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Vogtle Project

August 1, 1988

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D. C. 20555

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PLANT VOGTLE - UNITS 1 & 2
NRC DOCKETS 50-424, 50-425
OPERATING LICENSE NPF-68, CONSTRUCTION PERMIT CPPR-109
FSAR CHANGES FOR RADWASTE FACILITIES

Gentlemen:

Attached are the proposed changes to the FSAR for the Dry Active Waste (DAW) Facilities, Alternate Radwaste Building (ARB), Control Area modification, and the ARB bridge crane addition. Existing warehouses located on the southwest portion of the owner controlled area are being extensively modified to handle the DAW. A new addition to the ARB will house the ARB Control Room and dress-out area. The existing pedestal crane in the ARB is being replaced by a bridge crane.

In our letter, GN-1461 dated June 14, 1988, to the NRC Staff, reference was made to the fact that a subsequent submittal would contain the information concerning the DAW Facilities and the ARB Control Area modification. This letter provides the promised information. Should you have any questions concerning these proposed FSAR changes, please inquire.

Sincerely,

J. A. Bailey

J. A. Bailey
Project Licensing Manager

JAB/sem

xc: NRC Regional Administrator
NRC Resident Inspector
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B021
1/1

LIST OF FIGURES (Continued)

1.2.2 FACILITY ARRANGEMENT

The principal buildings and structures associated with the plant include the containments, the equipment buildings, the turbine building, the auxiliary building, the control building, the diesel generator buildings, the auxiliary feedwater pumphouses, the fuel handling buildings, the radwaste solidification and transfer buildings, the nuclear service cooling water towers, and the circulating water cooling towers. Ancillary structures include the administration building, warehouse building and receiving facility, service building, maintenance building, plant entry and security building, vehicle maintenance facility, intake and outfall structures, boathouse, chlorination facilities, fire pumphouse, demineralizer building, field support building, the nuclear training facility, ~~and~~ alternate radwaste building, and dry active waste facilities 25
These buildings and structures are founded upon suitable material for their intended application. Structures essential to the safe operation and shutdown of the plant are designed to withstand more extreme loading conditions than normally considered in conventional nonnuclear design practice. The safety-related buildings and their internal structures are designed to provide protection as required from floods, tornadoes, earthquakes, and the failure of equipment producing flooding, missiles, and pipe breaks. Additional discussion of design considerations is provided in chapter 3.

Location and orientation of the buildings on the site are shown in figure 1.2.2-1. The general arrangement of the power block buildings is shown in figures 1.2.2-3 through 1.2.2-14. Equipment locations for Unit 1 are also shown in figures 1.2.2-15 through 1.2.2-34.

The containment, shown schematically in figures 1.2.2-31 and 1.2.2-32, encloses the reactor coolant system, the steam generators, some of the engineered safety features systems, and supporting systems. The functional design basis of the Seismic Category 1 containment, including its penetrations and isolation valves, is to contain with adequate design margin the energy released from a design basis, high energy line break accident and to provide a leaktight barrier against the uncontrolled release of radioactivity to the environment, even assuming the loss of one of the two trains of engineered safety features. The containment is a prestressed, post-tensioned, reinforced concrete, right circular cylinder with a hemispherical dome.

The equipment building, shown in figures 1.2.2-17 and 1.2.2-18, provides protection from the weather for equipment located within the building. The equipment building consists of

The radwaste solidification system is housed within two buildings connected by a subterranean tunnel. A small transfer building, adjacent to the auxiliary building (figure 1.2.2-33), serves as a collection tankage area, providing waste holdup and pumping capacity necessary to transport the liquid and slurry wastes to the remote solidification building. The underground tunnel routes the process piping from the auxiliary building to the transfer building and from the latter to the solidification building. Shown in figure 1.2.2-34, the radwaste solidification building is a reinforced concrete structure designed to the seismic requirements of Regulatory Guide 1.143. It contains receiving tankage for the liquid and slurry wastes, volume reduction and solidification equipment, and a solidified waste drum storage area. The solidification system processes liquid and solid radioactive wastes generated by the plant as well as the residue from the volume reduction system.

The alternate radwaste building, shown in figure 1.2.2-35, is a metal siding building supported on a base slab with a "lean-to" structure on the north side for storage. The building basemat is designed with curbing to retain radioactive liquid in the event of an operating basis earthquake per Regulatory Guide 1.143. It contains a demineralizer vault, laydown area, and a truck-trailer loading bay. Areas have been allotted to stage process shields, process skids, ~~a dry waste compactor, and for box storage~~ and

INSERT F

The circulating water cooling tower is a concrete, natural draft, hyperbolic structure. The tower is designed to dissipate all excess heat removed from the main condensers and accomplishes this function by the use of the spray network, the tower basin, and circulating water pumps, piping, and valves. The intake structure houses the circulating water pumps, turbine plant cooling water pumps, and associated auxiliary equipment and piping.

The nuclear service cooling water towers, shown in figure 1.2.2-30, are Seismic Category 1 concrete mechanical draft structures. The towers house the equipment required to cool the heated nuclear service cooling water, and the basins provide a cooling water storage supply for the ultimate heat sink.

The plant is arranged so that Unit 1 can be placed in commercial operation before the completion of Unit 2. To minimize the exposure of construction personnel to radiation, to prevent unauthorized construction personnel from entering the Unit 1 protected area, and to ensure that no construction condition for Unit 2 affects operation of Unit 1, the following measures are taken:

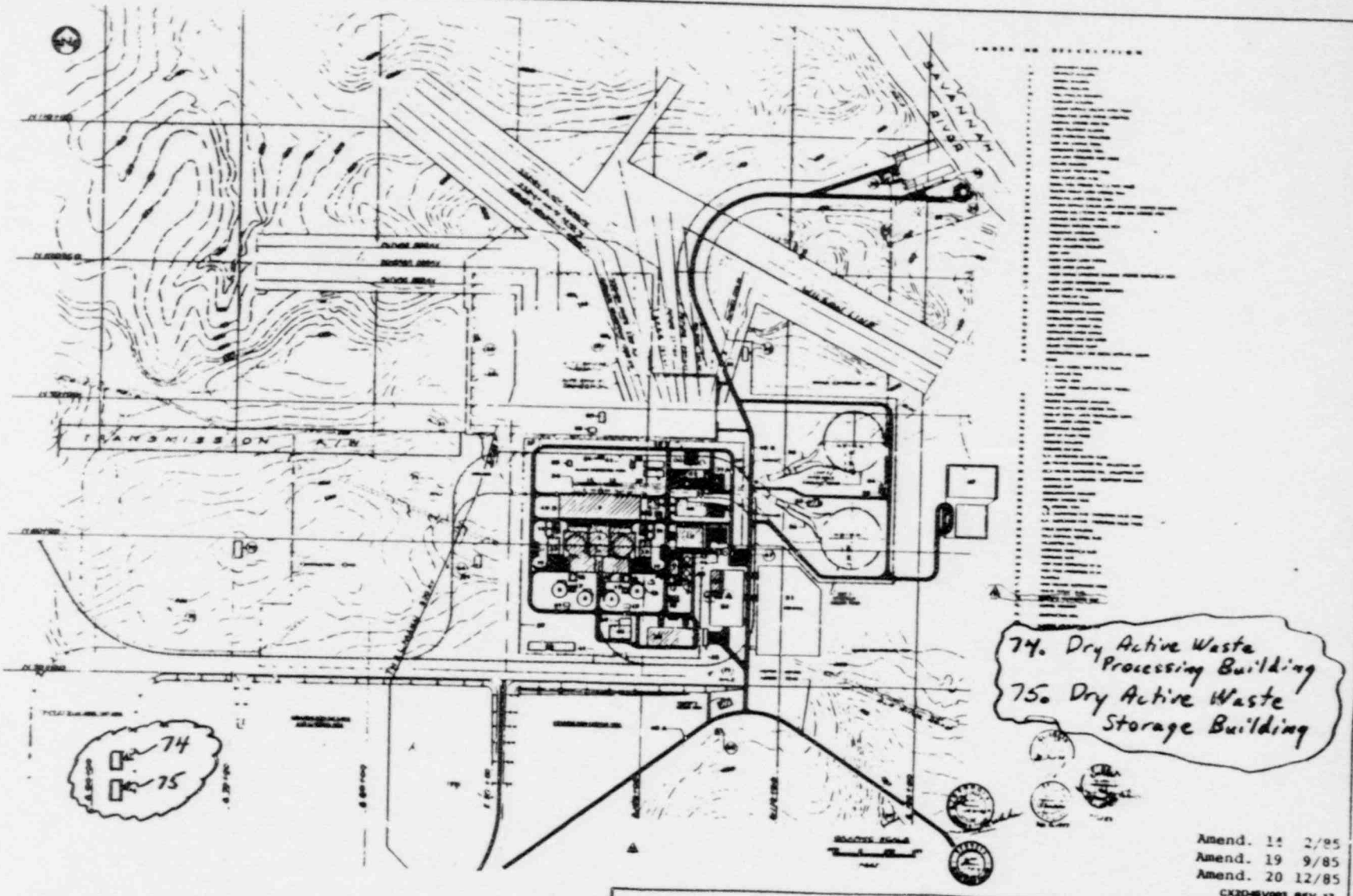
INSERT F

The Dry Active Waste (DAW) facilities consist of processing and storage buildings. These buildings are located in the South-West portion of the owner controlled area as shown on Figure 1.2.2-1. The DAW processing and storage buildings are metal siding buildings supported on a base slab with tilt-up concrete panels and masonary blocks provided for shielding. The roofs are metal decking supported by structural steel. The grade elevation is above that required for natural flood protection. Curbs and ramps are provided, in radioactive areas, to contain water from fire sprinkler actuation. The DAW processing building contains a compactor, sorting tables, waste drying equipment and other support equipment. The DAW storage building has space to store DAW packaged for offsite shipment. Figures 1.2.2-35 and 1.2.2-36 show the DAW processing and storage building layouts.

- Power block entry (control building).
- Control room (control building).
- Control building support facilities (locker rooms, showers, health physics office, laundry, first aid station, etc.).
- Radioactive laboratories (control building).
- Communication room (service building).
- Technical support center (control building).
- Hot machine shop (auxiliary building).
- Hot instrument decontamination shop (auxiliary building).
- Drum storage area (auxiliary building).
- New fuel pit (fuel handling building).
- Spent fuel cask handling areas (auxiliary and fuel handling building).
- Radwaste transfer building.
- Radwaste solidification and volume reduction area (radwaste building).
- Alternate radwaste building.
- Water analysis room (turbine building).
- Nitrogen storage area (outdoors).
- Dry Active Waste Facilities

//

Amend. 3 1/84
Amend. 25 9/86
Amend. 35 3/88



Amend. 14 2/85
Amend. 19 9/85
Amend. 20 12/85
CX2D-65V083 REV. 12

Georgia Power

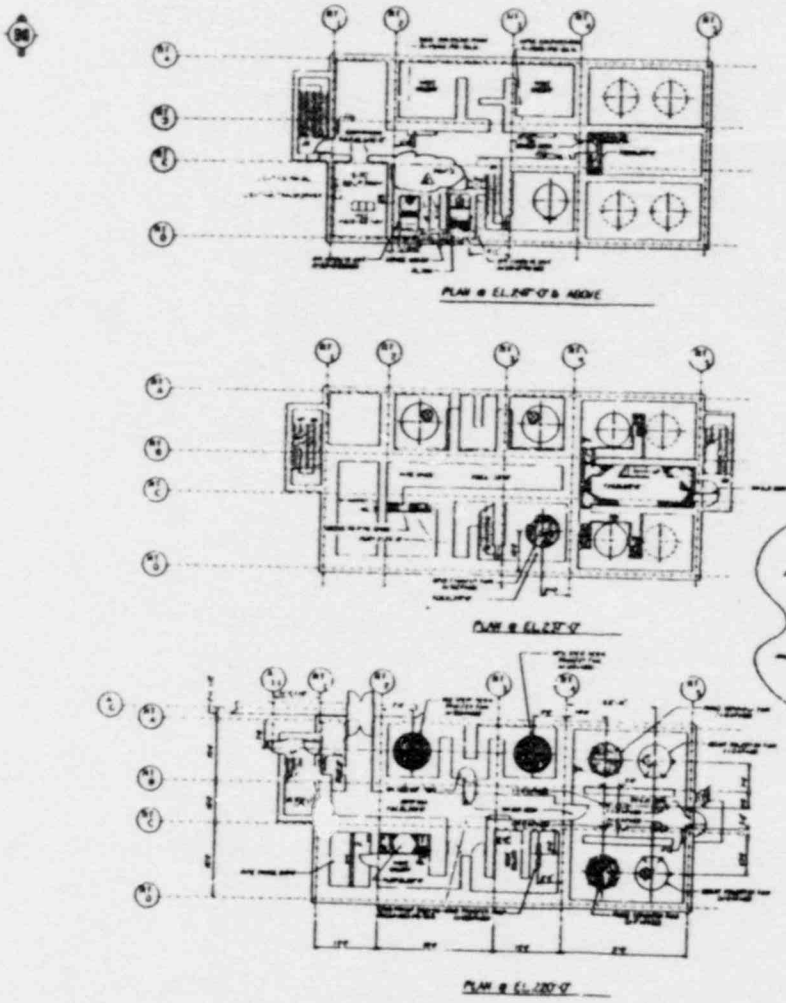
VOGTLE
ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2

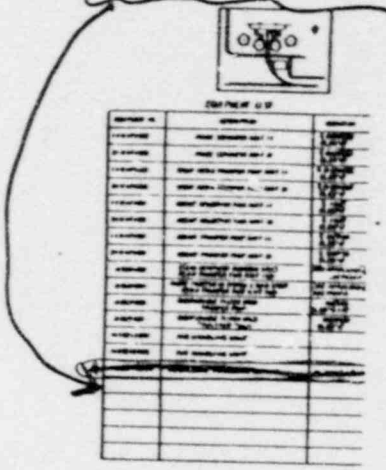
SITE PLAN

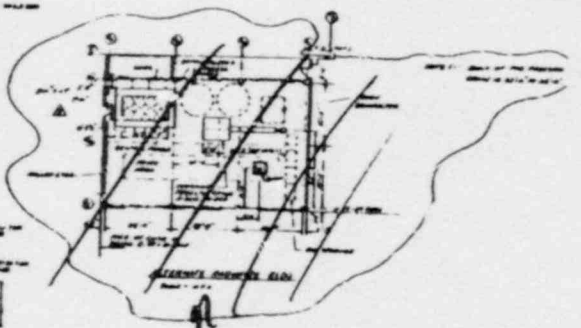
FIGURE 1.2.2-1 (SHEET 1 OF 3)

3605-G

A2165R4005 ARB BRIDGE CRANE elev. 25[illegible]





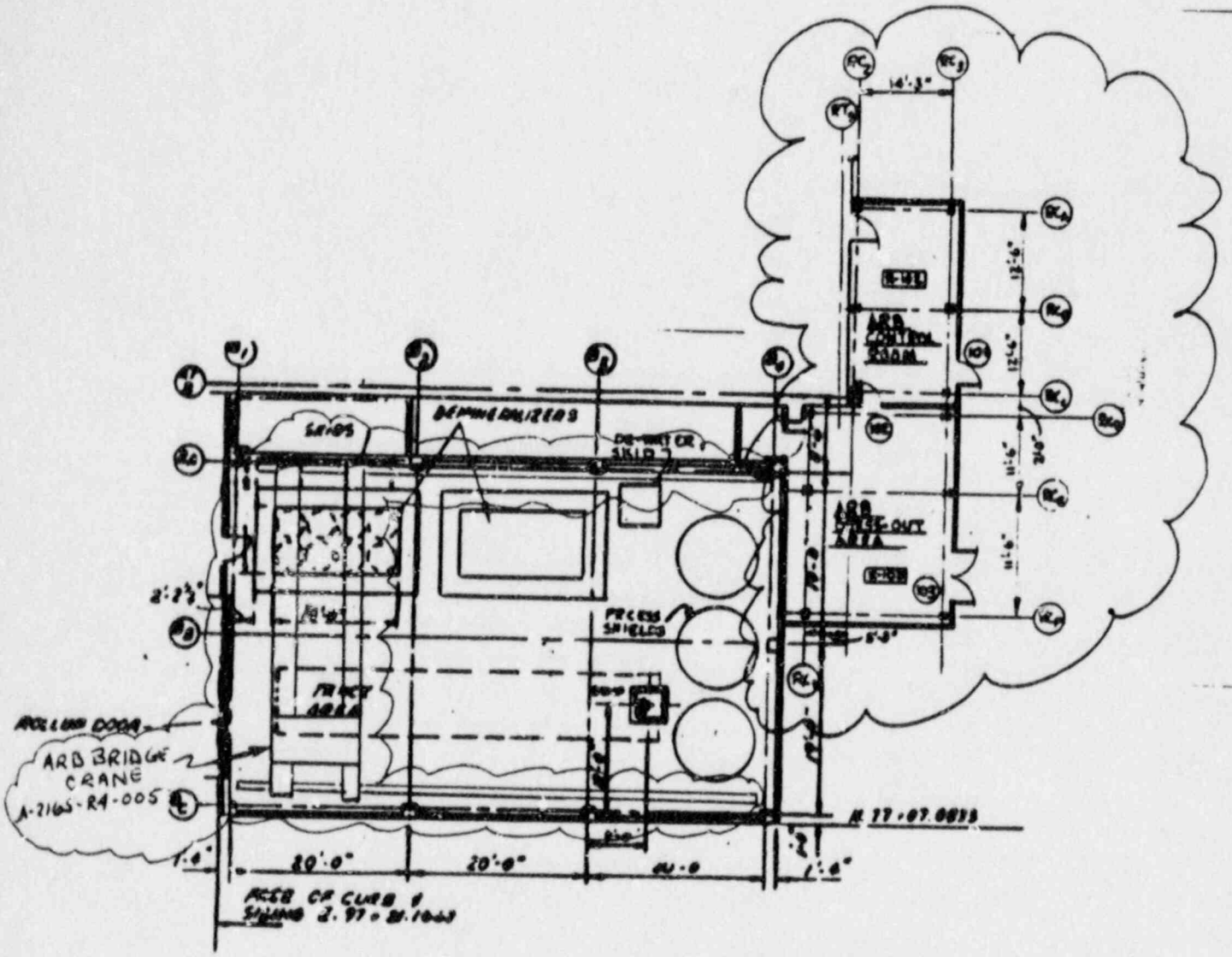


Note: This Figure changed by DCP 88VLE0061-0-1 and refer to addition of bridge crane next page.

Amend. 25 9/86

AX4D6380 REV. 4

Georgia Power — VOGTLE ELECTRIC GENERATING PLANT UNIT 1 AND UNIT 2	TRANSFER BUILDING EQUIPMENT LOCATION PLANS
	FIGURE 1.2.2-33

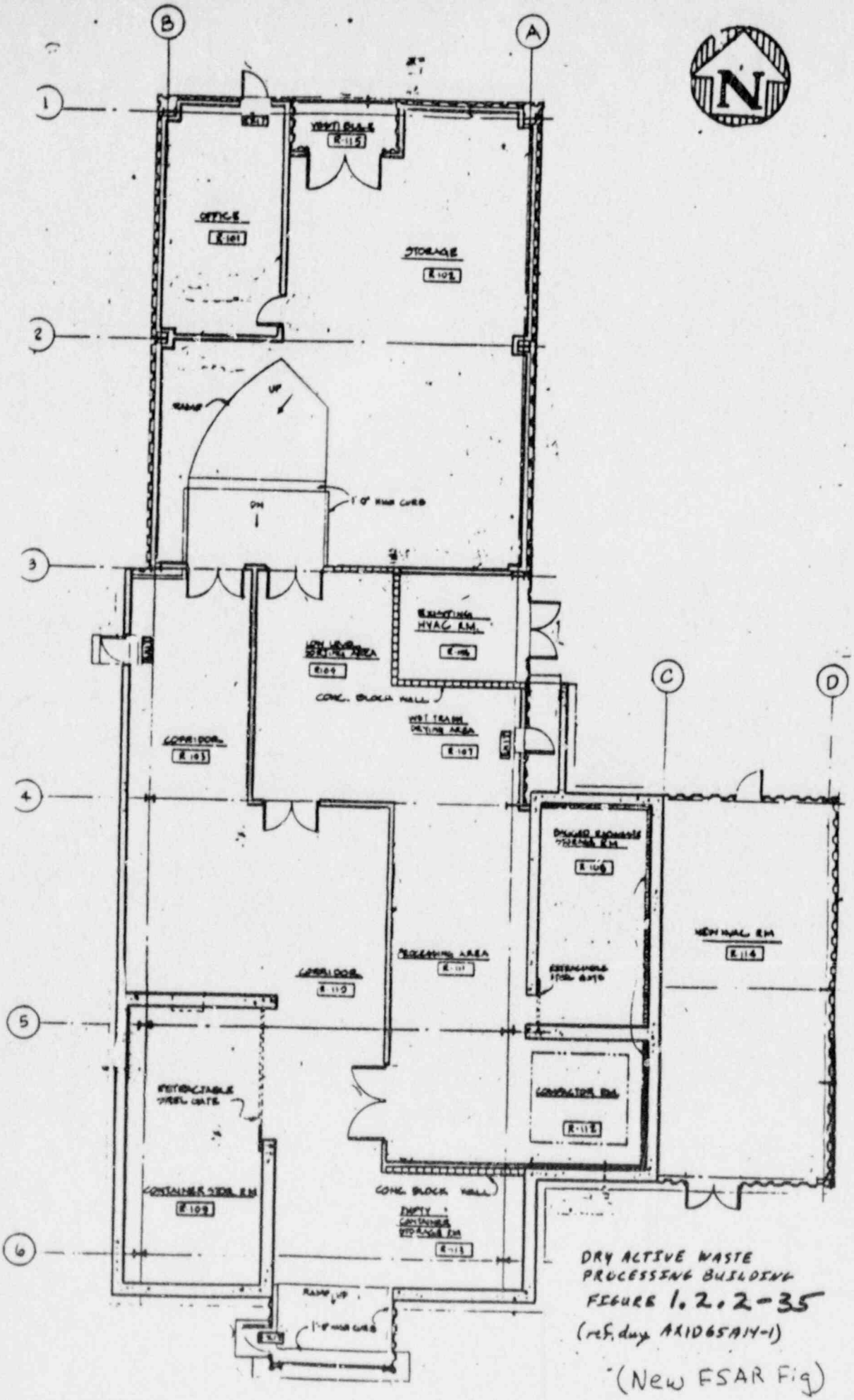


ALTERNATE RADWASTE BLDG.

SCALE • N.T.S.

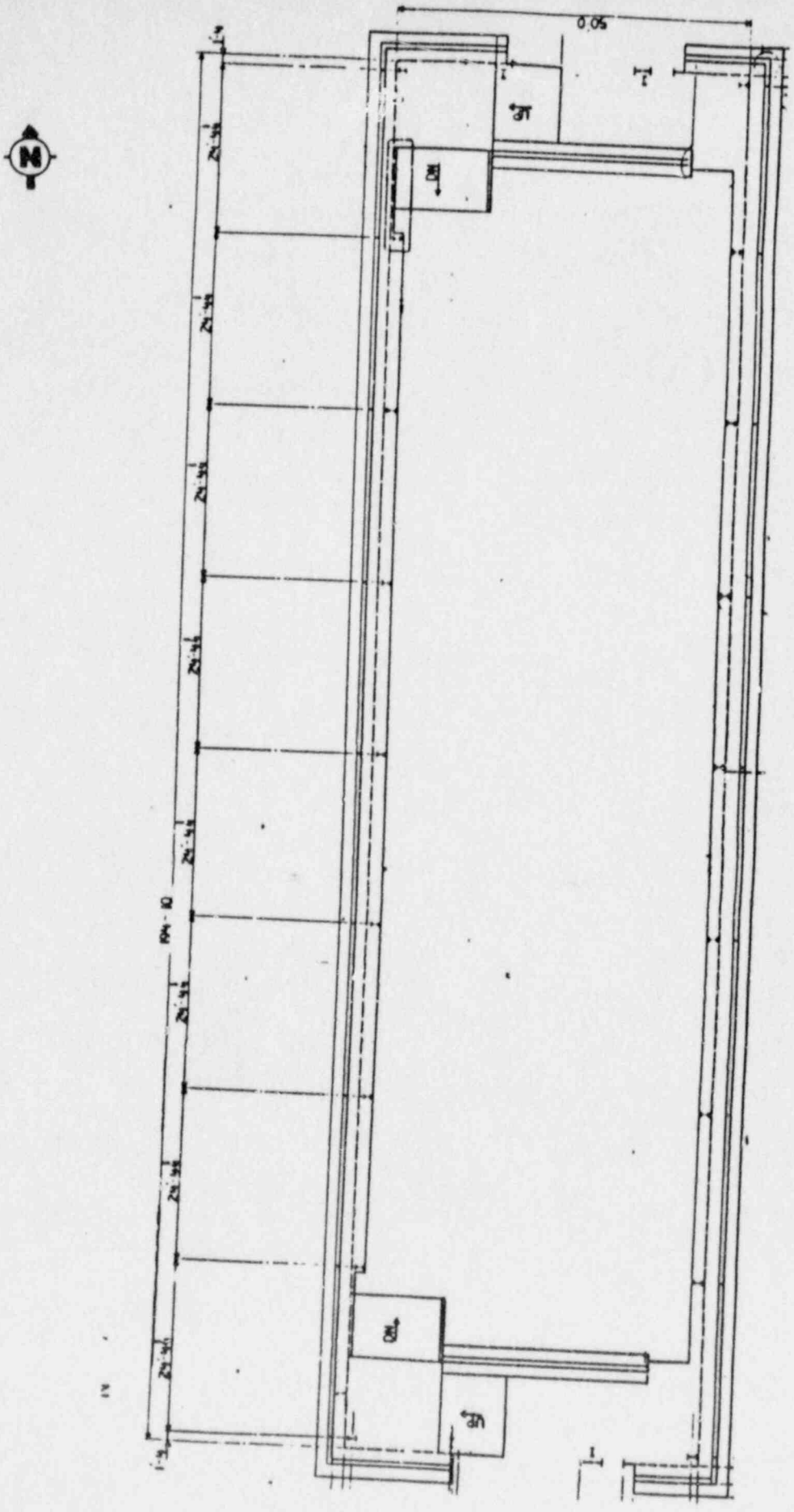
REVISED PORTION OF

FSAR FIGURE 1.2.2-33



DRY ACTIVE WASTE PROCESSING BUILDING
FIGURE 1.2.2-35
(ref. dwg AX1D65A14-1)

"(New FSAR Fig)


N
0.05
DRY ACTIVE WASTE
STORAGE BUILDING
FIGURE 1.2.2-36 (New FSAR Fig)

paragraph 5.10.8.2 of ANSI N509-1980 will not be performed since two separate interlocks are provided to preclude overpressurization of the ducting.

Wherever ANSI N510-1975 is referenced in the regulatory guide, conformance is with ANSI N510-1975 or ANSI N510-1980 depending on the date of the applicable purchase order. Conformance may be with ANSI 510-1980 when specifically called out in the corresponding specification. 22

1.9.141 REGULATORY GUIDE 1.141, APRIL 1978, CONTAINMENT ISOLATION PROVISIONS FOR FLUID SYSTEMS

1.9.141.1 Regulatory Guide 1.141 Position

The requirements and recommendations for containment isolation of fluid systems that penetrate the primary containment of light-water-cooled reactors as specified in ANSI N271-1976,

The Dry Active Waste processing building HVAC system is only subject to the in-place testing criteria, for the exhaust HEPA unit, of this Regulatory Guide.

Principal System and Components	(a) Location Unit 1	Unit 2	(b) Source of Supply	(c) Quality Group	(d) VEGP Safety Class	(e) Seismic Category	(f) Codes and Standards Designator	(g) Principal Construction Code	(h) Q-List	(i) Safety Related	(j) Environmental Designator	(k) Comments
50. Dry Active Waste Facilities	Shared		G	NA	6	2	C	UBC-76	N	N		
51. Dry Active Waste Compacter	Shared		G	NA	6	2	6	mfg	N	N		
52. Dry Active Waste HVAC	Shared		G	NA	6	2	6	mfg	N	N		
29. Turbine generator pedestal			S	NA	6	2	C	AISC-69, ACI 318-71, UBC-76	N	N		
30. Storm drain system			S	NA	6	2	C	mfg	N (Note Y)	N		
31. River makeup water piping			S	NA	6	2	C	AWWA C-200	N	N		
32. Radwaste solidification building			B	NA	6	2	C	AISC-69, ACI 318-71, UBC-76	N	N		
33. NSCW tower valve house			B	NA	0	1	C	AISC-69, ACI 318-71	Y	Y		
34. Radwaste transfer building			B	NA	6	2	C	AISC-69 ACI 318-71, UBC-76	N	N		
35. Category 1 electrical cable tray supports			B	NA	0	1	C	AISC-69, AISI-68	Y	Y		Note 2
36. Category 1 HVAC duct supports			B	NA	0	1	C	AISC-69	Y	Y		Note 2
37. Category 1 pipe supports			B		See Note 4			AISC-69 III-NF	Y	Y		Note 2
38. Pipe whip restraints			W,B	NA	0	1	C	AISC-69	Y	Y		
39. Water tight doors and seals			B	NA	0	1	C	m.g	Y	Y		
40. Waterproofing and water stops			B	NA	6	2	C	mfg	N	N		
41. Category 1 backfill			B	NA	0	1	C		Y	Y		
42. Category 1 tank liner plate	0	0	B	NA	0	1	C	AISC-69	Y	Y		
43. Underground Category 1 conduits			B	NA	0	1	C	AISC-69,	Y	Y		
44. Alternate radwaste building	Shared		B	NA	6	2	C	UBC-76	N	N		
45. Fire dampers	VB	VB	B	NA	6	1,2	6	mfg	N	Y,N		Note v
46. Fire doors	VB	VB	B	NA	6	2	C	mfg	N	N		Note v
47. Fire rated penetration seals	VB	VB	B	NA	6	2	C	mfg	N	N		Note v
48. Alternate Radwaste Bldg Dress Out Area and Control Room HVAC	Shared		S	NA	6	2	6	mfg	N	N		
49. Alternate Radwaste Bldg Bridge Crane	Shared		G	NA	6	2	C	mfg	N	N		

Control Room and Dress Out Area

Shared

Amend. 3 1/84
Amend. 8 7/84
Amend. 9 8/84
Amend. 15 3/85
Amend. 25 9/86
Amend. 35 3/88

TABLE 9.1.5-2 (SHEET 7 OF 8)

Equipment	Hoist/Crane Capacity (lb)	Design Standard	Load Weight (lb)	Maximum Vertical Lift (ft)	Safety-Related Item in Load Path	Safety-Related Item on Lower Elevation	Basis for Conformance/ Exclusion	Reference Drawings	Remarks
				Control Building - Level 3					
ESF chilled water chillers	4,000	7	3,500	8	Yes	Yes	4	Fig. 9.1.5-5 (sheets 26 and 27)	
				Control Building - Level 4					
Normal chilled water chillers	8,000	3	7,000	8	No	Yes	4	Fig. 9.1.5-5 (sheet 25)	
Normal chilled water pumps	8,000	3	6,900	8	No	Yes	4	Fig. 9.1.5-5 (sheet 25)	
				Alternate Radwaste Building					
Alternate radwaste building pedestal crane	30,000	5	30,000	35	No	Yes	2	Fig. 9.1.5-5 (sheet 42)	
Alternate radwaste building bridge crane	80,000	5	79,000	25	No	Yes	3	Fig 9.1.5-5 (sheet 42)	

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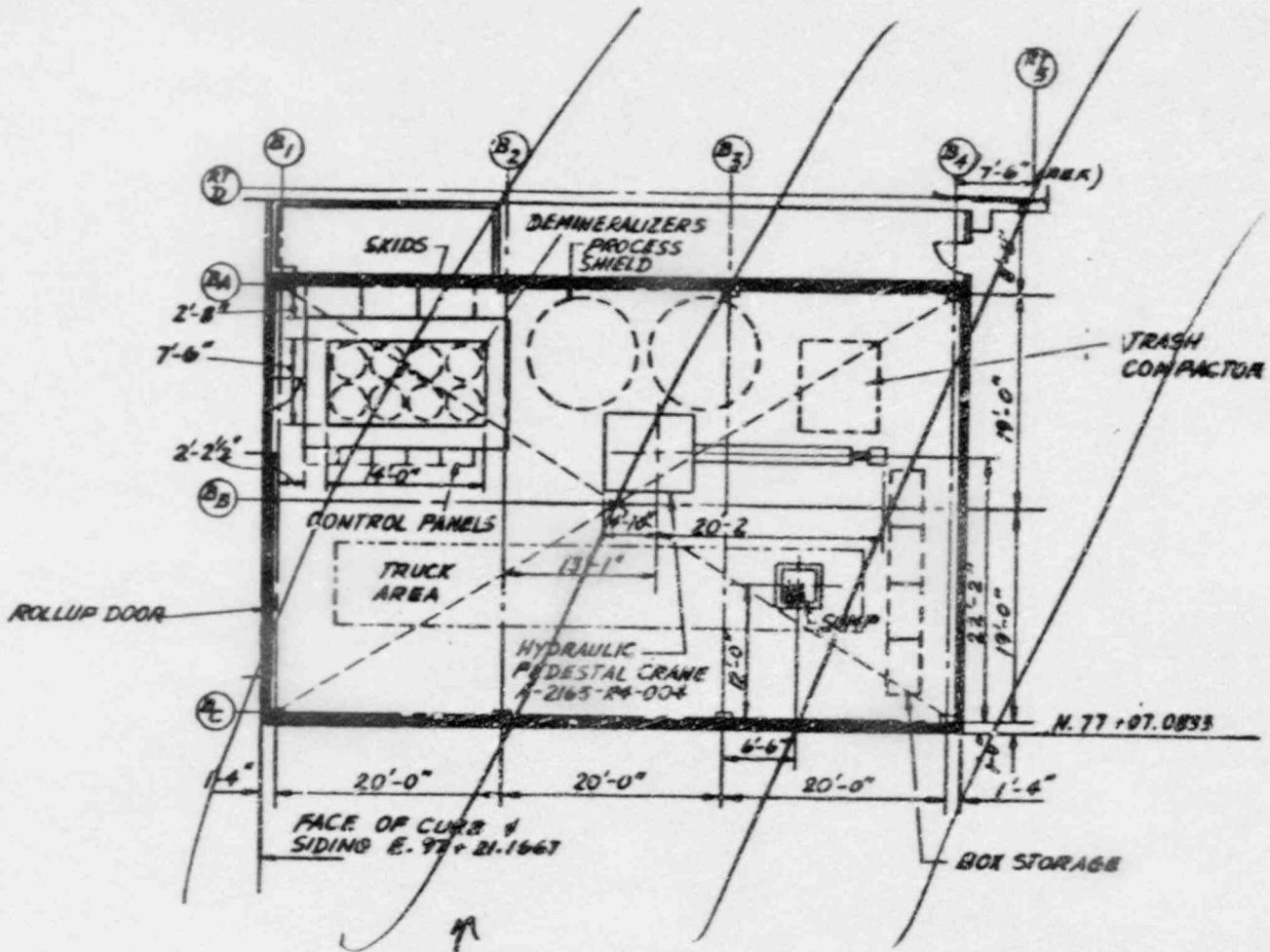
15

25

VEGP-FSAR-9

Amend. 15 3/85
Amend. 25 9/



Replace Figure
with next page

~~NOTE:~~
~~PEDESTAL CRANE BOOM CAN ACCESS~~
~~ALL AREAS WITHIN BUILDING~~

Amend. 25 9/86

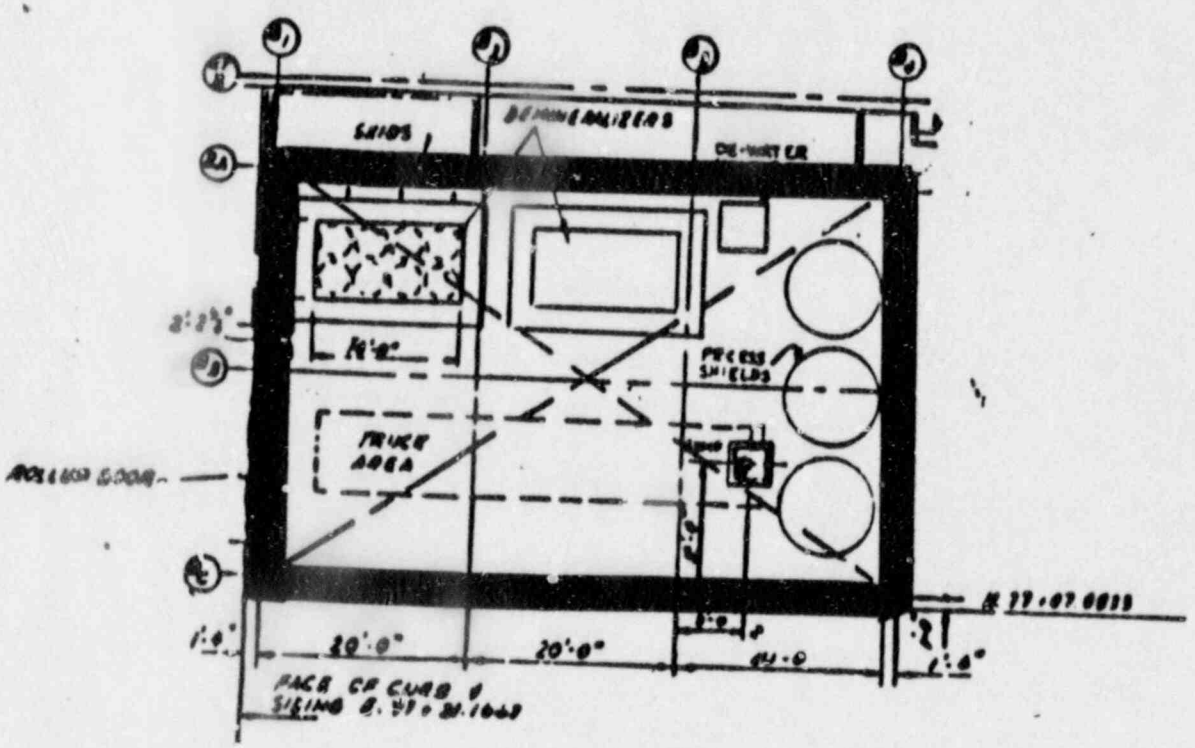
REFER TO LEGEND ON SHEET 1

Georgia Power

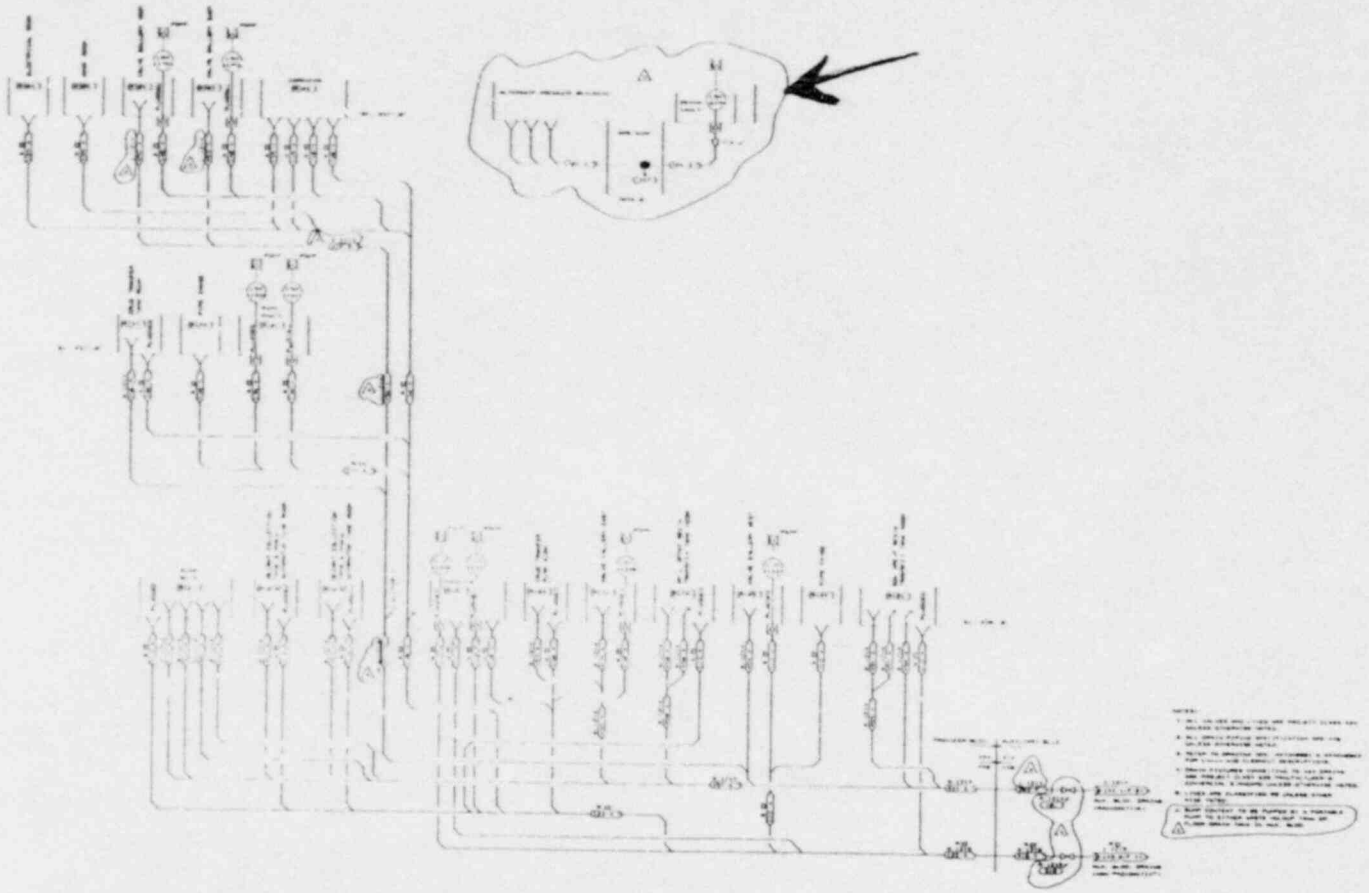
VOGTLE
ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2

ALTERNATE RADWASTE BUILDING
PLAN LEVEL 1 EL. 220'-0"

Figure 9.1.5-5 (SHEET 42 OF 42)



Revised Figure 9.1.5-5 (sheet 42 of 42)



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AX4DB105-4 REV. 4

Georgia Power

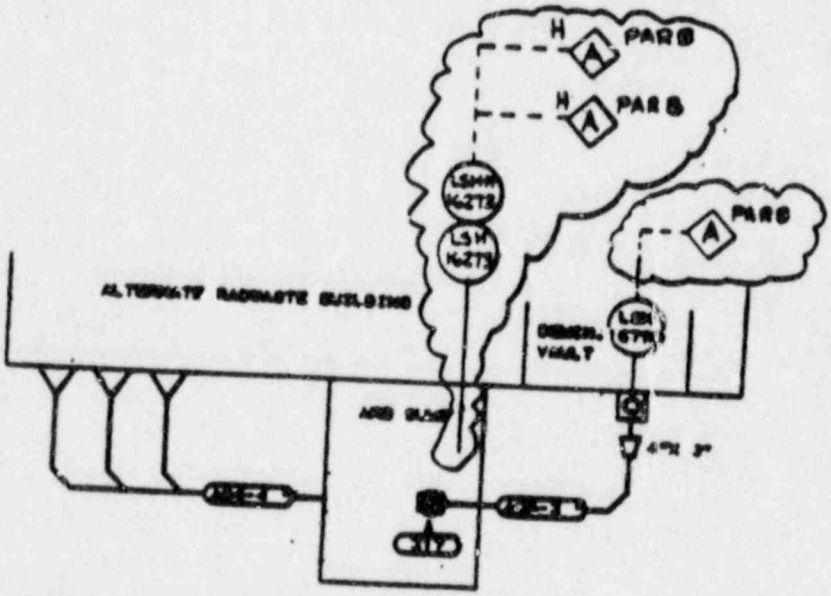
VOGTLE
ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2

AUXILIARY BUILDING AND
MISCELLANEOUS DRAINS

FIGURE 9.3.3-3 (SHEET 11 OF 11)

433-9

"PROPOSED CHANGES"



AUXILIARY BUILDING AND MISCELLANEOUS DRAINS

FIG 9.3.3-3 (SHEET 11 of 11)

mechanisms to allow chiller operation down to approximately 10 percent of its capacity.

9.4.3.3.2.3.7 Radwaste Solidification Building Elevator Machine Room. The elevator machine room is served by an outside air supply system that provides fresh air, heated as required, to the elevator shaft under positive pressure. The elevator machine room is supplied with outside air from an intake plenum at el 263 ft 6 in.; air is exhausted to the atmosphere at el 263 ft 6 in. This system assists in minimizing exfiltration from the radwaste solidification building.

9.4.3.3.2.3.8 Health Physics Building. The 100-percent outside air supply is filtered and conditioned by the air supply unit and is distributed to the health physics building. Supply air conditioned to 55°F is delivered to the different zones. Each zone is equipped with an electric reheat coil controlled by a space thermostat.

A package electric steam humidifier located at the main supply duct is initiated when the space relative humidity becomes lower than the preset value of the space humidistat.

An air exhaust fan collects all room air and discharges it to the atmosphere at el 237 ft 0 in.

9.4.3.3.2.3.9 Alternate Radwaste Building. Continuous manual ridge ventilators are provided for the alternate radwaste building. A vent line connection is provided to interface with the vendor-supplied container vent system to exhaust the potentially contaminated process air through the auxiliary building filtration system. Provisions are included to exhaust air from the radwaste tunnel area and portions of the radwaste transfer building through the auxiliary building filtration system prior to completion of the radwaste solidification building. 25

INSERT 6

9.4.3.3.3 Safety Evaluation

Since there is no safety design basis for the radwaste solidification building ~~and~~ radwaste transfer building ventilation systems, no safety evaluation is required.

and DAW facility ventilation systems

INSERT G

NOTE: Section 9.4.3.2.3.10 Addresses ARB Control Room and Dress Out Area.

9.4.3.2.3.11 - Dry Active Waste Facilities

The Dry Active Waste (DAW) Processing Facility is provided with two heating, ventilating and air conditioning (HVAC) systems, and exhaust air system and unit heaters. The HVAC system and exhaust system for the potentially contaminated processing rooms and storage rooms are designed to provide control of airborne contamination. The HVAC unit for the potentially contaminated processing rooms returns air from the rooms and individual pieces of equipment (e. g. - compactor) and recirculates the air through high efficiency particulate (HEPA) filters and cooling coils. The processing rooms are maintained at 70°F while the storage area temperature is not controlled during summer operation.

The exhaust air system is designed to maintain potentially contaminated processing rooms at a lower pressure than surrounding areas and the potentially contaminated storage area at a lower pressure than outside. The exhaust air passes through HEPA filters prior to being released. Testing of this HEPA filter is in accordance with the in-place testing criteria of Regulatory Guide 1.140. A radiation monitor (section 11.5.2) is provided to monitor this effluent path.

Seven unit heaters are provided for the storage areas and mechanical equipment rooms for freeze protection.

The HVAC system for the non-contaminated rooms provides outside make-up air while recirculating air through a cooling coil and three duct heaters. The system is designed to maintain these rooms at 75°F.

The DAW storage facility is provided with heat and ventilation. Manually controlled rooftop ventilators exhaust air from the building and draw outside air in through several intake louvers. Eight thermostatically controlled, ceiling mounted unit heaters provide space heating for freeze protection during the winter.

PROPOSED CHANGES

VEGP-FSAR-9

TABLE 9.4.3-6 (SHEET 4 OF 4)

Health Physics Building HVAC Supply Air Handling Unit

Quantity	1
Fan capacity (ft^3/min)	2300
Static pressure (in. WG)	2.75
Fan (hp)	2
Cooling capacity (Btu/h)	196,000
Heating capacity (kW)	35
Filter efficiency (%)	80 to 85

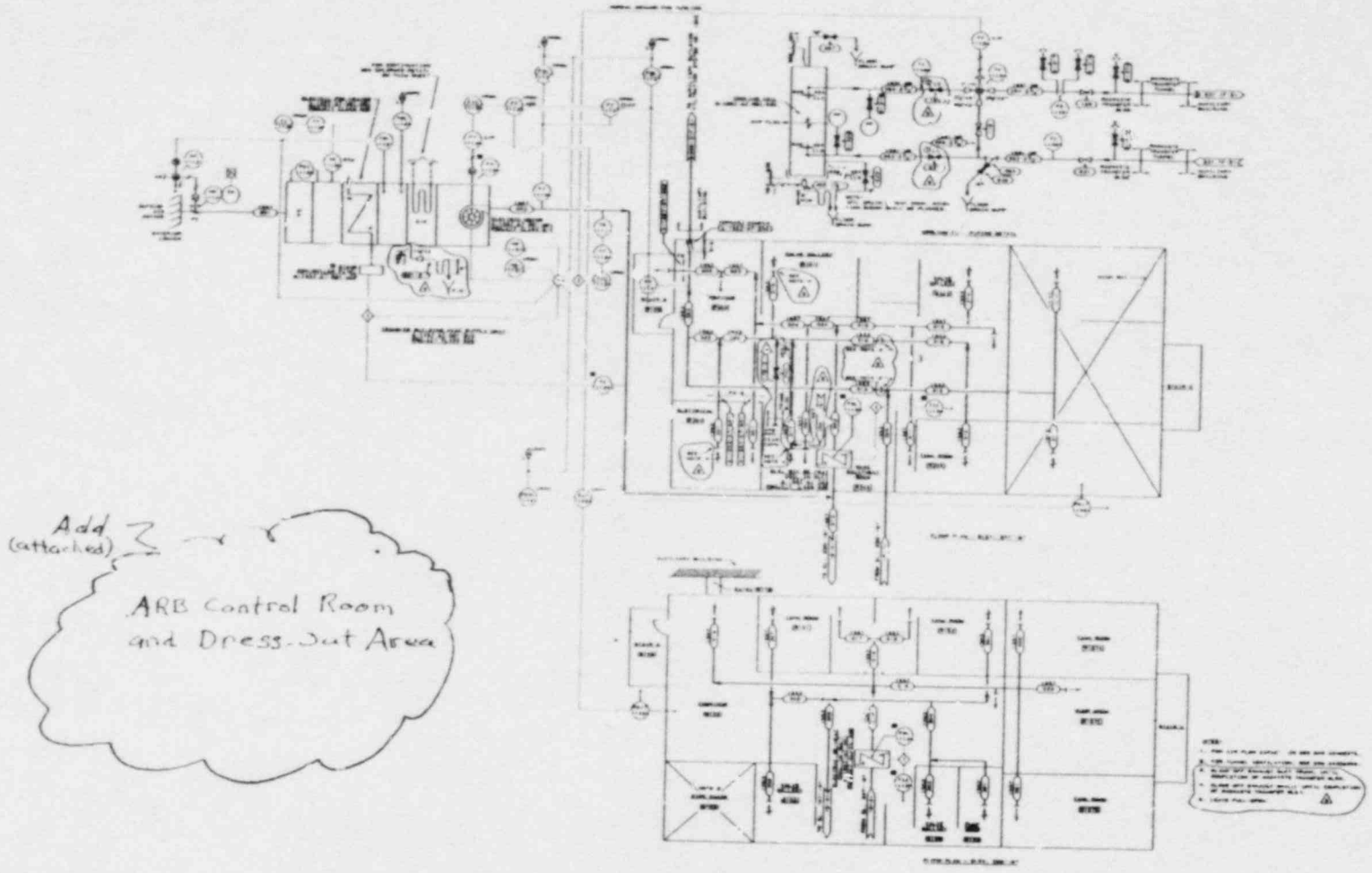
Alternate Radwaste Building Control Room and Dress-out Area Air Handling Unit

Quantity	1
Fan Capacity (ft^3/min)	1800
Static Pressure (in. WG)	0.70
Fan (HP)	0.75
Cooling Capacity (BTU/H)	65,000
Heating Capacity (KW)	17
Filter Efficiency(%)	Low

Alternate Radwaste Building Control Room and Dress-Out Area Condensing Unit

Quantity	1
Capacity (BTU/H)	65,000
Refrigerent	R-22
Fan Motor (HP)	0.5

ADD



Amend. 20 12/85
Amend. 25 9/86
AX405363 REV. 8

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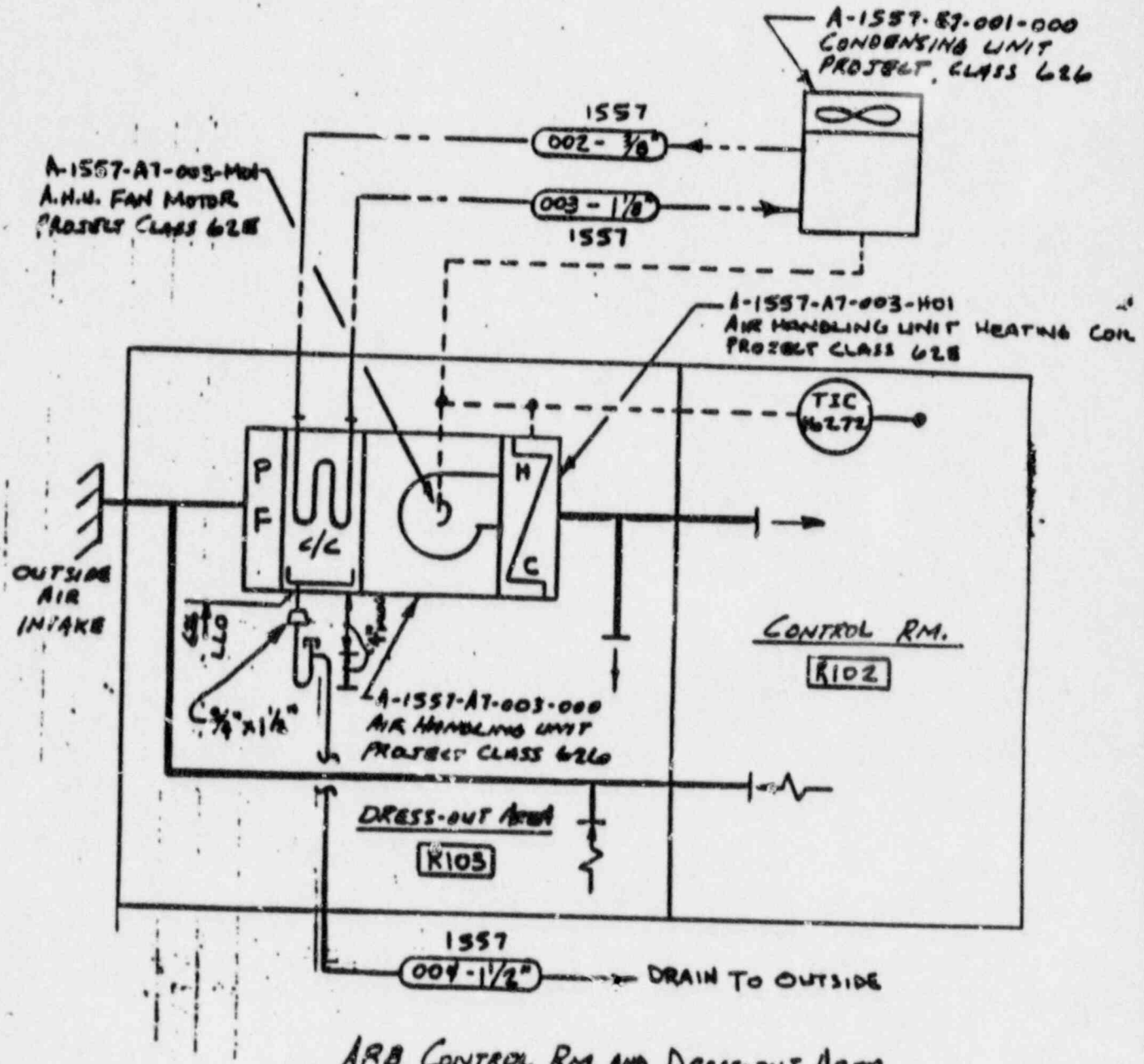
VOGTLE ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2

RADWASTE BUILDING VENTILATION SYSTEM

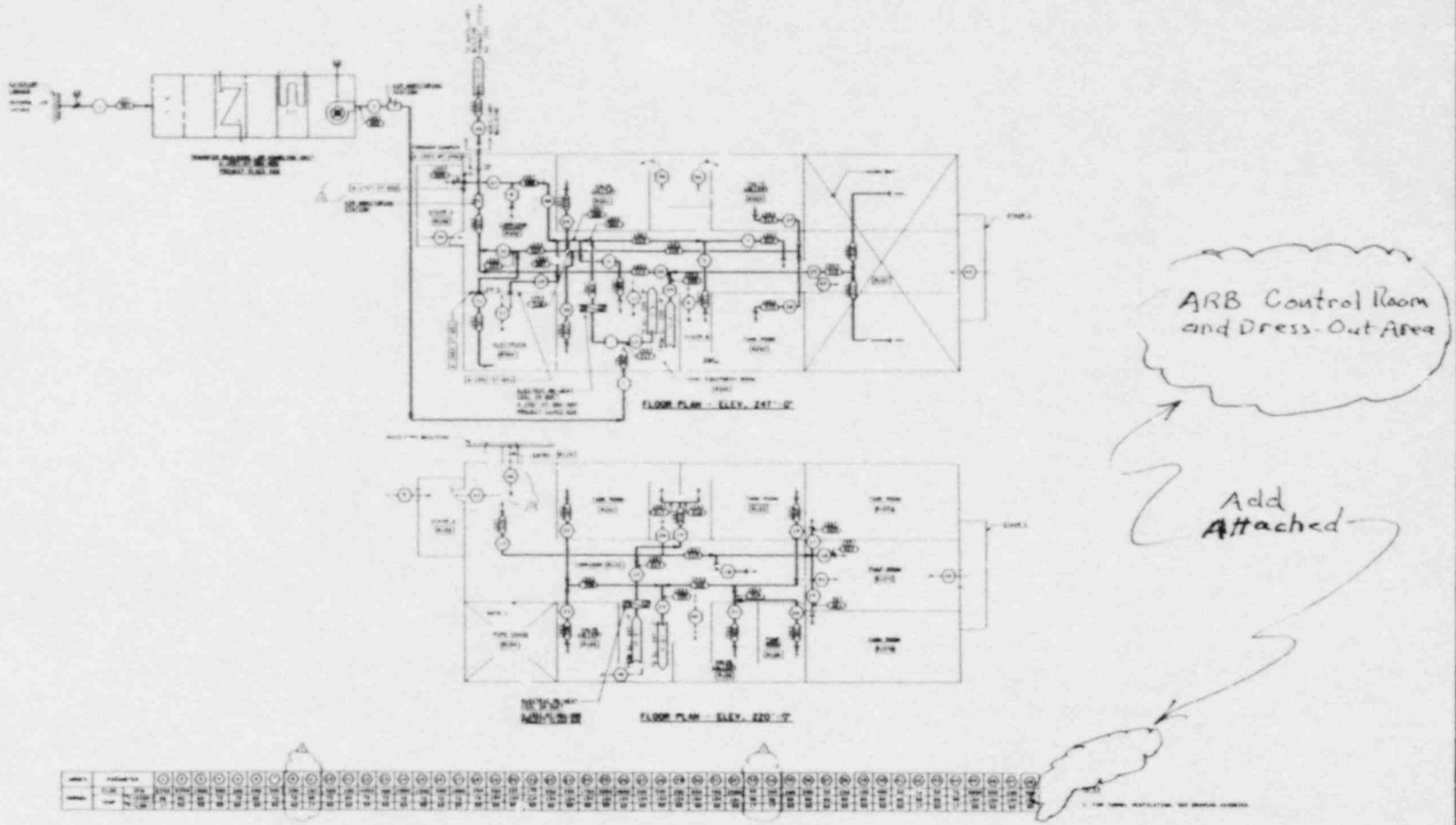
FIGURE 9.4.3-5 (SHEET 6 OF 8)

PROPOSED CHANGES



ARB CONTROL RM AND DRESS-OUT AREA
FLOOR ELEVATION 220'-0"

ADD TO FSAR
FIGURE 9.4.3-5 SH.6



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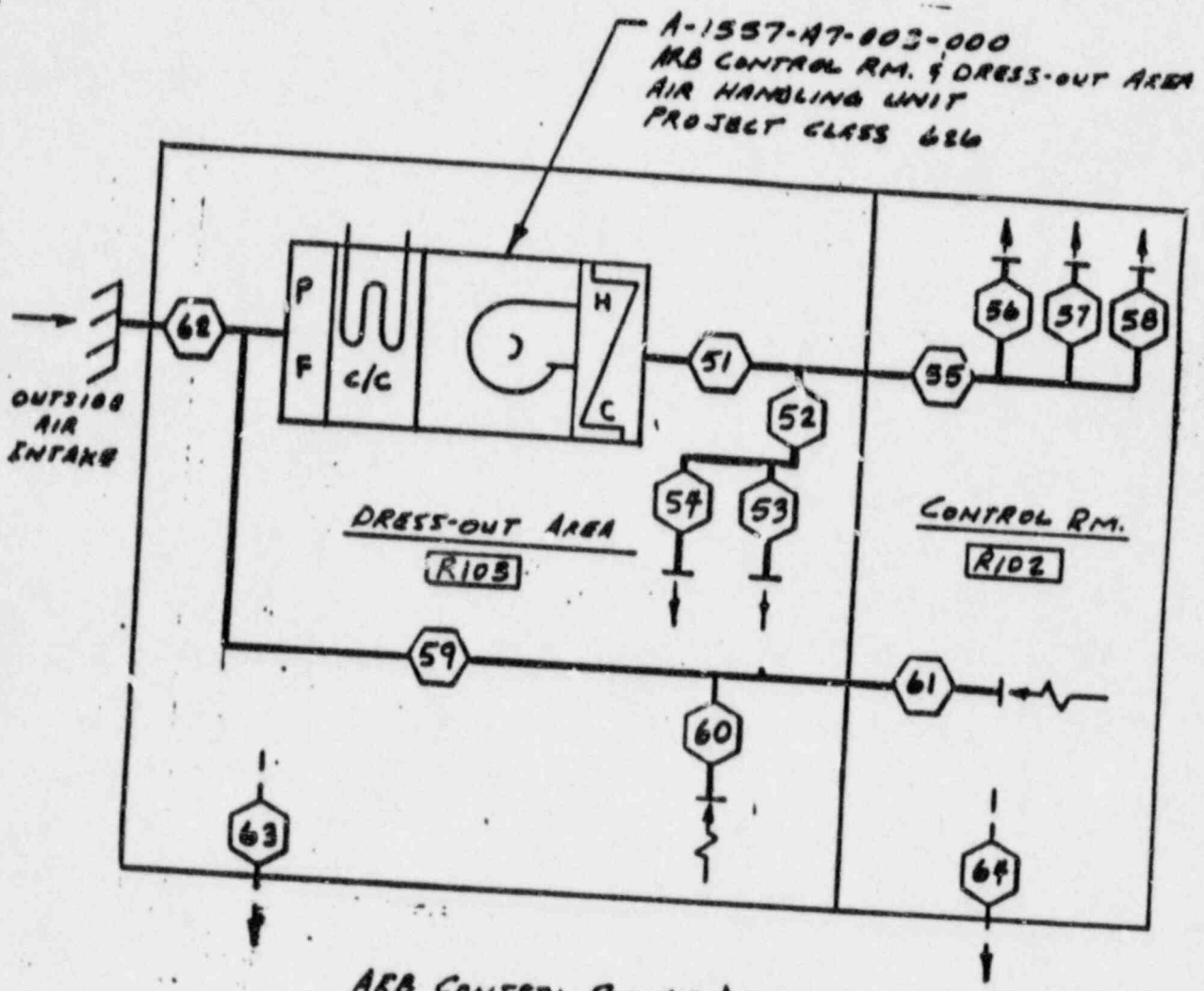
Georgia Power

VOGTLE
ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2

RADWASTE BUILDING FLOW DIAGRAMS

FIGURE 9.4.3-6 (SHEET 5 OF 7)

PROPOSED CHANGES



ARB CONTROL RM. AND DRESS-OUT AREA
FLOOR ELEVATION 220'-0"

ADD TO FSAR
FIGURE 9.4.3-6 SH. 5

PROPOSED CHANGES

ADD

MODES	PARAMETER		
NORMAL	FLOW	CFM	
	TEMP	°F (HIGH)	
		°F (LOW)	

	51	52	53	54	55	56	57	58	59
	1800	720	360	360	1080	360	360	360	1300
	—	—	—	—	—	—	—	—	75
	—	—	—	—	—	—	—	—	75

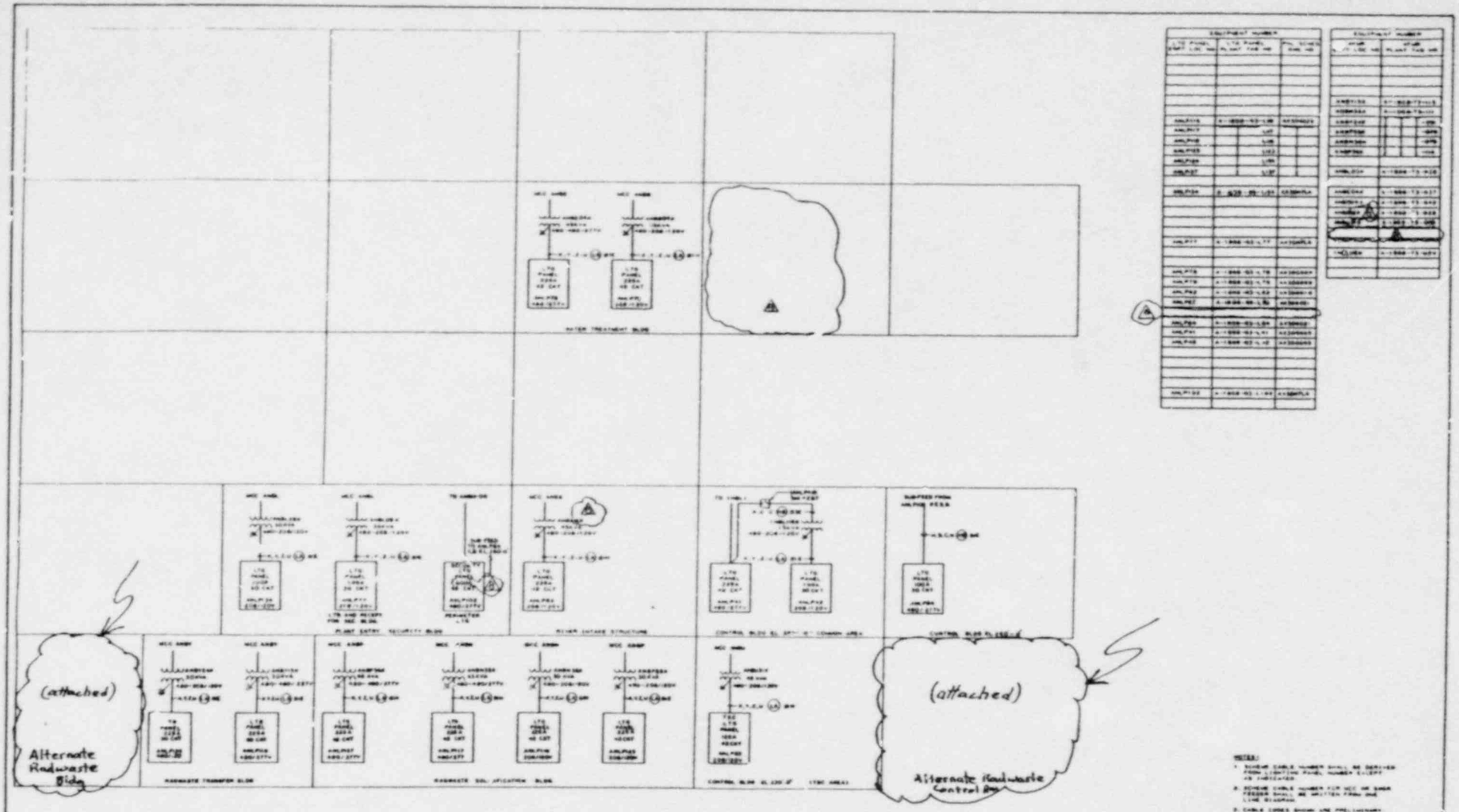
60	61	62	63	64
445	855	500	275	215
75	75	98	75	75
75	75	17	75	75

ADD

NOTES:

4. ARB CONTROL ROOM AND DRESS-OUT AREA TO BE MAINTAINED AT SLIGHTLY POSITIVE PRESSURE WITH RESPECT TO ADJACENT AREAS.

ADD TO FSAR
FIGURE 9.4.3-6 SH. 5



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1X3DG021 REV. 8

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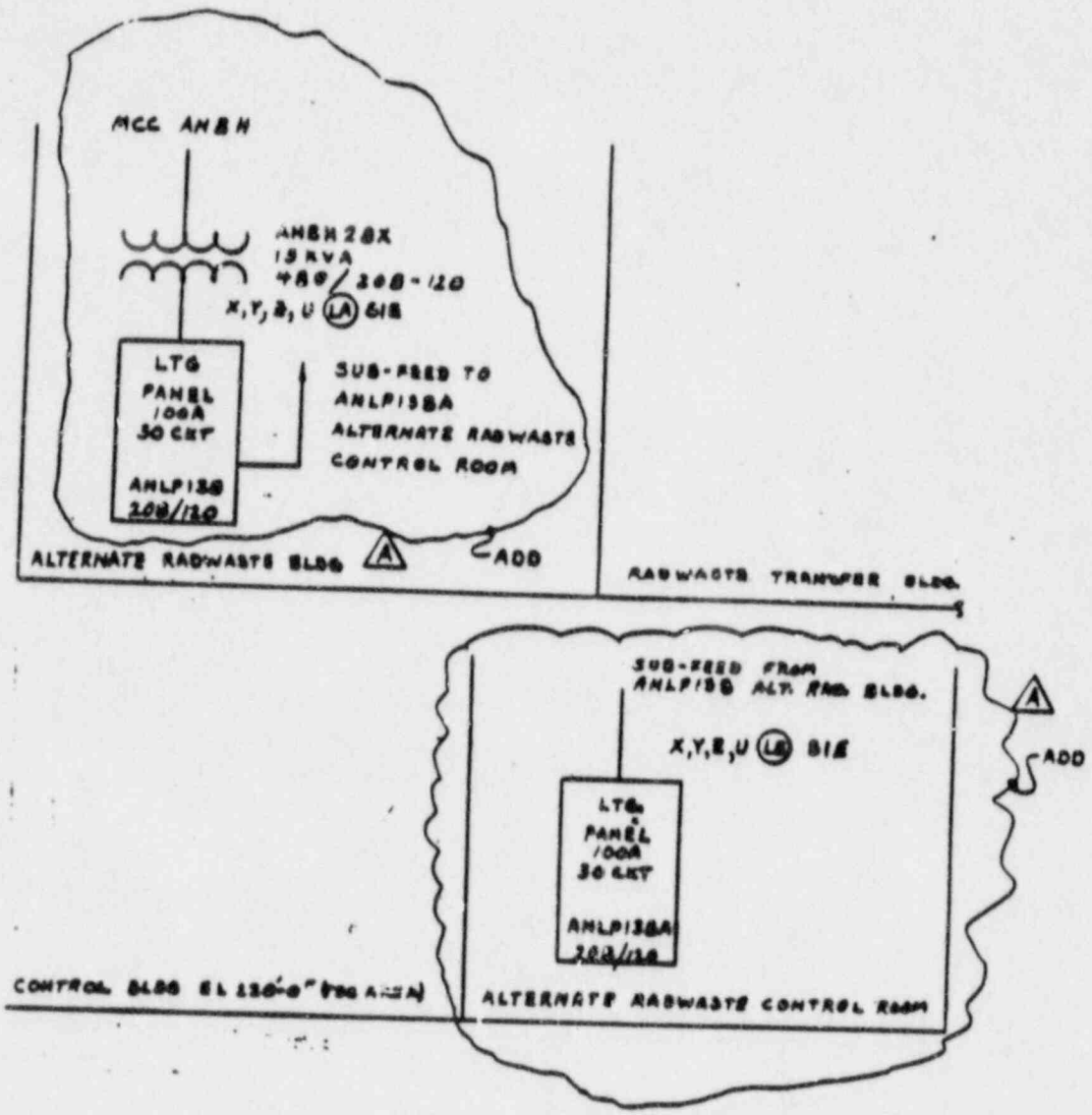
VOGTLE
ELECTRIC GENERATING PLANT
UNIT 1 AND UNIT 2

LIGHTING SYSTEMS SCHEMATIC

FIGURE 9.5.3-1 (SHEET 3 OF 3)

3605-0

"PROPOSED CHANGES"



LIGHTING SYSTEMS SCHEMATIC
FIGURE 9.5.3-1 (Sht. 3 & 5)

LIGHTING SYSTEMS SCHEMATIC
FIGURE 9.5.3-1 (SH 3 & 5)

9A.1.129 FIRE AREA 1-RTB-L1-A

A. Location: Radwaste Transfer Building, Levels 1, 2

B. Figures: ALTERNATE RADWASTE BUILDING LEVEL 1 9A-42, 9A-43, and 9A-44.

C. Description: Includes fire zones 300B, 301, 302, 303, 304, 330

Tank rooms, pump rooms, valve gallery, CONTROL ROOM, DRESSOUT AREA, EQUIPMENT ROOM,

D. Description of Boundaries

1. Level 1

- Floor - Unrated concrete base mat.
- North - 3-h-rated barrier separates area from the 1-AB-L1-C, 1-AB-LD-B.
- West - 2-h rated barrier separates area from stairwell No. A.
  - Unrated exterior area boundary.
  - 3-h-rated barrier separates area from 1-RB-LA-A. 15 24
- South - Unrated exterior area boundary.
  - ~~3-h rated barrier seperates area from 1-ARB-L1-A.~~
- East - Unrated exterior area boundary.

2. Elevation 237 ft - 0 in.

- North - 3-h-rated barrier separates are from 1-AB-LD-B, 1-AB-L1-C.
- South - Unrated exterior area boundary.
  - ~~3-h rated barrier seperates area from 1-ARB-L1-A.~~ 2
- East - Unrated exterior area boundary.

Amend. 15 3/85
Amend. 24 6/85
Amend. 28 11/86

- North - 3-h-rated barrier separates area from 1-AB-L2-A.
- South - Unrated exterior area boundary.

~~3-h rated barrier separates area from 1-AB-L1-A.~~

- East - Unrated exterior area boundary.
- West - 2-h rated barrier separates from stairwell No. A.

- Unrated exterior area boundary.

E. Area Access

1. Level 1

- North - Class A door from 1-AB-L1-G.
- West - Class A door from stairwell No. A.
- East - Unrated doors from outside.

2. Elevation 237 ft - 0 in.

- East - Unrated door from stairwell No. C. 15 24

3. Level 2

- West - Class A door from stairwell No. A.

- UNRATED DOOR FROM OUTSIDE
- UNRATED ROLL-UP DOOR FROM OUTSIDE

F. Sealed Penetrations

Seals meet or exceed fire barrier ratings.

G. Fire Dampers

Fire dampers meet or exceed fire barrier ratings.

H. Safe Shutdown Components

None.

I. Safety-Related Equipment

No major equipment.

J. Nonsafety-Related Equipment

- Two phase separator tanks and pumps

Amend. 15 3/85
Amend. 24 6/86
Amend. 28 11/86

K. Two decant collection tanks and pumps
RADWASTE PROCESS EQUIPMENT
Combustible Loading

1. Zone No. 300B

• Fixed combustible quantities	
- Cable insulation (equivalent hypalon value)	0 lb
- Charcoal	0 lb
- Cellulosic materials	0 lb
- Oil/grease	0 lb
- Plastics	0 lb
- Rubber goods	0 lb
• Heat release	
- Fixed combustibles	0 Btu
- Transient combustibles	400,000 Btu
• Combustible loading	1,754 Btu/ft²
• Fire severity (wood equivalent)	1 min

2. Zone No. 301

• Fixed combustible quantities	
- Cable insulation (equivalent hypalon value)	0 lb
- Charcoal	0 lb
- Cellulosic materials	0 lb
- Oil/grease	0 lb
- Plastics	0 lb
- Rubber goods	0 lb
• Heat release	
- Fixed combustibles	0 Btu
- Transient combustibles	400,000 Btu
• Combustible loading	633 Btu/ft²
• Fire severity (wood equivalent)	Negligible

- Cellulosic materials — 0 lb
- Oil/grease — 0 lb
- Plastics — 0 lb
- Rubber goods — 0 lb

- Heat release
  - Fixed combustibles — 5,003,260 Btu
  - Transient combustibles — 800,000 Btu
- Combustible loading — 24,281 Btu/ft²
- Fire severity (wood equivalent) — 18 min

L. Evaluation of Safe Shutdown Capability

1. For a fire in this area, use safe shutdown Train A or B.

2. Special operational and design considerations:

None.

3. Spurious actuation considerations:

None.

M. Fire Detection

Early warning fire detectors are installed within the following zones:

- Zone 300B
- Zone 301

6. Zone No. 330

- Fixed combustible quantities
  - Cable insulation (equivalent hypalon value)
  - Charcoal — 0 lb
  - Cellulosic materials — 0 lb
  - Oil/grease — 787 lb
  - Plastics — 500 lb
  - Rubber goods — 300 lb
    460 lb
- Heat release
  - Fixed combustibles — 73,610,000 Btu
  - Transient combustibles — 20,858,000 Btu
- Combustible loading — 25,257 Btu/ft²
- Fire severity (wood equivalent) — 19 min

Amend. 15 3/85
Amend. 24 6/86
Amend. 28 11/86

- Zone 302
- Zone 303
- Zone 304
- ZONE 330

N. Fire Suppression

1. Automatic

   - Zone 300B - No zone coverage.
   - Zone 301 - No zone coverage.
   - Zone 302 - No zone coverage.
   - Zone 303 - No zone coverage.
   - Zone 304 - No zone coverage.
   - ZONE 330 - WET PIPE SPRINKLER SYSTEM - PARTIAL ZONE COVERAGE

2. Manual

   Hose stations (with portable extinguishers) are conveniently located to each area. Any location can be reached with at least one effective water stream.

15 24

2

Amend. 15 3/85
Amend. 24 6/86
Amend. 28 11/86

O. Radioactive Materials

- Radioactive liquids.

P. Ventilation

Smoke can be removed using the normal ventilation system in a once-through only mode of operation. For areas isolated by fire dampers, smoke may be removed by portable fans using flexible tubes to direct the smoke to an area capable of being ventilated or directly to outside.

Q. Drainage

Because there are no safe shutdown and/or safety-related components in this area, no special consideration has been given to flooding.

R. Emergency Lighting

8-h-rated battery fixture(s) provide safe ingress/egress of personnel.

S. Deviations and Justifications

1. Unrated exterior fire area boundary:

See Appendix 9B, section C.5.a(1).

15 24

- Radioactive drywaste
- Low-level intermediate-level radioactive waste in solidification material, which in turn is in metal drums.
- Solid low-level radioactive waste.

9A..1.131 ~~FIRE AREA 1 ARB-L1-1~~ DELETED

A. Location: Alternate Radwaste Building

B. Figures: 9A-42, 9A-43, and 9A-44

C. Description: Includes fire zone 330

Alternate radwaste building (one level structure, el 220 ft 3 in.)

D. Description of Boundaries

- Floor - Unrated concrete base mat.
- Ceiling - Unrated exterior area boundary.
- North - 3-h-rated barrier separates area from 1-RTB-L1-A.
- West - Unrated exterior area boundary
- South - Unrated exterior area boundary.
- East - Unrated exterior area boundary.

E. Area Access

- East - Unrated door from outside.
- West - Unrated door from outside.
  - Unrated roll-up door from outside.

F. Sealed Penetration

Seals meet or exceed fire barrier ratings.

G. Fire Dampers

Dampers meet or exceed fire barriers ratings.

H. Safe Shutdown Components

None.

I. Safety-Related Equipment

None.

J. Nonsafety-Related Equipment

Temporary radwaste process equipment.

K. Combustible Loading

1. Zone No. 330

- Fixed combustible quantities
  - Cable insulation (equivalent hypalon value) 0 lb
  - Charcoal 0 lb
  - Cellulosic materials 5570 lb
  - Oil/grease 1600 lb
  - Plastics 0 lb
  - Rubber goods 0 lb
- Heat release
  - Fixed combustibles 76,560,000 Btu
  - Transient combustibles 77,360,000 Btu
- Combustible loading 55,168 Btu/ft² 28
- Fire severity (wood equivalent) 41 min

L. Evaluation of Safe Shutdown Capability

1. For a fire in this area, use safe shutdown Train A or B

2. Special operational and design consideration:

None.

3. Spurious actuation consideration:

None.

M. Fire Detection

Early warning fire detectors are installed within the following zone:

- Zone 330

N. Fire Suppression

1. Automatic

- Zone 330 preaction sprinkler system - Partial zone coverage.

2. Manual

Portable extinguishers are conveniently located in the area.

O. Radioactive Materials

- Radioactiave liquids
- Radiactive drywaste
- Low-level intermediate-level radioactive waste in solidification material, which in turn is in metal drums.
- Solid low-level radioactive waste.

P. Ventilation

Smoke can be removed by portable fans using flexible tubes to direct the smoke outside.

28

Q. Drainage

Because there are no safe shutdown and/or safety-related components in this fire area, no special consideration has been given to flooding.

R. Emergency Lighting

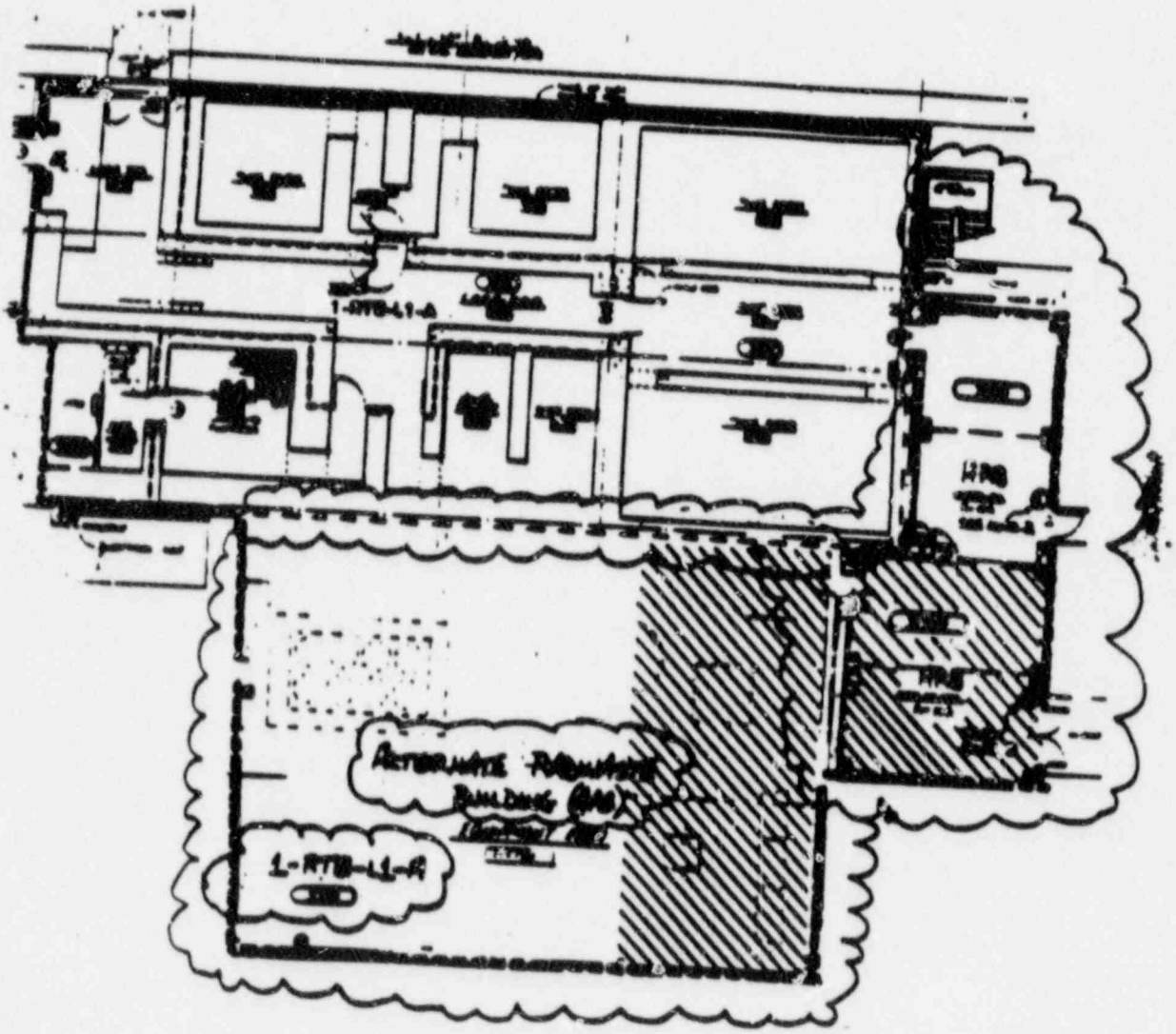
8-h-rated battery fixture(s) provide safe ingress/egress of personnel.

S. Deviations and Justifications

- Unrated exterior fire area boundary.

See Appendix 9B, section C.5.f(1).

PROPOSED CHANGES

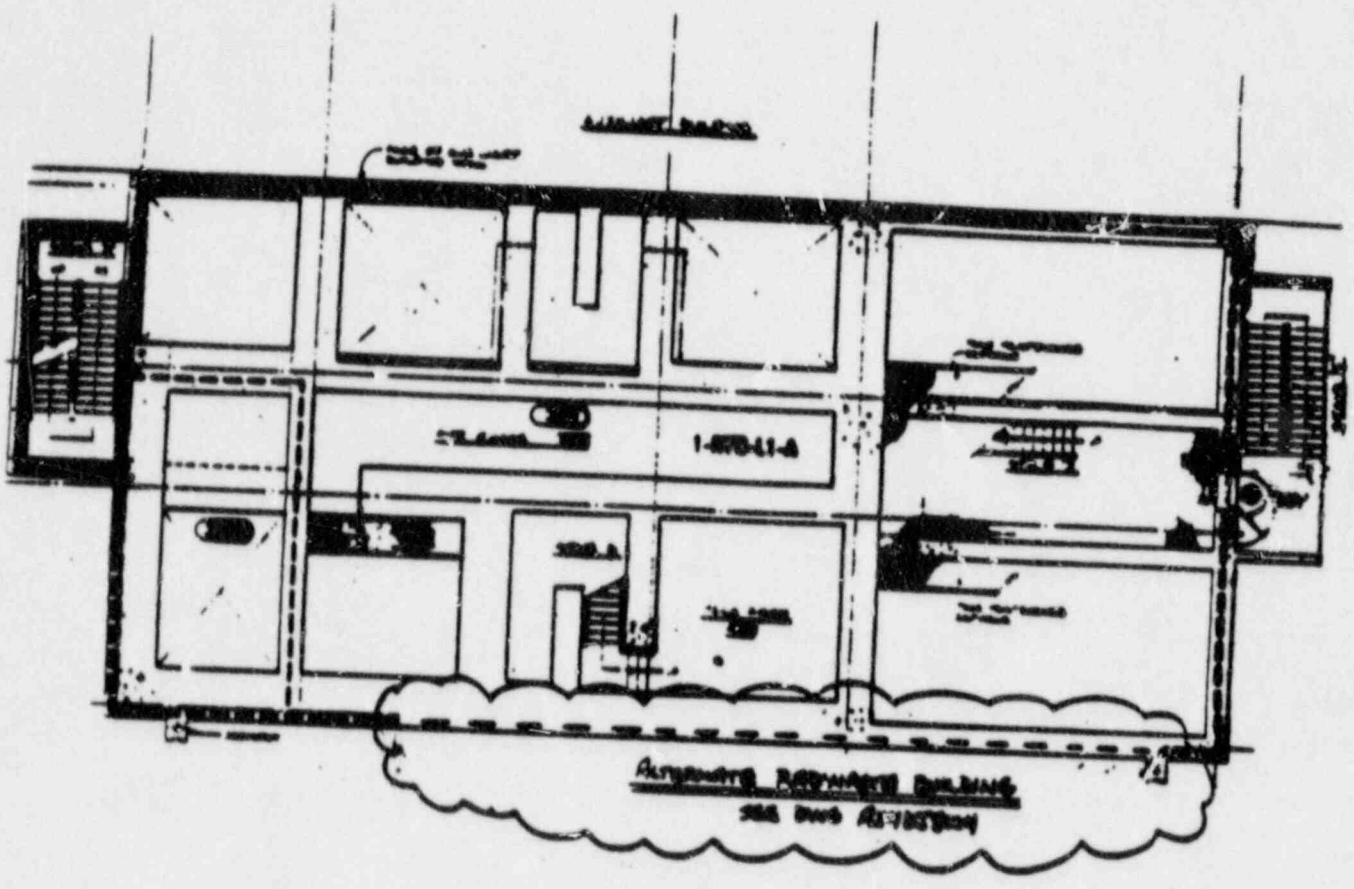


Amend. 15 3/85
Amend. 24 6/86
REV. 1

FIRE AREAS RADWASTE TRANSFER
BUILDING LEVEL 1
FLOOR PLAN EL. 220'-0"

FIGURE 9A-42

PROPOSED CHANGES



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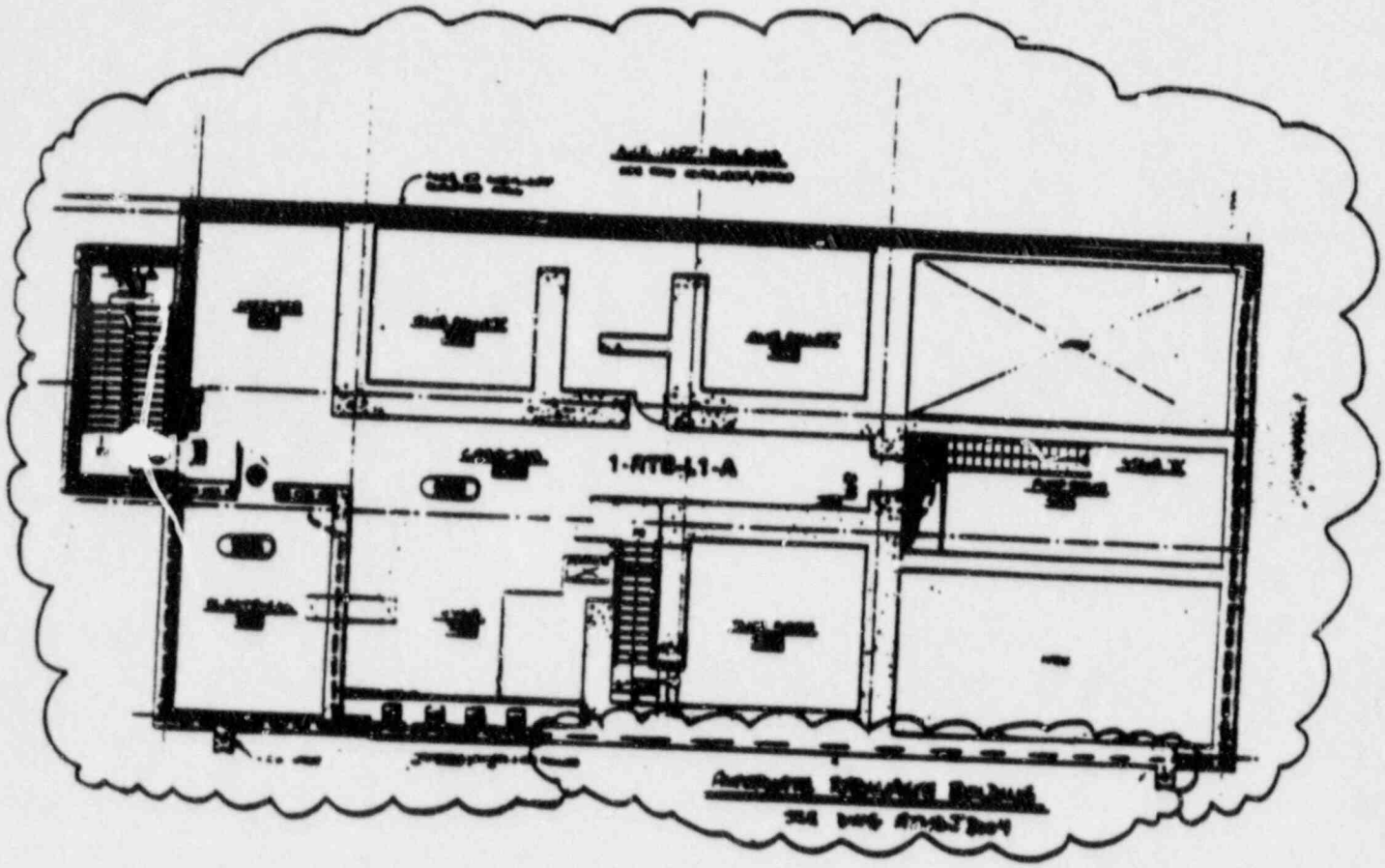
Amend. 24 6/86

REV. 1

FIRE AREAS RADWASTE TRANSFER
BUILDING PARTIAL LEVEL 1
FLOOR PLAN EL. 237'-0"

FIGURE 9A-43

PROPOSED CHANGES



Amend. 15 3/85
Amend. 25 9/86
AMDT 006 REV. 2

FIRE AREAS RADWASTE
TRANSFER BLDG. LEVEL II
FLOOR PLAN EL. 247'-0"

FIGURE 9A-44

H. Provide temporary onsite storage of packaged wastes in the event of delay or disruption of offsite shipping schedules.

I. Package radioactive solid wastes for offsite shipment and burial in accordance with applicable Department of Transportation (DOT) and Nuclear Regulatory Commission (NRC) regulations, including 49 Code of Federal Regulations (CFR) 170-178 and 10 CFR 71.

The solid waste management system is designed and constructed in accordance with Regulatory Guide 1.143, as described in section 1.9, to meet the requirements of General Design Criterion (GDC) 60 of 10 CFR 50, Appendix A. The seismic design classification of the radwaste transfer building, radwaste tunnel, and radwaste solidification building, which collectively house the volume reduction and solidification system, and the seismic design and classification for the system components and piping are provided in section 3.2. Provisions are made in the radwaste solidification building to utilize a mobile radwaste solidification system in the unlikely event that the inplant system becomes unavailable for a prolonged period of time. In addition, an alternate radwaste building is provided to allow use of portable radwaste systems (demineralizers, dewatering/drying, solidification) supplied by contractors for handling solid wastes from plant operations during all plant conditions (section 11.4.2.4). Dry active waste (DAW) facilities are provided to process and store DAW (section 11.4.2.5). 25

The solid waste management system design parameters are based on the radionuclide concentrations and volumes consistent with operating experience for similar reactor designs and with the source terms of section 11.1.

The solid waste management system airborne process effluents are released through the radwaste building vent and are discussed as part of the 10 CFR 50, Appendix I analysis presented in subsection 11.3.3.

The solid waste management system is designed to collect, solidify, package, and store radioactive wastes so as to maintain radiation exposure to plant operation or maintenance personnel as low as is reasonably achievable (ALARA) in accordance with GDC 60 of 10 CFR 50, Appendix A, and Regulatory Guide 8.8 in order to maintain personnel exposures below 10 CFR 20 requirements. Design features incorporated to maintain ALARA criteria include (but are not limited to) remote system operation, remotely actuated flushing, and shielding of components containing radioactive materials. Additionally, access to the process equipment and solid waste storage areas is controlled to minimize personnel exposure by suitable barriers such as locked doors or gates or control cards. (See

the drum enclosure for handling waste spillage. Fire protection provisions for the flammable polymer are discussed in subsection 9.5.1.

11.4.2.3.10 Packaging, Storage, and Shipment

Solidified wastes, spent filter cartridges, and solid compactible wastes are packaged in 55-gal drums or other approved packaging in accordance with 49 CFR 173.395(a)(1) and shipped in shielded casks, as required, to meet 49 CFR 173 dose limitations of 200 mrem/h at the external surface of the transporting vehicle and 10 mrem/h at 6 ft from the external surface of the transporting vehicle. 19

The 55-gal drums used in the volume reduction and solidification system meet the requirements of Specification 17H, as specified by 49 CFR 178.118, or of Specification 17C, as specified by 49 CFR 178.115. The 17H drum is used for processes requiring open-top drums, and the 17C drum is used for processes requiring a closed top drum with a screw cap.

Packaged solid radwaste is stored in the intermediate level or low level solid radwaste storage areas as shown in figure 1.2.2-33. Unused, uncontaminated shipping containers are stored in allocated storage areas.

The radwaste storage facility has limited access areas allocated for intermediate level and low level solid radwaste. These areas are shielded and remotely maintained to limit ~~radiation exposure to operating personnel.~~ Dry active waste can be stored in the facility described in section 11.4.2.5. The shielded storage area for ~~intermediate level solid radwaste~~ contains 834 ft² of usable floor area. The shielded storage area for low level solid radwaste contains 992 ft² of usable floor area. In addition, the storage areas are designed with the capability of stacking the filled drums (up to seven high) for additional storage capacity. This onsite storage capacity exceeds the expected quantity of drummed waste for 1 year of plant operation as stated in table 11.4.2-4. Shipment of solidified waste is expected to occur well before 1 year elapses.

Although compacted and solidified waste are expected to be stored onsite prior to shipment, generally no credit is taken for radioactive decay realized by such storage when filling drums for shipping in accordance with 49 CFR 173 dose limitations; that is, once filled, drums can normally be shipped immediately, with the proper shielding, without exceeding Department of Transportation (DOT) radiation limits. If 49 CFR 173 dose limitations cannot be met with the available

11.4.2.4.2 Portable Radwaste System

VEGP will utilize vendor-supplied portable radwaste equipment to provide for disposal of spent resins, radioactive cartridge filters, evaporator concentrates, backflushable filter crud, and chemical wastes via dewatering or solidification. In addition, a portable demineralizer system is available as an alternate means of processing the contents of the waste holdup tank chemical drain tank, floor drain tank, and boron recycle holdup tank. These systems are housed in the alternate radwaste building (ARB) which is located on the south side of the radwaste transfer building as shown in figure 1.2.2-33.

Isolation valves are provided to allow processing of waste streams either with existing systems or at the ARB. The valves are manually operated to achieve the desired configuration. Delivery of waste streams to the ARB is controlled from local panels near the waste stream source. Flanged connections are provided at the ARB to interface with the vendor-supplied systems. Major components for portable radwaste systems typically include process liners, process skids, and control panels. A separate ARB control room and dressout area are provided to facilitate system operation. 25
Radioactive condensate polishing demineralizer resins, backflushable filter crud, and spent resins from the liquid waste processing system and the steam generator blowdown system will be dewatered. The dewatering system supplied by vendor allows the water to be removed from the spent resins in the shipping containers. A vendor-supplied container vent is provided for the shipping containers thereby minimizing leakage into the building. A vent line to a monitored HVAC exhaust duct in the auxiliary building is provided to interface with the vendor system. In addition, demineralizer resins from the portable demineralizers (as discussed in section 11.2) can be sluiced to the container fill skid for dewatering and disposal.

An NRC approved process control program (PCP) will be required of the vendor and appropriately referenced in the VEGP PCP prior to any actual operation. If the burial site does not accept dewatered resins or the waste form criteria cannot be met, VEGP will have the ability to solidify resins utilizing a portable solidification system. Cartridge filters will be loaded into liners for shipment offsite.

delete ~~A dry waste box compactor is also provided to handle low level dry wastes collected throughout the plant. The dry waste compactor has an integral shroud which directs any airborne ducts created by the compaction operation through an exhaust fan and filter and then to the ARB ventilation system.~~

Solidification/dewatered liners will normally be shipped after filling and proper cure time, provided the proper shielding is available, without exceeding DOT radiation limits. If 49 CFR 173 dose limitations cannot be met with the available shielding, the liners are stored and allowed to decay until the appropriate shielding is available. Onsite storage for decay of short-lived radionuclides is accomplished both prior to solidification in holdup tanks and in appropriate onsite storage areas. 25

Add 11.4.2.5
INSERT A

INSERT A

11.4.2.5 Dry Active Waste Facilities

Two buildings have been designed for handling dry active wastes from plant operations:

A. The Dry Active Waste Processing Building is used to sort and compact dry active waste.

B. The Dry Active Waste Storage Building is used to store compacted dry active waste packaged for shipment offsite.

11.4.2.5.1 Dry Active Waste Processing Building

Dry Active Waste (DAW) is transported to the processing facility in containers which will prevent any leakage of radioactive material during conditions incident to normal transportation. The radioactive material is packaged such that contamination on the outer container surface is below administrative limits. The transport path remains within the owner controlled area.

The DAW Processing Building has separate areas for incoming radwaste containers, sorting and compaction of radioactive waste, handling of non-radioactive dry waste, and storage of empty containers. The DAW is sorted to separate usable material, radioactive and non-radioactive waste. Radioactive waste is compacted into packaging that will comply with the criteria of 10CFR Part 71 to minimize the need for repackaging for shipment.

A dry waste compactor is provided. The compactor has an integral shroud which directs any airborne dusts created by the compaction operation through an exhaust fan and filter and then to the building ventilation system.

The building has lockable doors and is enclosed by a fence with lockable gates. The purpose of this fence is to prevent unauthorized personnel from entering a radioactive area. Security patrols verify building security.

The building is provided with automatic wet-pipe sprinkler systems designed for an Ordinary Group II Hazard. Ionization and photoelectric smoke detectors are provided. Smoke detectors actuation or sprinkler head water flow initiates local audible/visual alarms external to the building. A fire hose station with portable extinguisher is provided. The waste container materials used do not support combustion.

11.4.2.5.1 Dry Active Waste Storage Building

DAW is transported to the storage facility in packaging that will comply with the criteria of 10CFR Part 71. The waste is stored in the interior of the building. Lockable doors and a fence with lockable gates are provided.

The building is provided with automatic wet-pipe sprinkler system and smoke detectors. Fire alarms external to the building are provided. The waste container materials used do not support combustion.

11.5.2 SYSTEM DESCRIPTION

11.5.2.1 Digital Radiation Monitoring System

The process and effluent radiation monitoring system (PERMS) is based on a distributed digital microprocessor approach, where each radiation monitor is self-contained and consists of a detector and a data processing module (DPM) that contains the microprocessor. The DPM is the basic control center for each PERMS channel. Each complete channel consists of a monitor with power supply and preamplifier; a local dedicated data processing module containing a digital buffer and microprocessor with alarm outputs; and access to readout modules (cathode ray tube (CRT) and printer).

The PERMS collects and displays all the information available from the field-mounted detectors on a CRT and hardcopy printer on demand. This is accomplished by either the communications console or the safety-related display console (SRDC) located in the control room. The communications console receives data from the DPMs (both standard and safety-related) and interfaces with a minicomputer and the technical support center (figure 11.5.2-1). The SRDC displays data received from the safety-related channels which are composed of safety-related Class 1E components (figure 11.5.2-2). The safety-related DPMs also interface with the communications console with one-way data transmission. The communications console is shown in figure 11.5.2-3.

INSERT B

11.5.2.2 Monitor Description

The radiation monitors fall into five different functional classifications:

A. Process monitors, which determine concentrations of radioactive material in plant fluid systems.

B. Effluent monitors, which measure radioactivity discharged to the environs.

C. Airborne monitors, which provide operator information on airborne concentrations of radioactive gases and particulate radioactivity at various points in the ventilation system ducts. (See figure 11.5.2-4.)

D. Area monitors, which provide operator information on external gamma radiation levels at fixed points throughout the plant.

INSERT B

11.5.2.1.1 Dry Active Waste Processing Building

The Dry Active Waste (DAW) Processing Building radiation monitor consists of a lead-shielded particulate sampler and detector, a count rate meter, recorder and sample flow indicator. The monitor has a local visual and audible high radiation alarm. A remote visual and audible high radiation alarm is also provided in the non-radioactive storage area.

The particulate sampler will be changed and analyzed weekly in accordance with plant procedures. The offsite dose calculation manual (ODCM) includes the DAW processing building as a potential effluent release path and incorporates the sample analysis results in the offsite dose calculation.

E. Post-accident (or high range) monitors, designed to assess and follow potential pathways for release of radioactive materials during accident conditions.

Table 11.5.2-1 gives the design parameters for the PERMS. Table 11.5.2-2 lists the detectors used in the PERMS. Table 11.5.2-3 lists the conditions of service for PERMS. Figures 11.5.2-5 and 11.5.2-6 give the monitoring locations for liquid and gaseous release pathways, and table 11.5.2-5 gives the design parameters for flowrate monitoring. Figure 12.3.1-3 shows the detector locations. 5

11.5.2.3 Monitor Functions

The PERMS consists of 23 area monitors (8 per unit and 7 shared), process and effluent monitors (subsection 11.5.2) (27 for Unit 1, 28 for Unit 2, and shared), 20 post-accident monitors (subsection 11.5.5) (10 per unit), including 10 passive activity collectors (5 per unit) planned for installation at the VEGP site. Some monitors are located in areas of the site that are common to both units. These monitors are identified by an "A" in front of the monitor's tag number (i.e., ARE - ----------).

The following is a description of each monitor:

A. Airborne Process and Effluent Monitors

1. RE-12442A - Plant Vent Effluent Air Particulate Monitor (Low Range)

The purpose of this monitor is to continuously monitor air particulate activity as it is discharged to the environment through the main plant vent and provide data necessary to ensure that particulate activity releases from the plant vent are below specified limits.

The monitor also serves as a backup to the containment vent particulate monitor RE-2565A. Since the main plant vent discharges directly to the atmosphere, the data from this monitor are most representative of particulate activity releases to the plant environs. Should the activity exceed a specified level, a high radiation level alarm will be annunciated to indicate that an increase in particulate release has occurred. The specific source of release within the plant may be determined through analysis of the monitors upstream of the vent monitor and/or with portable monitoring devices.

The activity is filtered and routed to the plant vent, where it is again monitored by the plant vent monitors RE-12442A, B, and C prior to discharge to the atmosphere. In the event of a fuel handling accident inside the fuel handling building, ARE-2532 and ARE-2533 are capable of detecting the high activity in order to switch the fuel handling building ventilation system from the normal operating mode to the accident mode, which includes safety-related filtration units. (See subsection 9.4.2.)

23. ARE-50003 - Technical Support Center Air Intake Process Radiogas Monitor

The purpose of this monitor is to continuously monitor the technical support center supply air for gaseous activity that could be present in the atmosphere following a contamination accident.

A high alarm signal will alert personnel in the technical support center of a deteriorated radiological condition.

INSERT C

B. Liquid Process and Effluent Monitors

1. ARE-0016 - Boron Recycle Liquid Process Monitor

The purpose of this monitor is to continuously monitor the boric acid evaporator distillate for high activity, which would be indicative of an evaporator malfunction.

A high alarm signal will initiate diversion of distillate flow from the reactor makeup water storage tank to a recycle holdup tank via the evaporator feed demineralizer.

Remote readout is provided at the boron recycle system panel.

2. RE-0017A and B - Component Cooling Water Process Monitor

The purpose of this monitor is to continuously monitor the component cooling loop for activity indicative of a leak of radioactive water into the component cooling system.

INSERT C

24. ARE-13256 - Dry Active Waste Processing Building Effluent Particulate Monitor

The purpose of this monitor is to continuously monitor air particulate activity as it is discharged through the DAW Processing Building Ventilation exhaust and provide data to ensure that activity releases from the building are below specified limits.

This monitor has visual and audible alarms locally and remotely in the non-radioactive storage area. The remote alarm is located adjacent to the ventilation system controls. Upon alarm the ventilation system exhaust can be manually isolated.

These components include the recycle evaporators and waste evaporators.

A high alarm signal provides operator warning so that action may be taken to avoid further radioactive contamination of the auxiliary steam condensate.

Remote readout is provided at evaporator steam supply system panel.

9. RE-1950 - Auxiliary Component Cooling Water Process Monitor

The purpose of this monitor is to continuously monitor the auxiliary component cooling loop for activity indicative of a leak of contaminated water into the auxiliary component cooling system.

10. RE-17646 - Control Building Sump Effluent Monitor

The purpose of this monitor is to monitor the control building sump discharge and provide data necessary to ensure that the liquid discharges from the control building are below specified limits. A high alarm signal initiates automatic isolation of the discharge line to prevent further activity releases.

11. RE-48000 - Chemical and Volume Control System Letdown Monitor

The purpose of this monitor is to monitor the chemical and volume control system letdown liquid process and provide indication of abnormal activity levels in the reactor coolant system.

11.5.2.4 Alarm Setpoints

Each of the PERMS airborne and liquid monitors (excluding passive cartridge monitors RE-2562B, RE-12839A and B, and RE-12444A and B) has two alarm setpoints, i.e., intermediate and high. When the radiation level being monitored reaches the intermediate setpoint, a visual indication alerts plant personnel of the monitor reading. If the high setpoint is reached, an alarm will be annunciated. The high alarm setpoint also triggers the control function for those monitors so equipped: gas monitors RE-2565A, B, and C, RE-12839C, RE-12116, RE-12117, ARE-13133A, B, and C, ARE-0014, ARE-2532A

ARE-13256 has only a high alarm,

TABLE 11.5.2-1 (SHEET 4 OF 7)

Monitor	Monitor Type	Safety Classification	Mechanical Code	Seismic Qualification	Number of Monitors per Unit	Moving Filter	Pump	Process Flow (ft³/min)	Automatic Control Function	Duct Size/Pipe Diameter Material, Schedule	Power Supply
Waste Gas Decay Tank RE-0039A and B (C for Unit 2 only)	Process, inline	NNS	NA	No	2 (Unit 1) 3 (Unit 2)			500/ 1200C (Unit 1) 500/ 1100/ 800 (Unit 2)	None	≤16 in. x 16 in. ASIM A527, 16 gauge	Non-Class 1E
Fuel Handling Building Effluent ARE-2532A and B ARE-2533A and B	Effluent inline	SC-3/1E	NA	Yes	Common			12,700	Yes; switches building to accident mode of operation including safety-related filtration units	36 in. x 36 in. ASIM A527, 18 gauge	Class 1E
Technical Support Center ARE-50003	Process, inline	NNS	NA	No	Common			1200	None	20 in. x 14 in. ASIM A527 18 gauge	Non-Class 1E diesel backed

INSERTD

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[INSERT D] D:/0)

TABLE 11.5.2-1 (SHEET 4 OF 7)

Monitor	Monitor Type	Safety Classification	Mechanical Code	Seismic Qualification	Number of Monitors per Unit	Moving Filter	Pump	Process Flow (ft³/min)	Automatic Control Function	Duct Size/Pipe Diameter Material, Schedule	Power Supply
Dry Active Waste Processing Building											
ARE-13256 (particulate)	Effluent, offline	NNS	B31.1	No	Common		X	2,200	None	24in. x 24in. ASTM A527 18 gauge	Non-Class 1E

TABLE 11.5.2-2 (SHEET 2 OF 3)

Monitor	Location	Detector Type	Radiation Zone (MR/h)	Major Isotopes	Detectable Range ($\mu Ci/cm^3$)
Control Room Air Intake RE-12116, RE-12117	Control room	Thin walled G-M tubes	<0.25	Xe-133, Xe-135, Kr-85, I-131, I-133, Co-58, Co-60	1.0E-6 to 1.0E-1
Waste Gas Processing System RE-0013	Aux bldg	G-M tubes	2.5-15	Xe-133, Xe-135, Kr-85	1.0E-1 to 1.0E+4
Volume Reduction Rooms Exhaust					
ARE-13133A (particulate)	Radwaste solidification bldg	Beta scintillation	<2.5	I-131, I-133, Cs-134, Cs-137, Co-58, Co-60	1.0E-11 to 1.0E-6
ARE-13133B (iodine)	Radwaste solidification bldg	Gamma scintillation	<2.5	I-131, I-133, I-135	1.0E-11 to 1.0E-6
ARE-13133C (radiogas)	Radwaste solidification bldg	Beta scintillation	<2.5	XE-133, Xe-135, Kr-85	1.0E-8 to 1.0E-3
Waste Gas Processing System Effluent ARE-0014	Aux bldg	G-M tube	0.25-2.5	Xe-133, Xe-135, Kr-85	1.0E-1 to 1.0E+4
Waste Gas Decay Tank RE-0039A, B, and C	Aux bldg	Thin walled G-M tube	0.25-2.5 2.5-15 2.5-15	Xe-133, Xe-135, Kr-85	1.0E-6 to 1.0E-1
Fuel Handling Building Effluent					
ARE-2532A and B ARE-2533A and B	Fuel handling bldg	Thin walled G-M tube	0.25-2.5	Xe-133, Xe-135, Kr-85	1.0E-6 to 1.0E-1
Technical Support Center Air Intake ARE-5033	Technical support center	Thin walled G-M tube	<0.25	Xe-133, Xe-135, Kr-85	1.0E-6 to 1.0E-1

INSERT E

INSERT E

E1/E1

TABLE 11.5.2-2 (SHEET 2 OF 3)

Monitor	Location	Detector Type	Radiation Zone (MR/h)	Major Isotopes	Detectable Range ($\mu Ci/cm^3$)
Dry Active Waste Processing Building					
ARE-13256 (particulate)	DAW Processing Building	Thin walled G-M tube	< 0.25	Co-58, Co-60 Cs-134, Cs-137	3.0 E-10 to 1.0 E-7

TABLE 11.5.2-3 (SHEET 2 OF 2)

Monitor	Sample fluid	Operating Temperature (°F)	Operating Pressure (psig)	Temp (°F)	Pressure (psig)	Relative Humidity (%)	Building Location/ Elevation
Fuel handling building effluent ARE-25332A and B	Gas	40-104	0	40-104	(-0.25)-0 (in. WG)	20-95	Fuel handling bldg 253 ft
Fuel handling building effluent ARE-25333A and B	Gas	40-104	0	40-104	(-0.25)-0 (in. WG)	20-95	Fuel handling bldg 283 ft
Technical support center air intake ARE-50003	Gas	5-104	0	60-100	0	20-100	Control bldg 234 ft 2 in.
INSERT F							
Liquid							
Liquid boron recycle ARE-0016	Liquid	120	65	40-104	0	20-95	Aux bldg 119 ft 3 in.
Component cooling water RE-0017A and B	Liquid	108	24	40-104	0	20-95	Aux bldg 240 ft
Waste liquid effluent RE-0018	Liquid	100	125	40-104	0	20-95	Aux bldg 119 ft 3 in.
Steam generator liquid RE-0019	Liquid	130	300	40-104	0	20-95	Aux bldg 170 ft 6 in.
Nuclear service water RE-0020A and B	Liquid	108	90	40-104	0	20-95	Aux bldg 195 ft
Steam generator blowdown RE-0021	Liquid	130	300	40-104	0	20-95	Aux bldg 195 ft
Turbine bldg drain RE-0848	Liquid	104	20	40-104	0	40-85	Turbine bldg 195 ft
Aux steam condensate return ARE-0025	Liquid	240	45	40-104	0	20-95	Aux bldg 119 ft 3 in.
Aux component cooling water RE-1950	Liquid	105	26	40-104	0	20-95	Aux bldg 220 ft
Control bldg sump discharge RE-17646	Liquid	80	45	40-104	0	20-90	Control bldg 180 ft
Chemical and volume control system letdown RE-48000	Liquid	115	350	40-104	0	20-95	Aux bldg 195 ft

INSERT F

TABLE 11.5.2-3 (SHEET 2 OF 2)

F1/F1

Monitor	Sample Fluid	Operating Temperature (°F)	Operating Pressure (psig)	Temp (°F)	Pressure (psig)	Relative Humidity (%)	Building Location/ Elevation
Dry Active Waste Processing Building Effluent ARE-13256	Gas	40-120	0	40-120	0	20-95	DAW Processing Bldg.

TABLE 11.5.2-4 (SHEET 1 OF 2)

ALARM SETPOINTS FOR PROCESS AND EFFLUENT RADIATION MONITORS

Gas Monitors	Initial Setpoints ($\mu Ci/cm^3$) Intermediate	High
RE-12442A	2E-11	3E-11
RE-12442B	2E-11	4.8E-11
RE-12442C	1E-6	1.5E-6
RE-2565A	2E-11	4E-11
RE-2565B	1.5E-10	1.5E-9
RE-2565C	1E-6	8E-6
RE-2562A	1.5E-11(a)	2E-11(a)
RE-2562C	7.5E-7(a)	1E-6(a)
RE-0024A	2E-10	1E-9
RE-0024B	1E-6	1.5E-6
ARE-0026A	2E-11	8.8E-10
ARE-0026B	3.7E-11	7.9E-10
ARE-0026C	4E-8	8.8E-7
RE-2562B	--	NA, passive monitor
RE-12116, RE-12117	2E-6	3E-6
RE-0013	3E+1	1E+3
ARE-13133A	1E-10	1E-9
ARE-13133B	9E-11	9E-10
ARE-13133C	1E-7	1E-6
ARE-0014	2E-1	3E-1
RE-0039A, B, and C	2E-6	3E-6
ARE-2532A and B	2E-6(b)	3E-6(b)
ARE-2533A and B	2E-6(b)	3E-6(b)
ARE-50003	2E-6	3E-6
ARE-13256.1	—	*

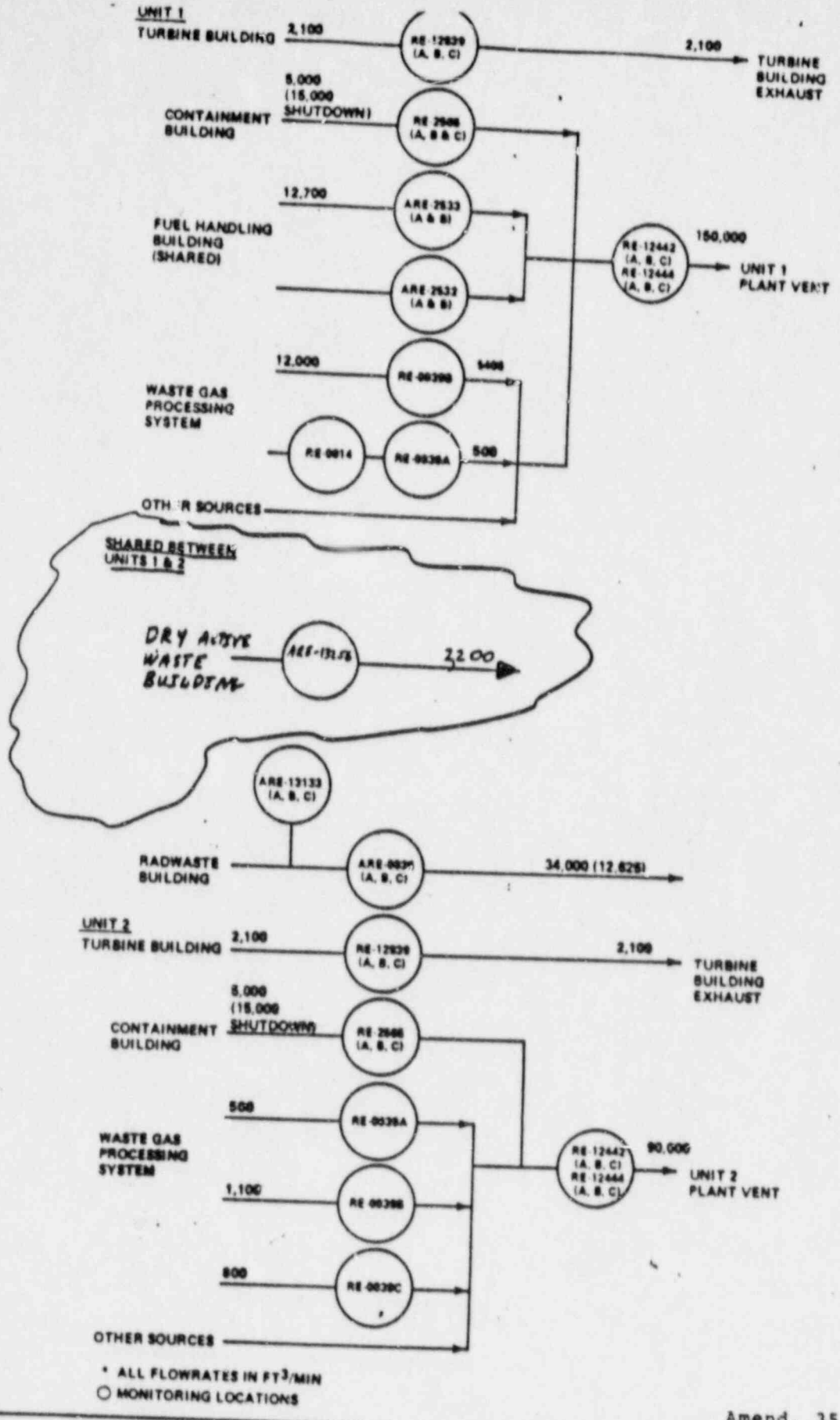
* Established based on Vogtle Offsite Dose Calculational Manual

TABLE 11.5.2-5 (SHEET 2 OF 2)

Pathway	Equipment Number	Range	Control Room Indication	Local Indication
Fuel handling building exhaust[b]	AFE-2532 AFE-2533	0-27,000 sf^3/min	Yes	Yes
Waste gas processing effluent[b]	AFE-0014	0.2-2.0 sf^3/min	Yes	Yes
Dry Active Waste processing building effluent	AFE-13256	0-5000 sf^3/min	No	Yes

a. These pathways are not equipped with a release flowrate measuring device due to the fact that radioactivity exceeding preset limits is not sent to the environs but instead to the respective waste processing systems.

b. These pathways are also monitored downstream by the plant vent monitor.



* ALL FLOWRATES IN FT^3/MIN

○ MONITORING LOCATIONS

Amend. 35 3/88

Georgia Power VOGTLE ELECTRIC GENERATING PLANT UNIT 1 AND UNIT 2	PERMS NORMAL GASEOUS EFFLUENT RELEASE PATHWAY
	FIGURE 11.5.2-6

TABLE 11.5.3-1 (SHEET 3 OF 3)

Monitor	Sample identification: Fluid	Location	Type	Purpose
RE-12444A RE-12444B RE-12444C (gaseous release pathway)	Ventilation air effluent	At monitor	Passive particulate cartridge Passive iodine cartridge Radiogas Vapor sample	Provide quantitative activity release data. Calibration of continuous monitors.
ARE-50003	Technical support center air intake	Technical support center air intake duct	Radiogas and iodine	Determine isotopic activity in technical support center following accident.
ARE-13256 (gaseous release pathway) [a]	DAW Processing Building Effluent	At monitor	Particulate	Provide quantitative activity release data. Calibration of continuous monitors.

a. These monitors require sampling in accordance with Regulatory Guide 1.21.

25

25

12.2.1.4 Stored Radioactivity

The principal sources of activity not enclosed by the power block buildings are:

- The refueling water storage tank.
- The reactor makeup water storage tank.
- The condensate storage tanks.
- The dry active waste storage facilities //

The content of these tanks is processed by the spent fuel pool purification system, liquid waste processing system, or boron recycle system until the activity in the fluids is sufficiently low to allow the shielding afforded by the concrete tank walls to result in surface dose rate less than 0.25 mR/h.

Radionuclide inventories of the refueling water storage tank, reactor makeup water storage tank, and condensate storage tanks are presented in tables 12.2.1-50 through 12.2.1-52. No other radioactive fluids are stored outside the power block and radwaste buildings.

Spent fuel is stored in the spent fuel pool until it is placed in the spent fuel shipping cask for transport offsite. Storage space is allocated in the radwaste building for storage of spent filter cartridges, solidified spent resins, evaporator bottoms, and chemical wastes. Radioactive wastes stored inside plant structures are shielded so that there is Zone I access outside the structures. If it becomes necessary to temporarily store radioactive wastes outside plant structures, radiation protection measures are to be taken by the radiation protection staff to ensure compliance with 10 CFR 20 and to be consistent with the recommendations of Nuclear Regulatory Commission Regulatory Guide 8.8.

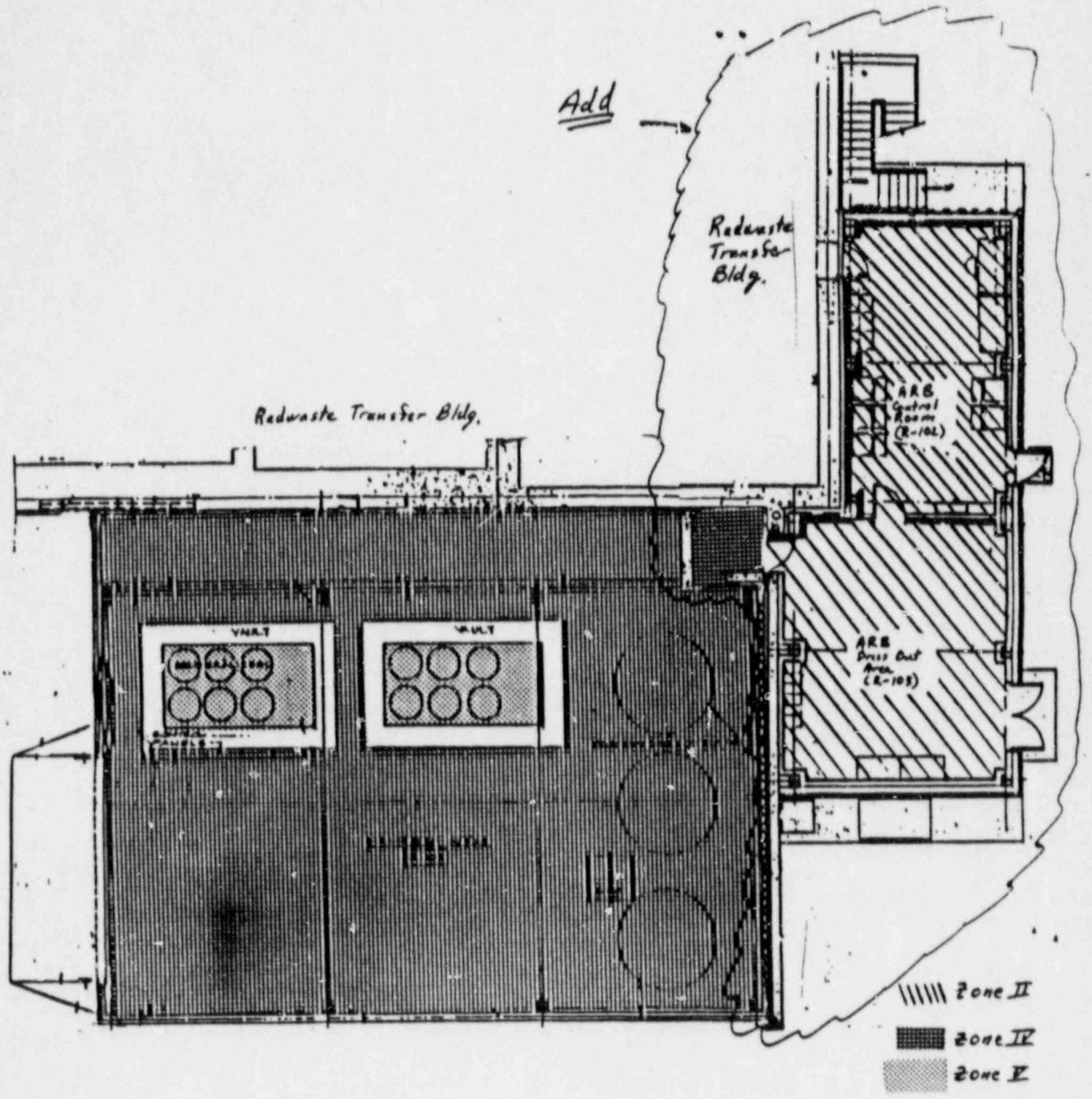
INSERT H

12.2.1.5 Field Run Pipe Routing

The procedures for routing of radioactive piping are discussed in paragraph 12.3.1.1.2.

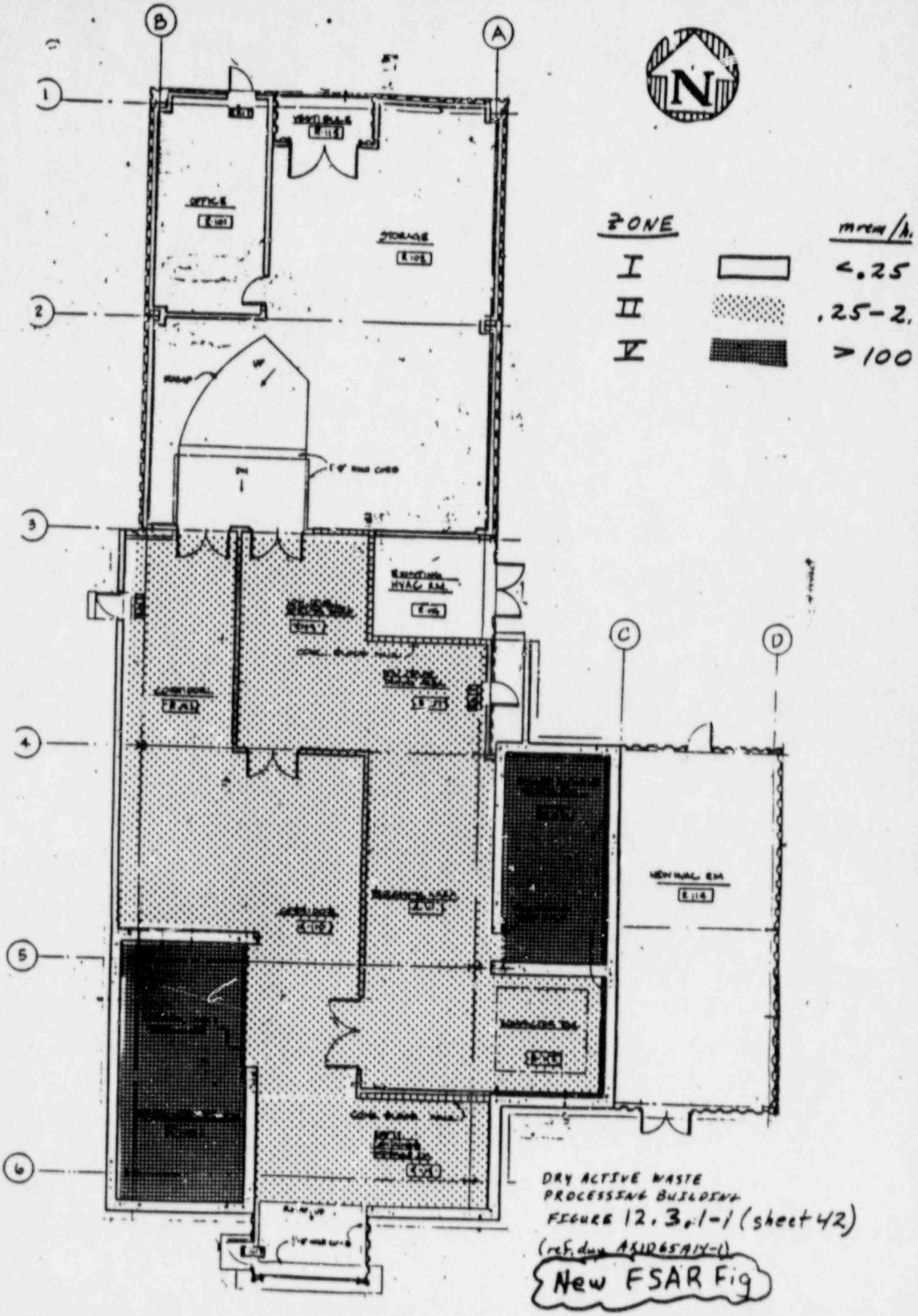
INSERT H

The Dry Active Waste (DAW) facilities process and store DAW. Radiation shielding is provided such that the dose rates at outside areas are maintained at less than 0.25 mr/hr. Radiation levels outside the fenced area are maintained at less than 0.06 mr/hr. This will assure that the dose rate at the site boundary is less than 1.0 mr/year. Interior concrete shielding is provided to limit exposure to personnel during waste processing. The ALARA methodology of Regulatory Guide 8.8 and 8.10 has been used in the design of this facility.



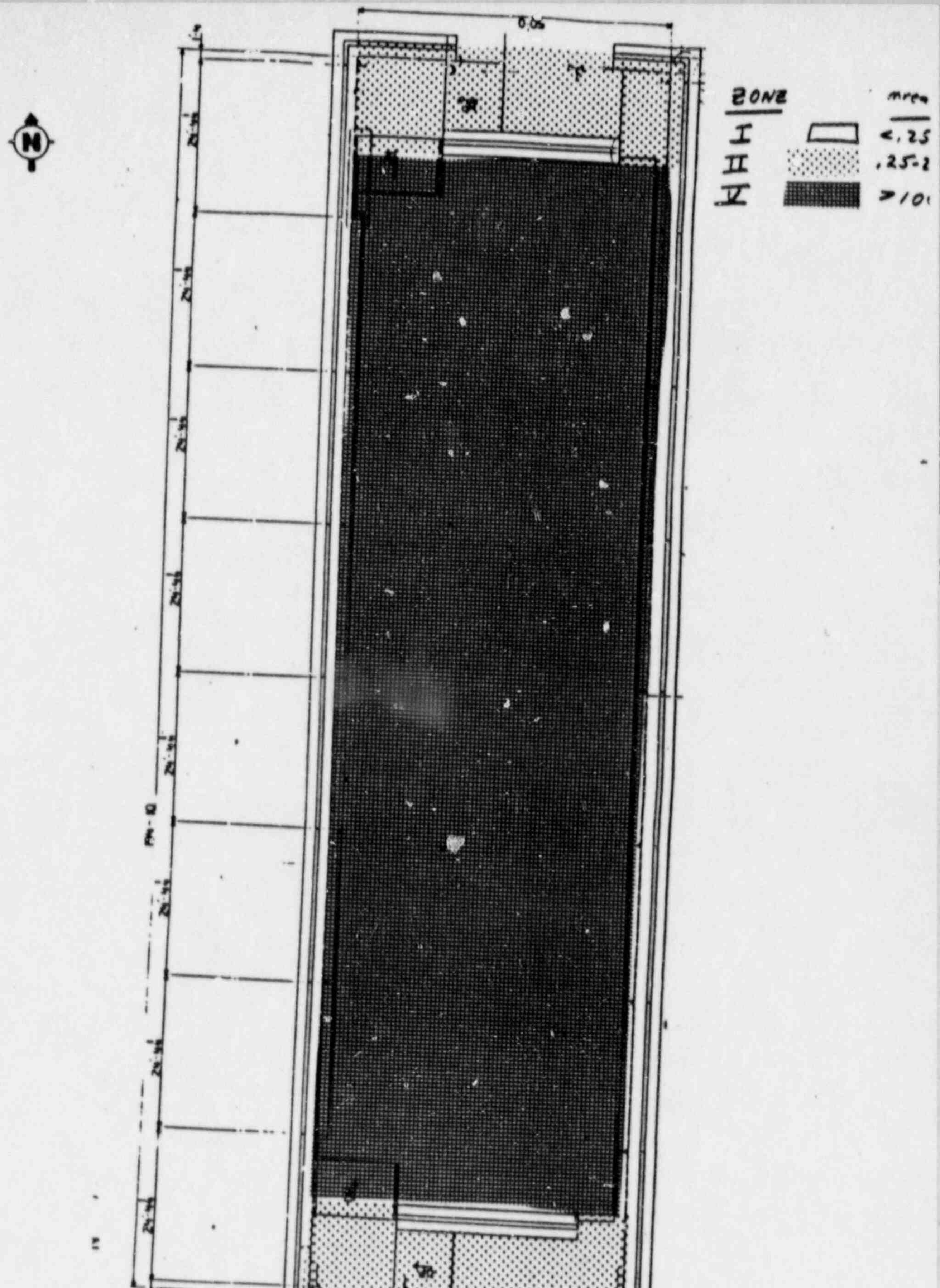
ALTERNATE RADWASTE BLDG

(Add to FSAR Figure 12.3.1-1 (sht 35 of 41))



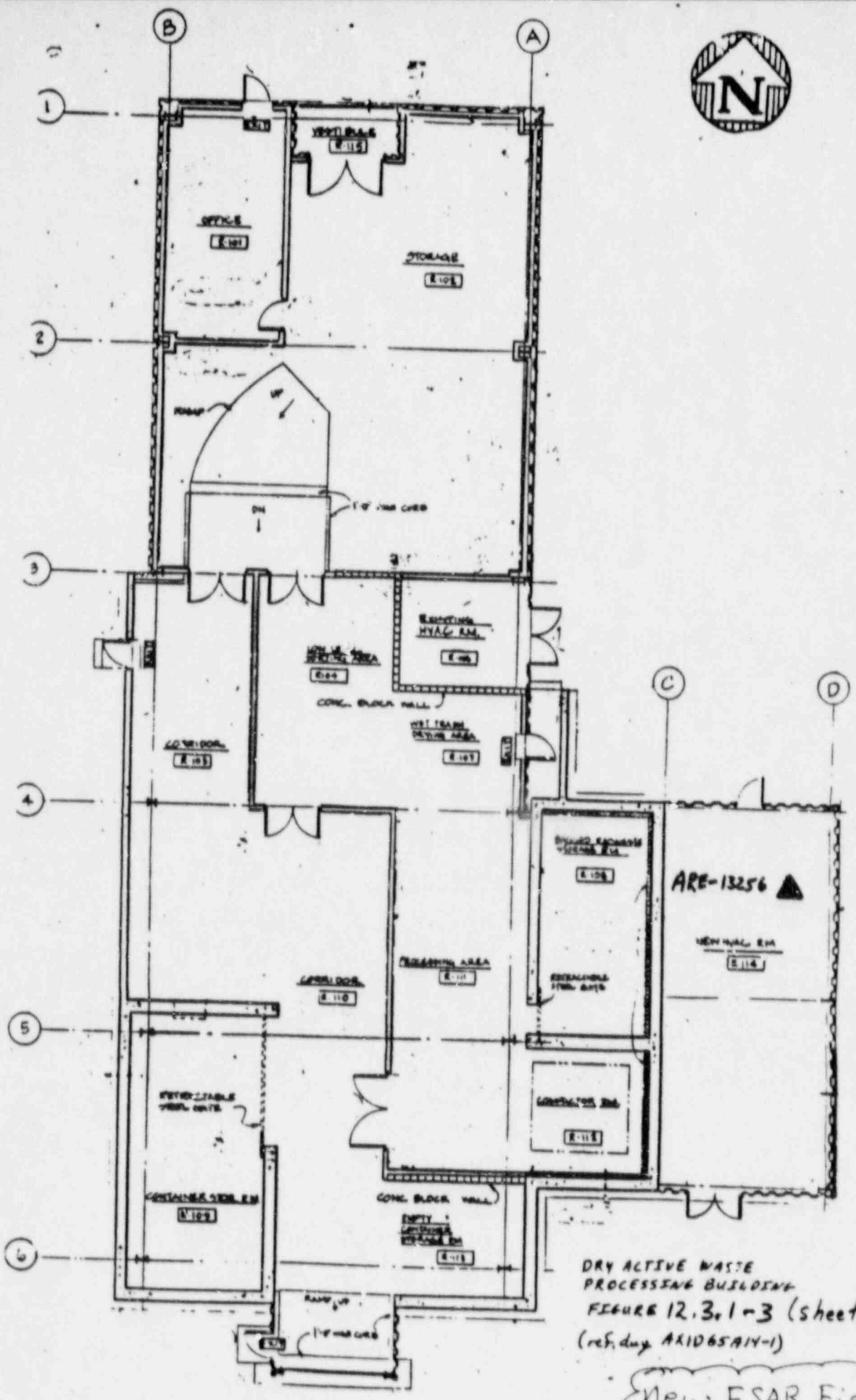
DRY ACTIVE WASTE PROCESSING BUILDING
FIGURE 12.3.1-1 (sheet 42)
(ref. dwg ASI06SA1X-1)

New FSAR Fig



DRY ACTIVE WASTE
STORAGE BUILDING
FIGURE 12.3.1-1 (sheet 43)

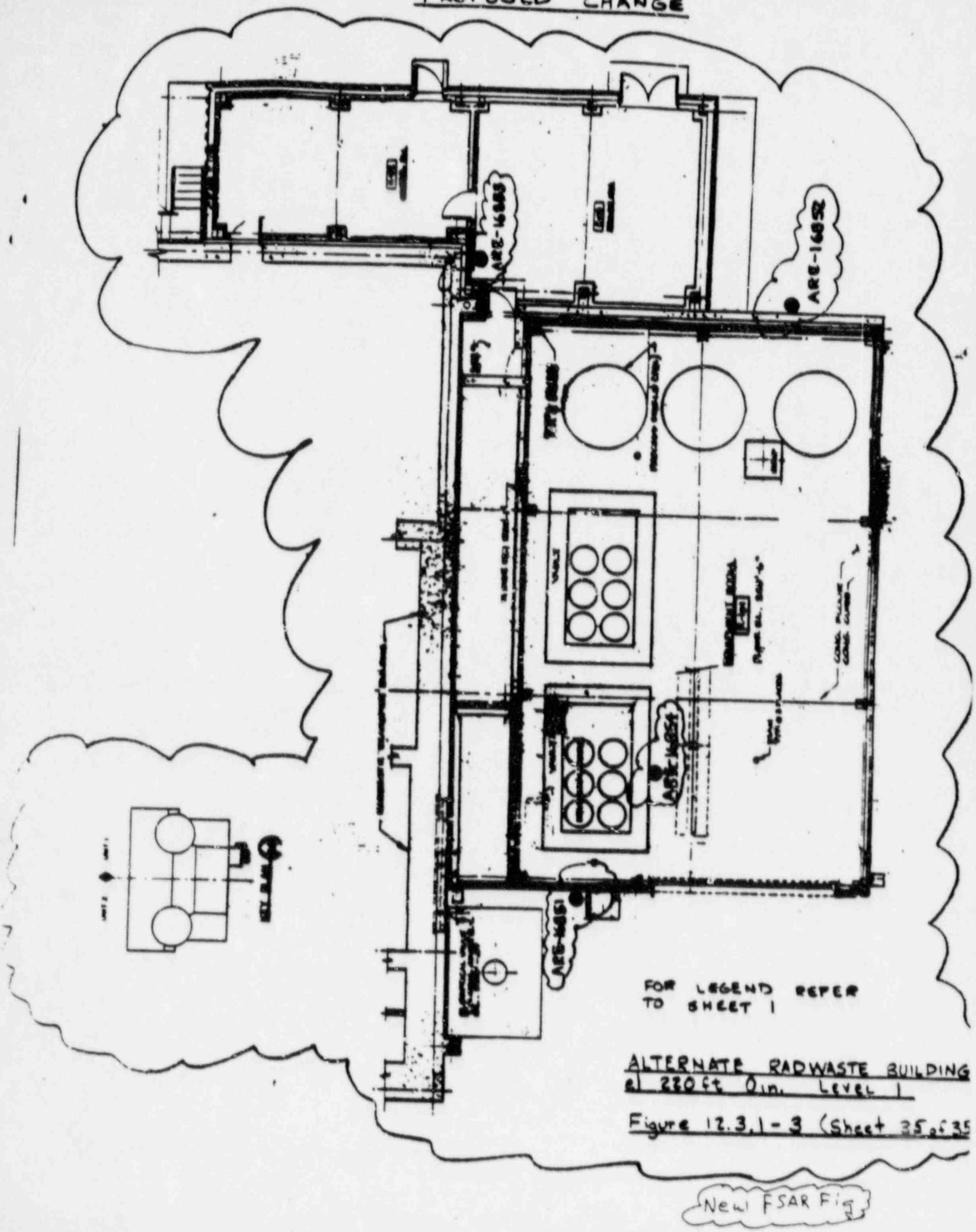
New FSAR Fig



DRY ACTIVE WASTE PROCESSING BUILDING
FIGURE 12.3.1-3 (sheet 34)
(ref. dwg AX1065A14-1)

New FSAR Fig

PROPOSED CHANGE



ALTERNATE RADWASTE BUILDING
el 230 ft 0 in. LEVEL 1

Figure 12.3.1-3 (Sheet 35 of 35)

New FSAR Fig

12.3.4 AREA RADIATION AND AIRBORNE RADIOACTIVITY MONITORING INSTRUMENTATION

The radiation monitoring system consists of the following:

A. Area radiation monitoring system (ARMS).

B. Process and effluent radiation monitoring system (PERMS).

C. Sampling system.

D. Post-accident monitoring systems (PAMS) radiation monitors.

The PERMS, sampling systems, and PAMS radiation monitors are described in section 11.5.

12.3.4.1 Area Radiation Monitoring

The ARMS is provided to supplement the personnel and area radiation survey provisions of the plant health physics program described in section 12.5 and to ensure compliance with the personnel radiation protection guidelines of 10 CFR 20, 10 CFR 50, 10 CFR 70, and Regulatory Guides 1.97, 8.2, 8.8, and 8.12.

The design of the fuel pool racks precludes criticality under all postulated normal and accident conditions. Therefore, criticality monitors, as stated in 10 CFR 70.24 and Regulatory Guide 8.12, are not needed.

INSERT "B"

12.3.4.1.1 Design Objectives

The design objectives of the ARMS during normal operating plant conditions and anticipated operational occurrences are:

A. To furnish records of radiation levels in specific areas of the plant.

B. To warn of uncontrolled or inadvertent movement of radioactive material in the plant.

C. To provide local and remote indication of ambient gamma radiation and local and remote alarms at key points where substantial change in radiation levels might be of immediate importance to personnel frequenting the area.

Proposed Changes
Insert "B"

The Area Radiation Monitors (ARM) installed in the Alternate Radwaste Building (ARB) monitor radiation levels in and around the ARB during processing of liquid radwaste. The design objectives of these ARM's is described in section 12.3.4.1.10.

I. Decontamination Station (Large Parts) Area Monitor ARE-0009A

To continuously indicate the radiation levels in the area around the large parts decontamination station. A high alarm alerts personnel in the area of a deteriorating radiological condition.

J. Decontamination Station (Small Parts) Area Monitor ARE-0009B

To continuously indicate the radiation levels in the area around the small parts decontamination station. A high alarm alerts the personnel in the area of a deteriorating radiological condition.

K. Instrument Decontamination Station Area Monitor ARE-0009C

To continuously indicate the radiation levels in the area around the instrument decontamination station. A high alarm signal alerts personnel working in the area of a deteriorating radiological condition.

L. Technical Support Center Cathode Ray Tube (CRT) Display Room Area Monitor ARE-50002A

To continuously indicate the radiological condition of the CRT display room. A high alarm signal provides warning to the CRT display room personnel of a deteriorating radiological condition.

M. Technical Support Center Work Area Monitor ARE-50002B

To continuously indicate the radiological condition of the work area. A high alarm signal provides warning to the work area personnel of a deteriorating radiological condition.

Insert "C"

12.3.4.1.9 Range and Alarm Setpoints

The range, setpoints, and control function of the PERMS area monitors are given in table 12.3.4-2.

Radiation zones for VEGP are described in table 12.3.1-1.

With the exception of area monitors RE-0002, RE-0003, RE-0004, RE-0005, RE-0006, [redacted] RE-0011, all of the area monitors are located in radiation Zones I or II.

and ARE-16854

PROPOSED CHANGES
Insert "C"

N. Alternate Radwaste Building Area Monitor ARE-16851

To continuously indicate the radiation levels on the outside west wall of the ARB. A high alarm alerts personnel in the area of a deteriorating radiological condition.

O. Alternate Radwaste Building Area Monitor ARE-16852

To continuously indicate the radiation levels on the outside of the shield wall on the east side of the ARB. A high alarm alerts personnel in the area of a deteriorating radiological condition.

P. Alternate Radwaste Building Area Monitor ARE-16853

To continuously indicate the radiation levels in the dress-out area of the ARB. A high alarm alerts personnel in the area of a deteriorating radiological condition.

Q. Alternate Radwaste Building Area Monitor ARE-16854

To continuously indicate the radiation levels in the ARB. A high alarm alerts personnel in the area of a deteriorating radiological condition.

The control room monitor RE-0001 and the technical support center monitors, ARE-50002A and ARE-50002B, have greater sensitivities than the other area monitors, since they are located in Zone I radiation areas; monitors RE-0002, RE-0003, RE-0005, and RE-0006 cover a wide range of radiation levels. During plant shutdown including refueling operations, the radiation level on and above the operating deck should be less than 2.5 mR/h. The high end of the range is dictated by the design basis accident, a LOCA.

Each area monitor has two alarm setpoints, intermediate and high. (See table 12.3.4-2.) If a monitor has a control function, i.e., RE-0002, RE-0003, RE-0005, and RE-0006, the control function is triggered coincidentally with the high alarm setpoint. An intermediate alarm gives a visual indication in the control room and near the detector that the radiation level has reached the intermediate setpoint. A high alarm gives both a visual and audible indication near the detector (along with a visual indication and annunciation in the control room) that the high alarm setpoint has been reached.

For testing, each area monitor has a check source assembly which is operated from the control console and uses a sealed Sr-90 source. Inservice inspection, calibration, and maintenance of the ARMS monitors is discussed in paragraph 11.5.2.5.

INSERT "D"

12.3.4.2 Standard Review Plan Evaluation

The VEGP did not utilize American National Standards Institute/ American Nuclear Society (ANSI/ANS) HPSSC-6.8.1-1981. Design of the VEGP ARMS began prior to the issuance in 1981 of ANSI/ANS HPSSC-6.8.1, Location and Design Criteria for Area Radiation Monitoring Systems for Light-Water Nuclear Reactors, and therefore the standard was not specifically addressed in the initial design stages. However, the ARMS is in conformance with other applicable regulations and guides. (See paragraph 12.3.4.1.) 1

Criticality monitors as defined in the Standard Review Plan are not included in the VEGP design. Paragraph 12.3.4.1 states that the design of the fuel pool racks precludes criticality under all postulated normal and accident conditions and that therefore criticality monitors are not needed. Supporting information of this subject is given in subsections 9.1.1, New Fuel Storage, and 9.1.2, Spent Fuel Storage, and paragraph 4.3.2.6, Criticality of the Reactor During Refueling.

"PROPOSED CHANGES"
Insert "D"

12.3.4.1.10 Design Objectives for the ARB Area Radiation Monitors

The design objectives of the ARB ARM's during normal liquid radwaste processing and anticipated operational occurrences are:

A. To warn of uncontrolled or inadvertant movement of radioactive material in and arcund the ARB.

B. To provide local and remote (in the ARB control room) indication (audible and visual) of ambient gamma radiation levels in and around the ARB.

C. To annunciate and warn of possible equipment malfunctions and radioactive leaks in the ARB.

D. To furnish information for making radiation surveys.

By meeting the above objectives, the ARM's aid Health Physics personnel in keeping radiation exposures as low as reasonably achievable (ALARA).

TABLE 12.3.4-1 (SHEET 2 OF 2)

Area Monitor	Detectors Per Unit	Operating Temperature (°F)	Pressure	Relative Humidity (%)	Radiation Zone	Safety Classification	Location/ Elevation (ft)
ARE-[illegible] technical support center work area	1 (shared)	65-85	-1/8 in. WG to +1/2 in. WG	50 (max)	I	NNS	Technical support center at 224 ft 6 in.
ARE-16851 ARB WEST WALL	1 (shared)	17-104	0 psig to -3 psig	100(max)	I	NNS	Outside, west wall of the Alternate Radwaste Building (ARB).
ARE-16852 ARB EAST WALL	1 (shared)	17-104	0 psig to -3 psig	100(max)	I	NNS	Outside surface of shield wall on the east side of the ARB.
ARE-16853 ARB DRESS-OUT AREA	1 (shared)	60-80	0 psig to slightly positive	100(max)	II	NNS	Dress-out area for the ARB.
ARE-16854 ARB INTERIOR	1 (shared)	50-120 [a]	slightly negative to 0 psig	100(max)	IV	NNS	South wall of the demineralizer vault in the ARB.

a. These monitors are qualified for post-LOCA environment.

TABLE 12.3.4-2 (SHEET 2 OF 2)

Monitor	Range (mR/h)	Sensitivity (mR/h)	Initial Setpoint		Control Function	Accuracy
			Intermediate	High		
ARE-50002A technical support center CRT display room	10^{-3} to 10^{3}	10^{-3}	0.10 mR/h	0.25 mR/h	No	±20 percent of actual radiation field
ARE-50002B technical support center	10^{-3} to 10^{3}	10^{-3}	0.10 mR/h	0.25 mR/h	No	±20 percent of actual radiation field
ARE-16851 ARB WEST WALL	10^{-2} to 10^{3}	10^{-2}	0.25 mR/h	2.5 mR/h	No	±20 percent of actual radiation field
ARE-16852 ARB EAST WALL	10^{-2} to 10^{3}	10^{-2}	0.25 mR/h	2.5 mR/h	No	±20 percent of actual radiation field
ARE-16853 ARB DRESS-OUT AREA	10^{-2} to 10^{3}	10^{-2}	0.25 mR/h	2.5 mR/h	No	±20 percent of actual radiation field
ARE-16854 ARB INTERIOR	10^{-1} to 10^{4}	10^{-1}	2.5 mR/h	100 mR/h	No	±20 percent of actual radiation field

Proposed Changes
VEGP-FSAR-12

a. During refueling operations.

b. During power operation.