TEXAS UTILITIES GENERATING COMPANY
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MANAGER-LICENSING

January 7, 1985

Director of Nuclear Reactor Regulation
Attention: Mr. B. J. Youngblood, Chief
Licensing Branch No. 1
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION
DOCKET NOS. 50-445 AND 50-446
PROCESS CONTROL PROGRAM

Dear Mr. Youngblood:

Attached is the CPSES process control program used for the solidification of radioactive wastes. Also attached is the relevant CPSES FSAR Section 11.4, revised for Amendment 54.

Sincerely,

John W. Beck

John W. Beck

RWH:tls
Attachments

c - J. J. Stefano
Robert Fell

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11.4 SOLID WASTE MANAGEMENT SYSTEM

The solid waste management system (SWMS) is designed to control, collect, condition, 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. | 54

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 condition and supply spent resins, spent filter cartridges, evaporator concentrates, reverse osmosis wastes, and chemical drain tank contents to a vendor's mobile solidification processing skid for solidification or dewatering, whichever is appropriate. Connections have been provided to allow for the bulk disposal of wastes to a truck mounted or mobile waste processing system. These connections supply waste from the Chemical Drain Tank, Waste Conditioning Tank, and the Spent Resin Transfer System. | 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
46 solids and liquids are packaged 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 RWSS components and piping are in accordance with ETSB. Technical position 11-1. See Appendix 17A.

11.4.2 SYSTEM DESCRIPTION

11.4.2.1 Solidification System Description

The ATCOR System is as described in ATCOR topical report ATC-132A. Only those components necessary for the collection and conditioning of the various waste streams prior to discharge via the bulk disposal connections on elevation 810' of the Fuel Building are utilized. 54

The major ATCOR system components which are utilized include the Waste Conditioning Tank, Waste Feeder Pumps, Emergency Waste Return Pump, Powdex Transfer Pump, Chemical Addition Tank and their associated valves, piping and controls.

11.4.2.2 Spent Filter Cartridge Assembly Processing

Transfer of expended filter cartridge assemblies from the filter housing to the waste solidification area is accomplished by means of a filter transfer cask, shipping shield, and flat bed cart. The transfer cask is positioned next to the compartment of the filter to be replaced. The compartment shielding plug is removed and placed 50
outside of the work area. The filter housing head bolts are disengaged and the head swung out of the way to allow access for the transfer cask. The base of the cask is removed and the cask positioned concentrically above the filter housing. The cask hoist grapple is lowered to engage the filter cartridge assembly and the cartridge raised into the shielded cavity. The base of the transfer cask is replaced, then the cask is moved by monorail to the filter drop zone hatchway where it is lowered into the Fuel Building. In the Fuel Building, the transfer cask is placed on the flat bed cart and moved to the waste solidification area. The transfer cask is removed from its base and lowered onto the shipping shield, with a liner in place. The cartridge is lowered into the liner, and the transfer cask returned to the flat bed cart where the base is reattached. The

transfer cask is then taken back to the filter compartment area.
50 Filters are stored in the shipping shield until the liner is full.
The liner is then processed for offsite shipment.

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.

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Q320.8 Baling of compressible low-radiation-level solid wastes into drums is accomplished in the following manner.

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. 4 Q320.8

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 905 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 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 recessed area surrounds the disconnect fittings to arrest any accidental spills. 46 4 Q320.8 46

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. 4 Q320.8

2. Shipping Shields

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

46 handling of the filled containers. The shields have a lead core with inner and outer shells of steel and are designed to accommodate 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

4 Q320.8 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.

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.

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. 4 Q320.8

11.4.2.6 Other Design Features

1. Process Control Program

All solidifications are performed by a mobile solidification vendor in accordance with an approved process control program. This process control program meets the waste form criteria of the Branch Technical Position to 10CFR61. 54 Q320.8

2. Overflow of Tanks

The waste conditioning tank is provided with an ultrasonic level sensing device which provides level indication over the range of tank operating levels. In addition, level detectors are provided which provide interlock inputs for waste conditioning tank high and low levels. The high level interlock stops waste stream addition to the waste conditioning tank while the low level interlock stops the tank agitator.

3. Tanks Using Compressed Gases

Compressed gas is not directly used in any SWMS tank. However, the waste conditioning tank is vented to the plant ventilation system since bead resin slurry is transported to the waste conditioning 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
54 scfm. 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

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Q320.8 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

26 Storage capacity for up to seventy-four 50 ft3 containers is provided in the Drum Storage Area shown in figure 1.2-38. Capacity for storage of at least one hundred forty-four 55-gallon drums is provided in Area 247 in the Fuel Building (see Figure 1.2-38).

36 Adequate shielding is supplied to reduce exposure to personnel outside the drumming station to less than 25 mrem/hr. The locations of the solidification room and the drum storage area within the plant are shown on the general arrangement drawing,
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Q320.8 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. 4 Q320.8

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.

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.

TABLE 11.4-1

SOURCE INPUTS
(2-Unit Operation)

Type of Waste	Expected Annual Volume (ft^3)	Avg. Container Contact Dose Rate*
Dry Active Waste (DAW)	16,500**	≤ 50 mR/hr.
Solidified Wet Waste (SWW)		
Evaportor Conc.		
Reverse Osmosis		
Chemical Drains	9,360	≤ 200 mR/hr.
Filter Cartridges	1,300***	≤ 5 R/hr.
Resins		
Non-RCS	2,210	≤ 5 R/hr.
RCS	130	≤ 100 R/hr.
Total SWW	13,000	

* 50-ft^3 liner for SWW, 55-gallon drum for DAW.
** Assumes a 30% volume reduction due to sorting operating and a 4:1 compaction ratio.
*** 5 filter cartridge assemblies per 50-ft^3 liner.

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TABLE 11.4-2 (Sheets 1-10)

COMPONENT DESIGN PARAMETERS

(DELETED)

REFER TO ATCOR TOPICAL REPORT NO. 132A

FIGURE 11.4-1

(DELETED)

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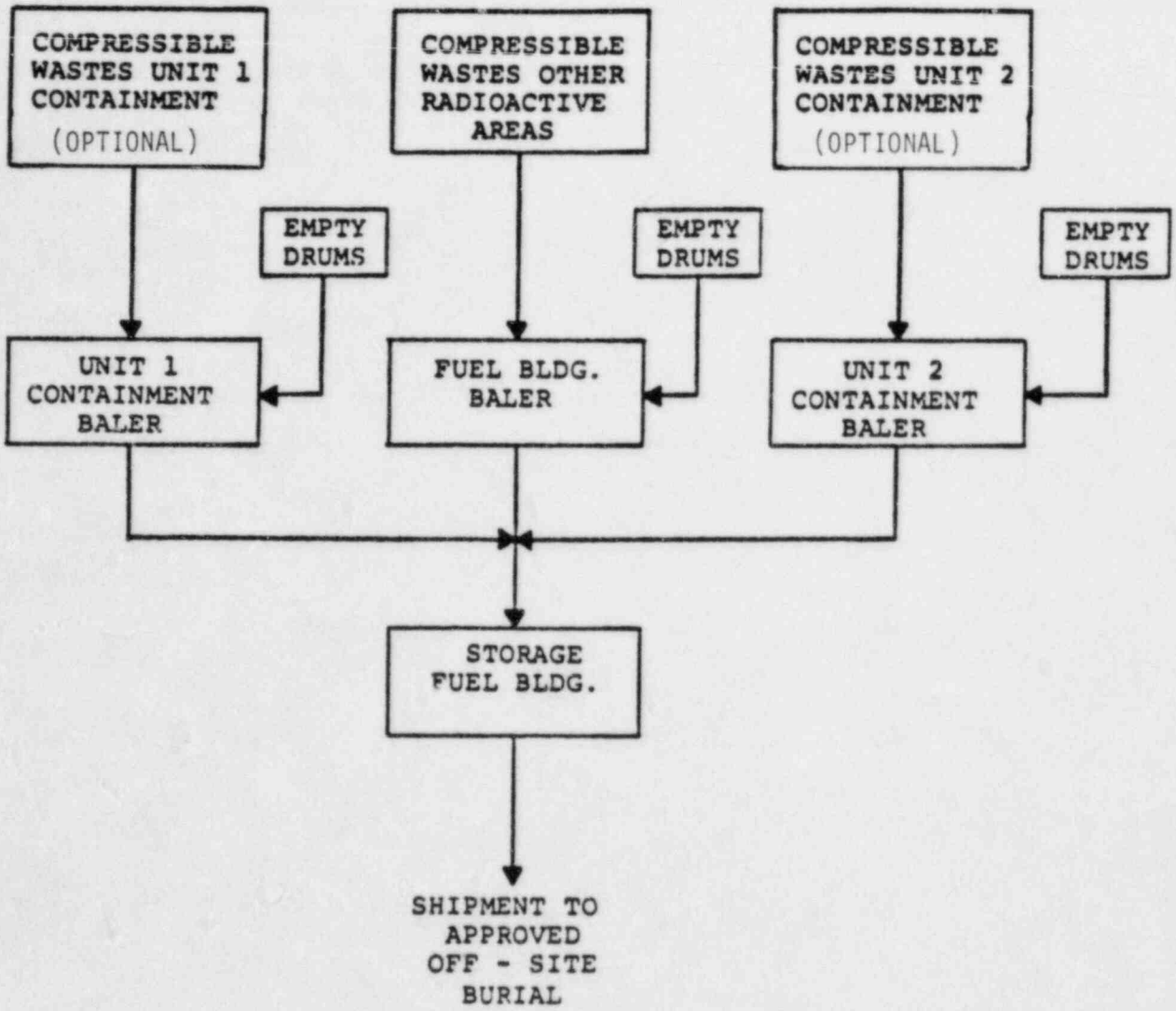
FLOW DIAGRAM - RADIOACTIVE WASTE SOLIDIFICATION SYSTEM

FIGURE 11.4-1



AMENDMENT 54
JANUARY 21, 1985

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FLOW SHEET
BALER - SUBSYSTEM

FIGURE 11.4-2