

Vepco

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VIRGINIA ELECTRIC AND POWER COMPANY, RICHMOND, VIRGINIA 23261

January 19, 1981

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
Attn: Mr. Darrell G. Eisenhut, Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

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Serial No. 036
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Docket Nos. 50-280
50-281
License Nos. DPR-32
DPR-37

US NRC
DISTRIBUTION SERVICES
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Dear Mr. Denton:

Enclosed is our response to Item III.D.3.4 of NUREG-0737 for Surry Power Station.

Attachment 1 to this letter contains the information that was requested in your Attachment 1 to Item III.D.3.4 of NUREG-0737.

Attachment 2 contains the results of the analysis of control room concentrations from postulated accidental release of toxic gases stored on-site. The analysis of control room concentrations from toxic gases transported within five miles of the station will be forwarded by June 30, 1981 as stated in our letter Serial No. 985 dated December 15, 1980.

The plant design basis accident has been evaluated to determine radiation exposure to the control room operators. These exposures are limited to 2.5 rem whole body dose and 10 rem thyroid dose, as documented in Section 11.3 of the FSAR.

These reviews of control room habitability for Surry Power Station indicate that the control room meets the requirements of Regulatory Guides 1.78 and 1.95 and Standard Review Plan Sections 2.2.1-2.2.2, 2.2.3 and 6.4, with the following exceptions:

- 1) The control room bottled air system and the dampers for isolating the control room's normal supply and exhaust ducts do not meet the single failure criterion as required by Regulatory Guide 1.78. These systems will be modified such that redundancy is provided. A046
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- 2) The onsite toxic chemical release analysis (Attachment 2) indicates that rupture of chlorine, hydrazine, dimethylamine, or carbon dioxide containers could lead to control room concentrations exceeding the toxicity limit. Corrective actions for these chemicals will be identified along with the offsite toxic chemical release analysis being forwarded by June 30, 1981. ~~XXXXXX~~
~~XXXXXX~~
~~XXXXXX~~
- 3) The emergency ventilation system is designed to develop a positive pressure of .05 inch water gauge differential pressure rather than 1/8 inch water gauge as stated in Standard Review Plan 6.4. This satisfies the intent of the Standard Review Plan by demonstrating a positive pressure within the control room. No modification is necessary. ~~XXXXXX~~
~~XXXXXX~~
~~XXXXXX~~

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- 4) Emergency supplies (i.e.: food and water) may not be wholly contained within the control room complex but are available nearby. This is felt to be adequate since limited traffic in and out of the control room is possible while the control room is isolated. No modification is necessary.

A schedule for the above modifications will be included with our June 30, 1981 submittal.

We trust that this information will allow you to initiate your review of this matter.

Very truly yours,



B. R. Sylvia
Manager - Nuclear
Operations & Maintenance

- Attachment 1: "Information Required for Control Room Habitability Evaluation"
Attachment 2: "Surry Onsite Toxic Chemical Release Analysis," Report No. NUS-3735, Vol. I
Attachment 3: "Drawings 11448-FB-24A and B"

Attachment 1

Information Required for Control Room Habitability Evaluation Surry Power Station

Note: This information follows the format of Attachment I from Item III.D.3.4, NUREG-0737.

1. Control Room Mode of Operation. The control room emergency ventilation system for Surry Units 1 and 2 provides for isolation of the control room zone, positive pressure in the control room zone, and filtered incoming air from the turbine building.

The main control and relay room complex is isolated by closing dampers MOV-1-VS-103A and B in the normal supply and exhaust ducts, respectively, and by shutting down exhaust fan 1-VS-F-15. This is done either automatically by a safety injection (SI) signal or by manual initiation. (Logic diagram 21-11F).

Initial pressurization of the main control and relay room complex is provided from a bottled air system, capable of developing .05 inch water gauge differential pressure for one hour.

Two redundant emergency ventilation fans and charcoal filter units are provided to supply incoming filtered air to the control room from the turbine building, and two redundant emergency ventilation fans and charcoal filter units are provided to supply incoming filtered air to the emergency switchgear rooms from the turbine building.

The bottled air system and the four emergency ventilation fans are manually initiated.

2. Control Room Characteristics

- 2.a. The control room complex contains approximately 70,000 ft³ of air. The main control and relay room complex contains a total of approximately 200,000 ft³ of air.

- 2.b. The control room complex consists of Units 1 and 2 main control rooms, Units 1 and 2 computer rooms, Units 1 and 2 air conditioning rooms, a washroom, two partitioned offices, and the control room annex workroom area.

The main control and relay room complex consists of the control room complex, Units 1 and 2 emergency switchgear rooms, Units 1 and 2 relay rooms, and battery rooms 1-A, 1-B, 2-A, and 2-B.

- 2.c. The normal and emergency ventilation systems schematic is shown on drawings 11448-FB-24A and B (Attachment 3).

- 2.d. Infiltration leakage is not postulated during the time the control room is isolated since the control room will be under positive pressure.

- 2.e. HEPA filters are specified to have an efficiency of not less than 99.97 per cent. (specification NUS-259). The charcoal filters are two inches deep and are assumed per Reg. Guide 1.52, Table 2, to have an efficiency of 95 percent.
- 2.f. Closest distances between the reactor containment buildings and the control room air intakes are listed below and are shown on the plot plan in Attachment 2.

	<u>Unit 1</u> <u>Containment</u>	<u>Unit 2</u> <u>Containment</u>
Normal Air Intake	60'	280'
Unit 1 Emergency Intake	130'	210'
Unit 2 Emergency Intake	160'	160'

- 2.g. The plot plan in Attachment 2 shows the plant layout, including chemical storage locations and control room air intakes.
- 2.h. Shielding for the main control and relay room complex consists of the following: 24 inch thick reinforced concrete walls; 24 inch thick reinforced concrete ceiling; at least 18 inch thick reinforced concrete walls for the stairwell in the cable tray room; 18 inch thick reinforced concrete walls for the emergency switchgear and relay rooms; sliding radiation shield doors for door openings; and concrete labyrinth arrangement for ventilation duct openings for normal supply and exhaust ventilation ducts.
- 2.i. Damper MOV-1-VS-103A in the supply duct is 18" by 20" and damper MOV-1-VS-103B in the exhaust duct is 18" by 18". (Drawing 11448-FB-24A).
- 2.j. Chlorine detectors with local audible alarm are presently installed at the sewerage treatment building. No other toxic gas detectors are installed at the station.
- 2.k. Four self-contained breathing apparatus are maintained in the control room complex, although neither the FSAR nor station procedures require a minimum number. This number of apparatus is adequate since breathing apparatus is only necessary for those operators leaving the control room for short periods of time during an accident.

Additional breathing apparatus and air bottles are available in the Health Physics area. Air bottles may be recharged using a cascade arrangement with greater than 6 hour supply capacity as required to be available for fire brigade use.

- 2.l. The bottled dry air bank provides 18,000 scf of free air and is sufficient for approximately one hour's pressurization. (FSAR Section 9.13.3.6).
- 2.m. No food supply is permanently stored within the control room complex, but food is available in the station lunchroom and in the kitchen area of the office building. This food supply is felt to be adequate

since the control room operators will be able to leave the control room for short periods of time while the control room is isolated.

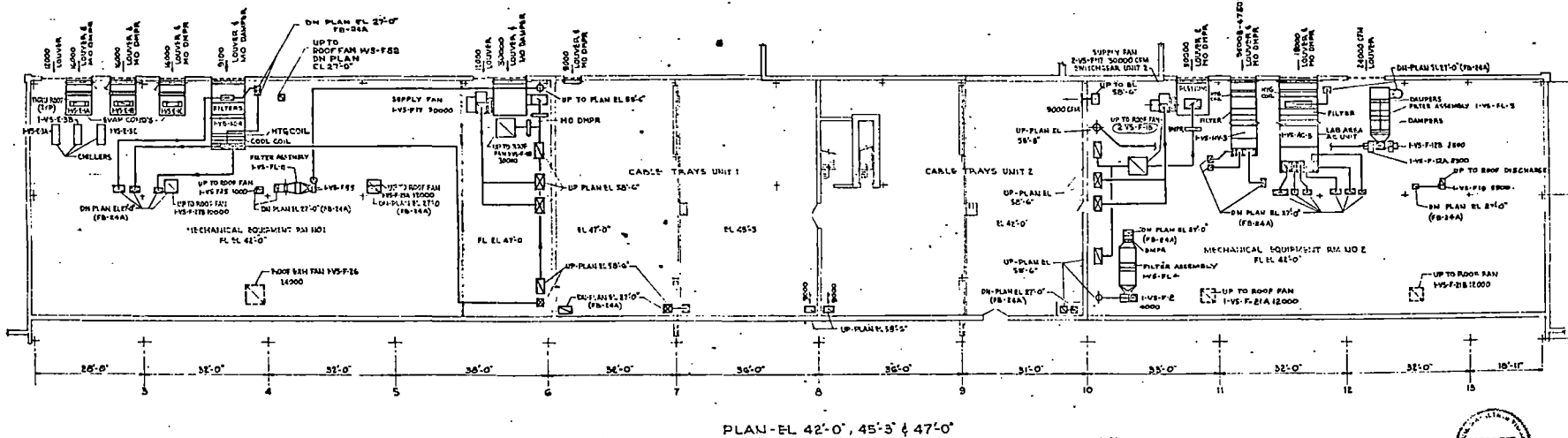
Potable water for drinking and for the washroom is supplied to the control room complex from the domestic water system. The domestic water system provides chlorinated water to the station from underground wells. If the domestic water system is disrupted by a seismic event, bottled water could be brought from off-site.

First aid lockers are available within the plant and a first aid kit is usually available within the control room. Station procedures do not state specific locations for first aid supplies.

- 2.n. During normal operations with two units operating, Technical Specifications require a minimum of seven operators either in the control room or available on-site. During emergency operations, all seven operators will most likely be located in the main control and relay room complex.
- 2.o. The Station Emergency Plan states that Vepco's Medical Director has approved the use of a thyroid blocking agent for a potential radioiodine inhalation situation by administering approximately eight drops of saturated potassium iodide solution in a cup of water. The potassium iodide supply is available in the Health Physics area of the Service Building.
3. On-Site Storage of Chlorine and Other Hazardous Chemicals. Quantities and locations of on-site chemical storage containers are summarized in Attachment 2.
4. Off-site Manufacturing, Storage or Transportation Facilities of Hazardous Chemicals. There are no manufacturing or chemical storage facilities within a five-mile radius of the station. There is no rail traffic within a five-mile radius of the station. There is truck traffic on Virginia Route 10, approximately 4.5 miles from the station. There is barge traffic along the James River, approximately 2.5 miles from the station. The type of chemical, frequency of shipment, and quantity of shipment for barge traffic and truck traffic will be identified in a later submittal.
5. Technical Specifications
 - 5.a. Technical specifications for a chlorine detection system will be developed and implemented if a chlorine detection system is determined to be necessary.
 - 5.b. Technical Specifications 3.19 and 4.1-5 contain requirements for verifying every 12-18 months that the main control room can be pressurized to at least .05 inch water gauge differential for one hour. This technical specification followed the NRC recommended technical specifications at the time Surry's specifications were issued.



PLAN - EL 58'-6"



PLAN-EL 42'-0", 45'-3" & 47'-0"

NOTE:
GENERAL NOTES (LSGPD-FB-24A)
NO SCALE
QUANTITIES INDICATED ARE CUBIC FEET PER MIN



SURRY POWER STATION
VIRGINIA ELECTRIC AND POWER COMPANY
STONE & WEBSTER ENGINEERING CORPORATION

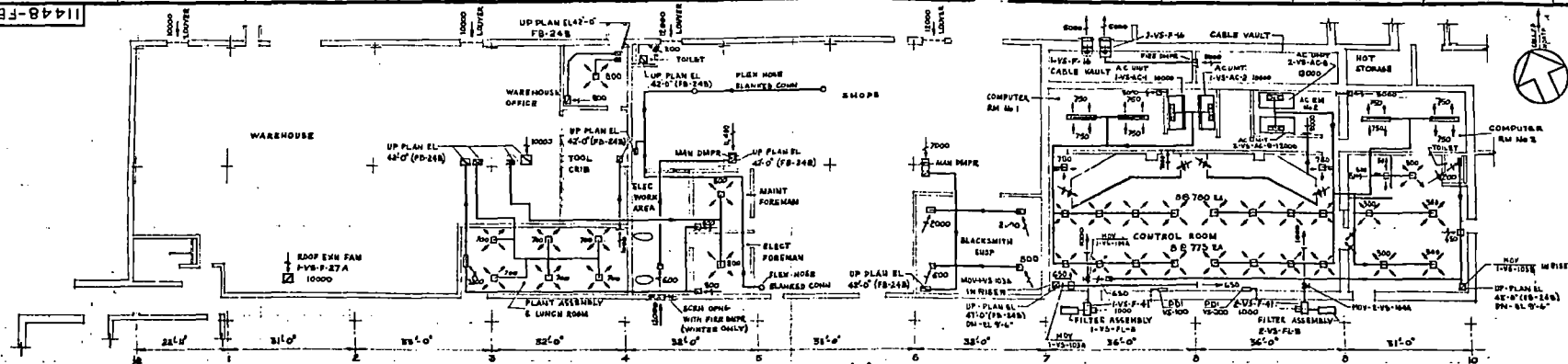
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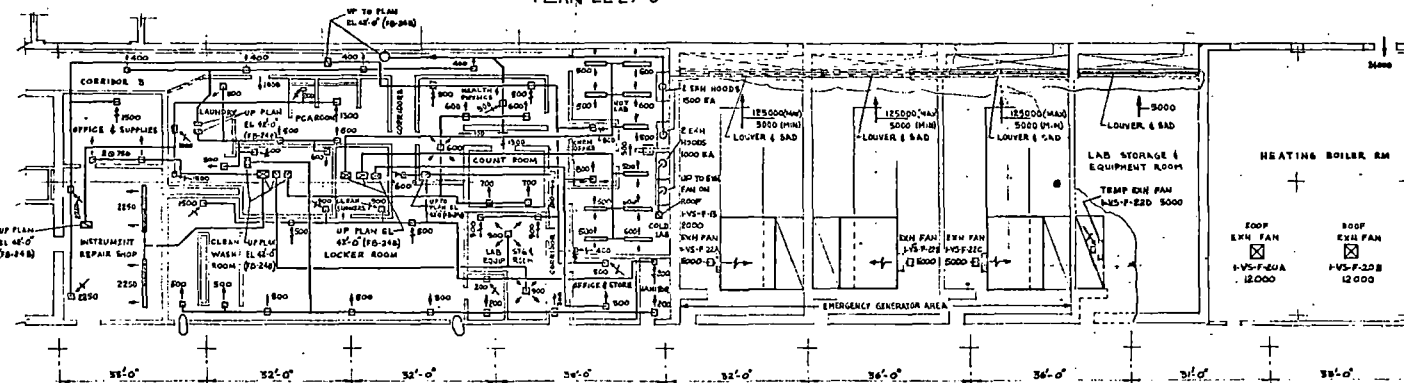
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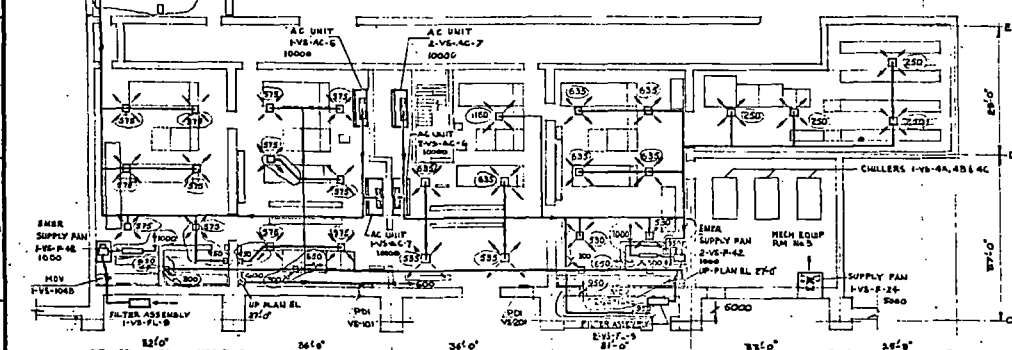
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PLAN-EL 27'-0"



PLAN-EL27'-0"



GENERAL NOTES
NO SCALE
LEGEND - STD-MB-5A, 5B & 5C
QUANTITIES INDICATED ARE CUBIC FT PER MIN
SAD - SELF ACTING DAMPER

VENTILATION ARRANGEMENT SH-1
SERVICE BUILDING

SURRY POWER STATION
VIRGINIA ELECTRIC AND POWER COMPANY
STONE & WEBSTER ENGINEERING CORPORATION

 DRAWING 11448-FB-24

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PLAN-EL 42'-0", 45'-3" & 47'-0"

NOTE:
GENERAL NOTE 2 OF LEGEND-P2-24A
NO SCALE
QUANTITIES INDICATED ARE CUBIC FEET PER MIN



HUNRY POWER STATION
VIRGINIA ELECTRIC AND POWER COMPANY

STONE & WEBSTER ENGINEERING CORPORATION

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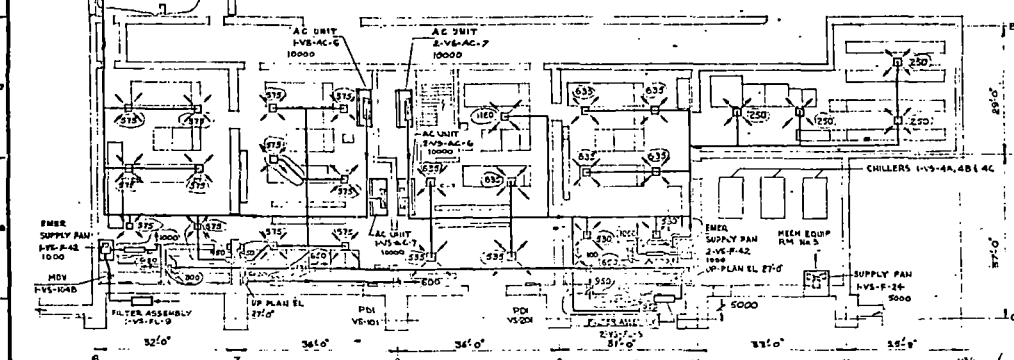
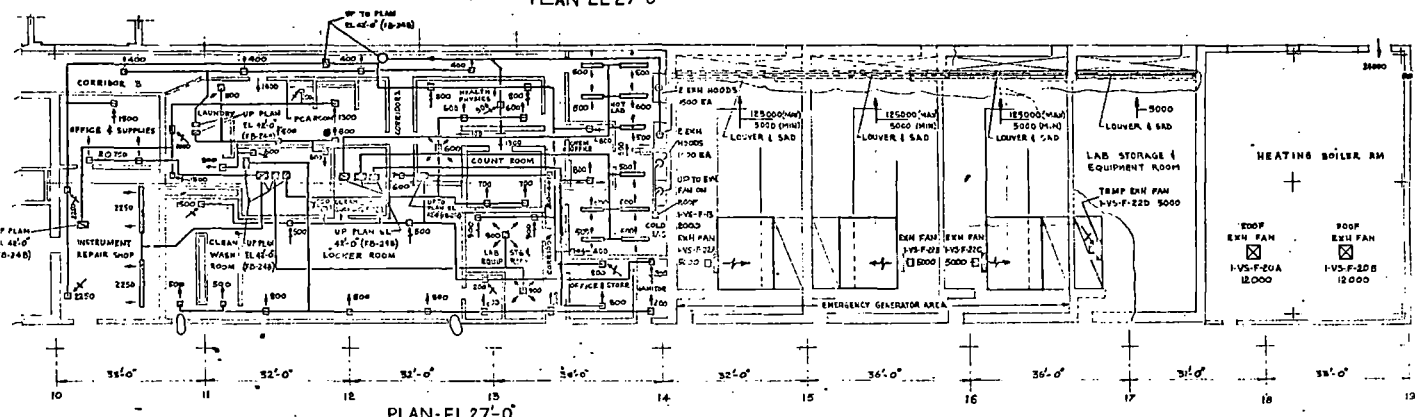
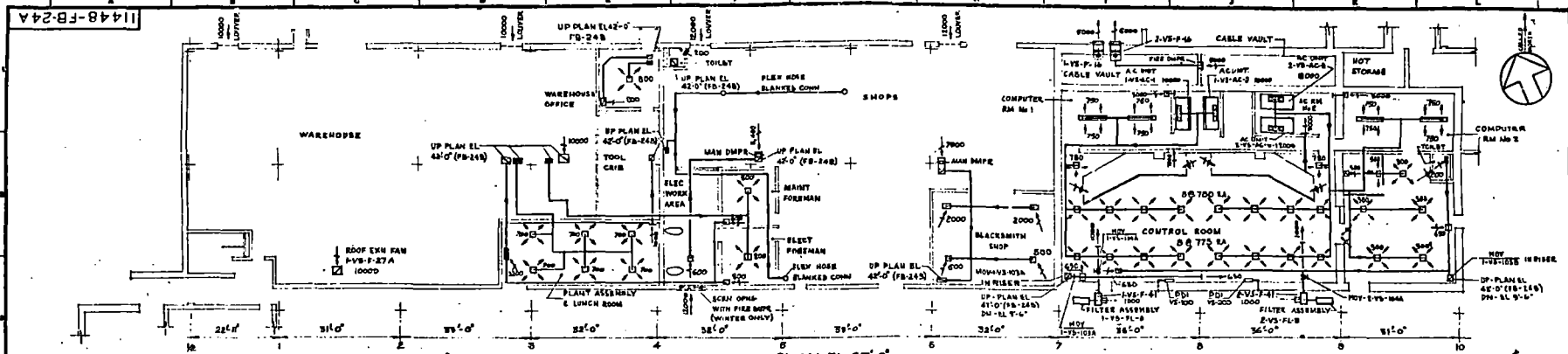
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Designed by J.G. GARNETT
Dec. Ch'd by

Drawn by J. L. DICKSON
Ch'd by R.L. DICKSON



GENERAL NOTES
 NO SCALE
 LEGEND - 1-VS-F-24, 5000
 QUANTITIES INDICATED ARE COBIC FT PER MIN
 SAD - SELF ACTING DAMPER

VENTILATION ARRANGEMENT SH-1 SERVICE BUILDING

BURRY POWER STATION
 VIRGINIA ELECTRIC AND POWER COMPANY
 STONE & WEBSTER ENGINEERING CORPORATION
 BOSTON, MASS.

DRAWING NO. 11448-FB-24A

NO.	DESCRIPTION	QTY	UNIT	REMARKS	NO.	DESCRIPTION	QTY	UNIT	REMARKS
1	1-VS-F-27A	1	FAN	10000	1	1-VS-F-20A	1	FAN	12000
2	1-VS-F-24	1	FAN	5000	2	1-VS-F-22B	1	FAN	12000
3	1-VS-F-22A	1	FAN	12000	3	1-VS-F-22C	1	FAN	12000
4	1-VS-F-22D	1	FAN	12000	4	1-VS-F-22E	1	FAN	12000
5	1-VS-F-22F	1	FAN	12000	5	1-VS-F-22G	1	FAN	12000
6	1-VS-F-22H	1	FAN	12000	6	1-VS-F-22I	1	FAN	12000
7	1-VS-F-22J	1	FAN	12000	7	1-VS-F-22K	1	FAN	12000
8	1-VS-F-22L	1	FAN	12000	8	1-VS-F-22M	1	FAN	12000
9	1-VS-F-22N	1	FAN	12000	9	1-VS-F-22O	1	FAN	12000
10	1-VS-F-22P	1	FAN	12000	10	1-VS-F-22Q	1	FAN	12000
11	1-VS-F-22R	1	FAN	12000	11	1-VS-F-22S	1	FAN	12000
12	1-VS-F-22T	1	FAN	12000	12	1-VS-F-22U	1	FAN	12000
13	1-VS-F-22V	1	FAN	12000	13	1-VS-F-22W	1	FAN	12000
14	1-VS-F-22X	1	FAN	12000	14	1-VS-F-22Y	1	FAN	12000
15	1-VS-F-22Z	1	FAN	12000	15	1-VS-F-22AA	1	FAN	12000
16	1-VS-F-22AB	1	FAN	12000	16	1-VS-F-22AC	1	FAN	12000
17	1-VS-F-22AD	1	FAN	12000	17	1-VS-F-22AE	1	FAN	12000
18	1-VS-F-22AF	1	FAN	12000	18	1-VS-F-22AG	1	FAN	12000
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