the operation of other systems which are required to safely shut down the plant. Failures of the RWSS that can cause potential problems in daily operation of the RWSS and increase normal operator exposure have been analyzed and are discussed in the ATCOR topical report No. 132A.