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June 23, 1981

Director of Nuclear Reactor Regulation
United States Nuclear Regulatory Commission
Attn: Mr. Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing
Washington, DC 20555

Reference: Beaver Valley Power Station, Unit No. 1
Docket No. 50-334
Control of Heavy Loads - NUREG-0612

Gentlemen:

Attached for your review are the itemized responses for Section 2.1 as requested by your letter dated December 22, 1980. We wish to point out that the safe load paths defined to date have not taken into account any analysis which are being performed on the integrity of the structures to withstand load drops. We have assumed for the initial response, that a dropped load penetrates one floor elevation. The safe load paths may be revised in the second required submittal of information to take into account further information in this area.

We will proceed with implementation of any required changes or modifications deemed necessary as a result of the reviews being performed. At this time, we expect to complete the changes within the two years specified in your letter.

Very truly yours,

J. J. Carey

J. J. Carey
Vice President, Nuclear

cc: Mr. D. A. Beckman, Resident Inspector
U.S. Nuclear Regulatory Commission
Beaver Valley Power Station
Shippingport, PA 15077

U.S. Nuclear Regulatory Commission
c/o Document Management Branch
Washington, DC 20555

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DUQUESNE LIGHT COMPANY
Beaver Valley Power Station, Unit No. 1
Docket No. 50-334
Control of Heavy Loads - NUREG-0612

Attachment A

2.1.1 Report the results of your review of plant arrangements to identify all overhead handling systems from which a load drop may result in damage to any system required for plant shutdown or decay heat removal (taking no credit for any interlocks, technical specifications, operating procedures or detailed structural analysis).

RESPONSE APPLICABLE OVERHEAD LOAD HANDLING SYSTEMS

Mark No.	Identification	Location
CR-1	Polar Crane	Reactor Containment
CR-9	7.5 Ton Monorail System	Auxiliary Building
CR-15	Fuel Cask Crane	Fuel Building
CR-17	Screenwell Crane	Intake Structure
CR-19	PCA Shop Crane	Service Building
CR-20	10 Ton Monorail System	Auxiliary Building
CR-21	6 Ton Monorail System	Auxiliary Building
CR-23	10 Ton Monorail System	Auxiliary Building
CR-24A&B	6 Ton Monorail System	Auxiliary Building
CR-27	Moveable Platform & Hoists	Fuel Building

2.1.2 Justify the exclusion of any overhead handling system from the above category by verifying that there is sufficient physical separation from any load-impact point and any safety-related component to permit a determination by inspection that no heavy load drop can result in damage to any system or component required for plant shutdown or decay heat removal.

RESPONSE NONAPPLICABLE OVERHEAD LOAD HANDLING SYSTEMS

Mark No.	Identification and Reason
CR-2	Turbine room crane - This crane is located inside the turbine building which does not contain any safety related equipment or systems. Therefore, a load drop from this crane would not result in damage to any system required for plant shutdown or decay heat removal.
CR-5	Refueling Manipulator Crane - This crane is located inside the Reactor Containment. The maximum load this crane will lift is a fuel element with its handling tool. This by definition (NUREG-0612) is not classified as a "heavy load". A load drop associated with this crane was addressed in a detailed study entitled "Fuel Handling Accident Evaluation" dated October 31, 1977.

CR-8 Solid Waste Handling Crane - This crane is located inside the Solid Waste Building which does not contain any safety related equipment or systems. Therefore, a load drop from this crane would not result in damage to any system required for plant shutdown or decay heat removal.

CR-16 Neutron Detector Carriage - This crane is located inside the Reactor Containment and is not used to lift any "heavy loads" as defined in NUREG-0612.

CR-18 Clean Shop Crane - This crane is located in the Service Building in an area where a load drop would not result in damage to any system required for plant shutdown or decay heat removal.

CR-22 7.5 Ton Monorail Hoist - This crane is located inside the Auxiliary Building and is used for the gaseous waste and primary drains transfer systems. A load drop from this crane would not result in damage to any system required for plant shutdown or decay heat removal.

CR-25 10 Ton Monorail Hoist - This crane is used for the Boron Recovery system in the Auxiliary Building and does not operate in an area where a load drop could result in damages to any system required for plant shutdown or decay heat removal.

2.1.3.a Drawings or sketches sufficient to clearly identify the location of safe load paths, spent fuel and safety-related equipment.

RESPONSE Safe load travel paths have been defined which will minimize adverse effects of a load drop for those handling systems identified in Table 1. These safe load paths are shown in Figures 2 through 5. There is no figure to show a safe load path for CR-19 because it is used to handle equipment throughout the PCA shop and there is no preferential load path. Thus, the safe load path is the entire area accessible by the crane.

Figures 1A and 1B are plan views of the containment structure (Elevations 767' 10" and 738' 10") showing locations of various safety related equipment, piping and systems required for plant shutdown or decay heat removal, as well as various heavy loads. These figures may be used in conjunction with written procedures to define safe load paths for any undefined heavy load movement inside the containment. Figures 2A through F show the safe load path for all heavy loads which have been determined for the polar crane (CR-1).

Figures 2A, B and C depict the safe load paths for the dismantling and laydown necessary for Refueling Operations. Figure 2A shows the safe load path for the installation of the removable slabs (Item No. 6) from their storage locations above the RV head storage stand (Item No. 5) including the temporary removal and replacement of the manipulator crane rail and grating (from area by Item No. 5 to Item No. 16). Figure 2B shows the safe load path for the movement of the CRDM ventilation ring duct (Item No. 15) and the CRDM shield (Item No. 5) to the removal of the RV internals lifting rig tripod (Item No. 5) from its storage position to its temporary position south of steam generator BC-E-1C.

The tripod is then moved into position over the core and then with the RV internals placed back in the storage stand. Also shown on Figure 2C is the movement of the RV head, lower internals (Item No. 14) and stud tensioner handling frame (Item No. 15).

Figures 2D, E and F depict various other heavy loads located within the containment which could possibly be lifted by the polar crane (CR-1) and their safe load paths. Figure 2D shows the path to be used for reactor coolant pump(s) removal. Figure 2E shows removal path for the containment recirculation spray coolers and residual heat removal heat exchangers. Figure 2F shows the location of various heavy loads (Elevation 738' 10") to be lifted by CR-1.

Figures 3, 4 and 5 are plan views of the fuel and decontamination building, intake structure and auxiliary building showing the location of safety related equipment and piping and safe load paths used when handling heavy loads within these structures.

2 1.3.b A discussion of measures taken to ensure that load-handling operations remain within safe load paths, including procedures, if any, for deviation from these paths.

RESPONSE Maintenance administrative procedures are being revised to include the general guidance and evaluation requirements contained in NUREG-0612. Implementing procedures will require compliance with NUREG-0612 using the load paths defined in the attached figures. Deviation from these procedures requires field changes which are reviewed and approved in accordance with existing administrative procedures.

2.1.3.c A tabulation of heavy loads to be handled by each crane which includes the load identification, load weight, its designated lifting device and verification that the handling of such load is governed by a written procedure containing, as a minimum, the information identified in NUREG-0612, Section 5.1.1(2).

RESPONSE The attached Table 1 which is consistent with the loads identified in Table 3-1 of NUREG-0612 provides this information.

Existing maintenance procedures generally follow the guidance of NUREG-0612. Trigger statements will be added to existing procedures requiring an evaluation to the requirements of NUREG-0612 before making the lift. New procedures generated will incorporate the guidance of NUREG-0612.

2.1.3.d Verification that lifting devices identifed in 2.1.3-c, above, comply with the requirements of ANSI N14.6-1978, or ANSI B30.9-1971 as appropriate. For lifting devices where these standards, as supplemented by NUREG-0612, Section 5.1.1(4) or 5.1.1(5), are not met, describe any proposed alternatives and demonstrate their equivalency in terms of load-handling reliability.

RESPONSE The designs of the head lifting device and the internals lifting rig were reviewed with respect to the above listed criteria. These criteria were not available at the time the devices were designed and the lifting devices were built to the current industrial standards using good engineering practices. Additionally, the following specific items were found to either comply or substantially comply with the new criteria. They were designed to lift five times the weight of the designed load without exceeding the ultimate strength of the material. They were welded according to Section IX of the ASME code, and they were load tested to 125% of the design lift load weight.

2.1.3.e Verification that ANSI B30.2-1976, Chapter 2-2, has been invoked with respect to crane inspection, testing and maintenance. Where any exception is taken to this standard, sufficient information should be provided to demonstrate the equivalency of proposed alternatives.

RESPONSE Preventative maintenance procedures are being reviewed for compliance to ANSI B30.2-1976 and will be revised as necessary. Contractors are presently used to perform crane inspections and testing. Purchase orders will be revised to require inspectors to be qualified and inspections conducted in accordance with ANSI B30.2-1976.

2.1.3.f Verification that crane design complies with the guideline of CMAA Specification 70 and Chapter 2-1 of ANSI B30.2-1976, including the demonstration of equivalency of actual design requirements for instances where specific compliance with these standards is not provided.

RESPONSE CMAA Specification 70 and ANSI B30.2-1976 apply to cranes CR-1, 15, 17, 19 and 27. Cranes CR-15 and CR-27 have been designed to comply with CMAA 70.

Cranes CR-1, CR-17 and CR-19 were designed to comply with EOCI Specification 61 which was superceeded by CMAA 70. The differences between these two specifications which impact the evaluation of the safe handling of heavy loads are addressed below with respect to the significant cranes.

a) CMAA 70 requires the hoist rope safety factor be calculated on the combined weight of the bottom block assembly and the rated load. This requirement is met by all of the above listed cranes except CR-19 which will be administratively limited to a 13.9 ton load to meet this safety requirement while the remainder of this study is in progress.

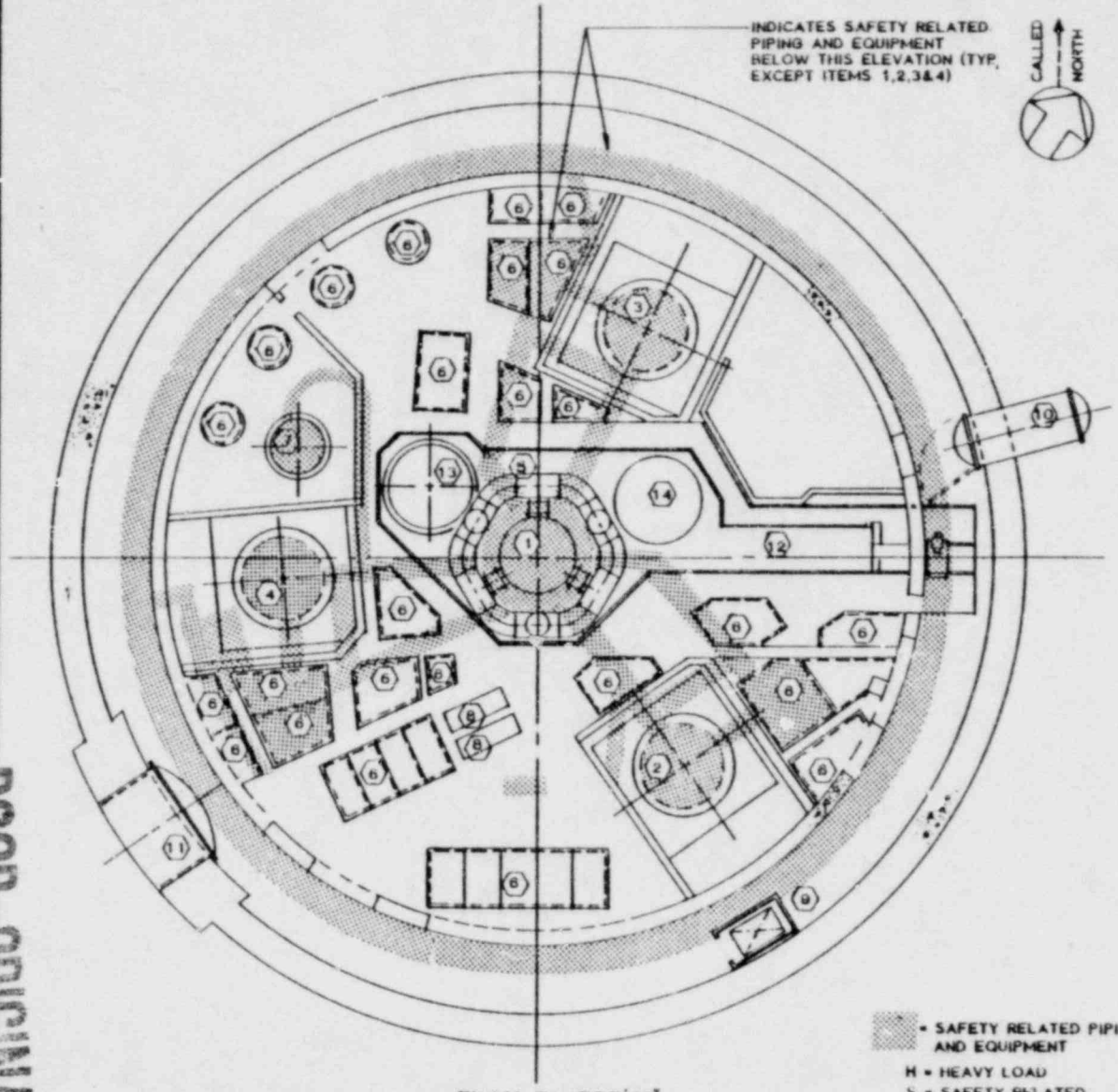
b) CMAA 70 requires ASTM-A36 structual steel; all of the above cranes are built of this material.

c) Though the specification requirements differ, the stress requirements of CMAA 70 for bridge girders, end trucks and trolly frames are met by the cranes.

ANSI B30.2-1976 adds the additional requirement applicable to safe heavy load handling that crane hooks have latches if practical in that application. This requirement is met by the above listed cranes.

2.1.3.g Exceptions, if any, taken to ANSI B30.2-1976 with respect to operator training, qualification and conduct.

RESPONSE Training is in accordance with ANSI B30.2-1976.



LEGEND

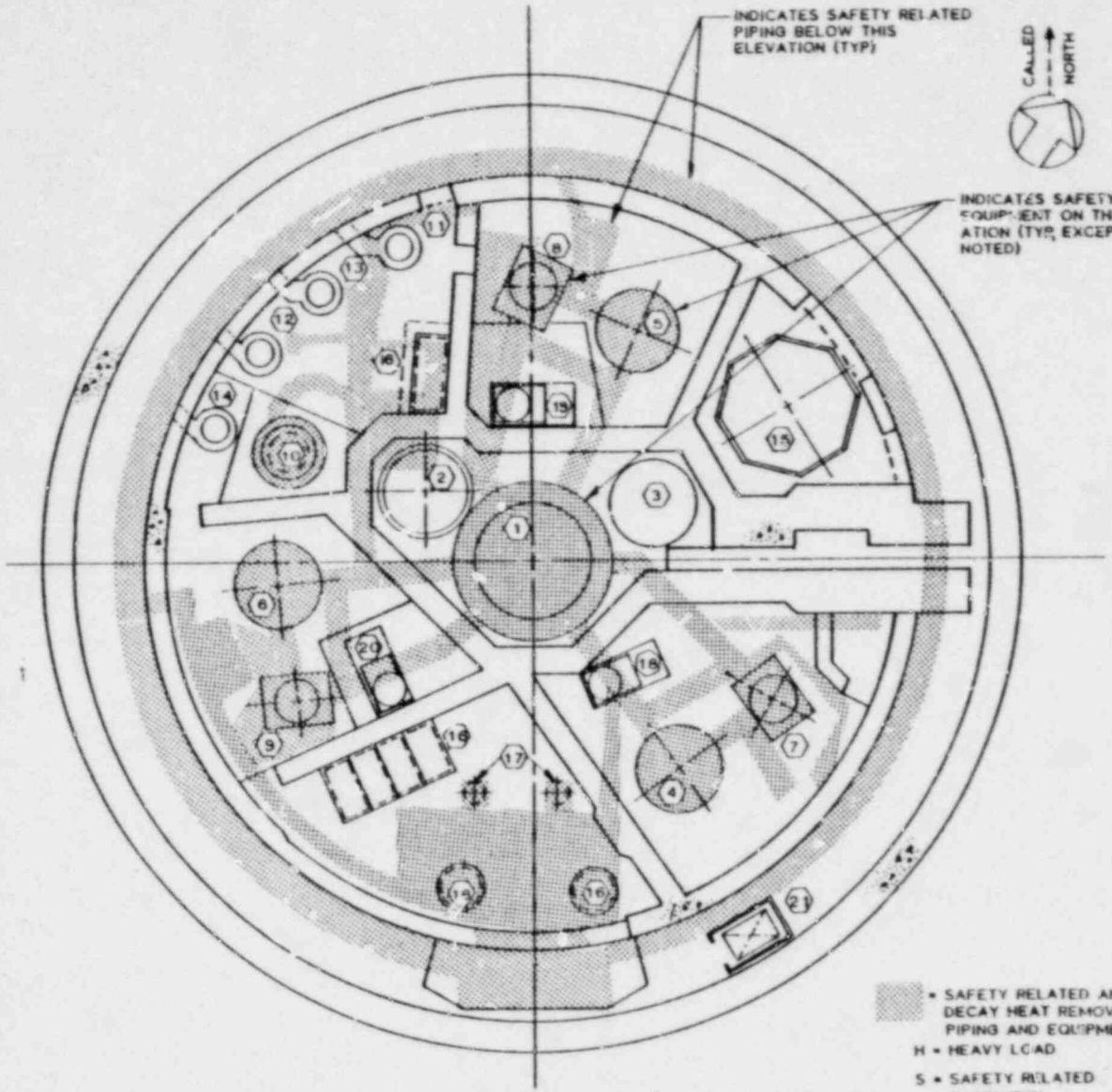
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-E-1A	STEAM GENERATOR	S
3	RC-E-1B	STEAM GENERATOR	S
4	RC-E-1C	STEAM GENERATOR	S
5		CRDM VENTILATION RING DUCT	H
6		REMOVABLE SLABS	H
7	RC-TK-1	PRESSURIZER	S
8		ELEC. JUNCTION BOXES (FOR CRDM CABLES)	
9		ELEVATOR	
10		PERSONNEL HATCH	
11		EQUIPMENT HATCH	
12		FUEL TRANSFER CANAL	
13	RC-ES-0	UPPER INTERNALS LIFTING RIG (EL 738'-10")	H
14	RC-ES-6	LOWER INTERNALS STORAGE (EL 738'-10")	H

FIGURE 1A

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 767'-10"



LEGEND

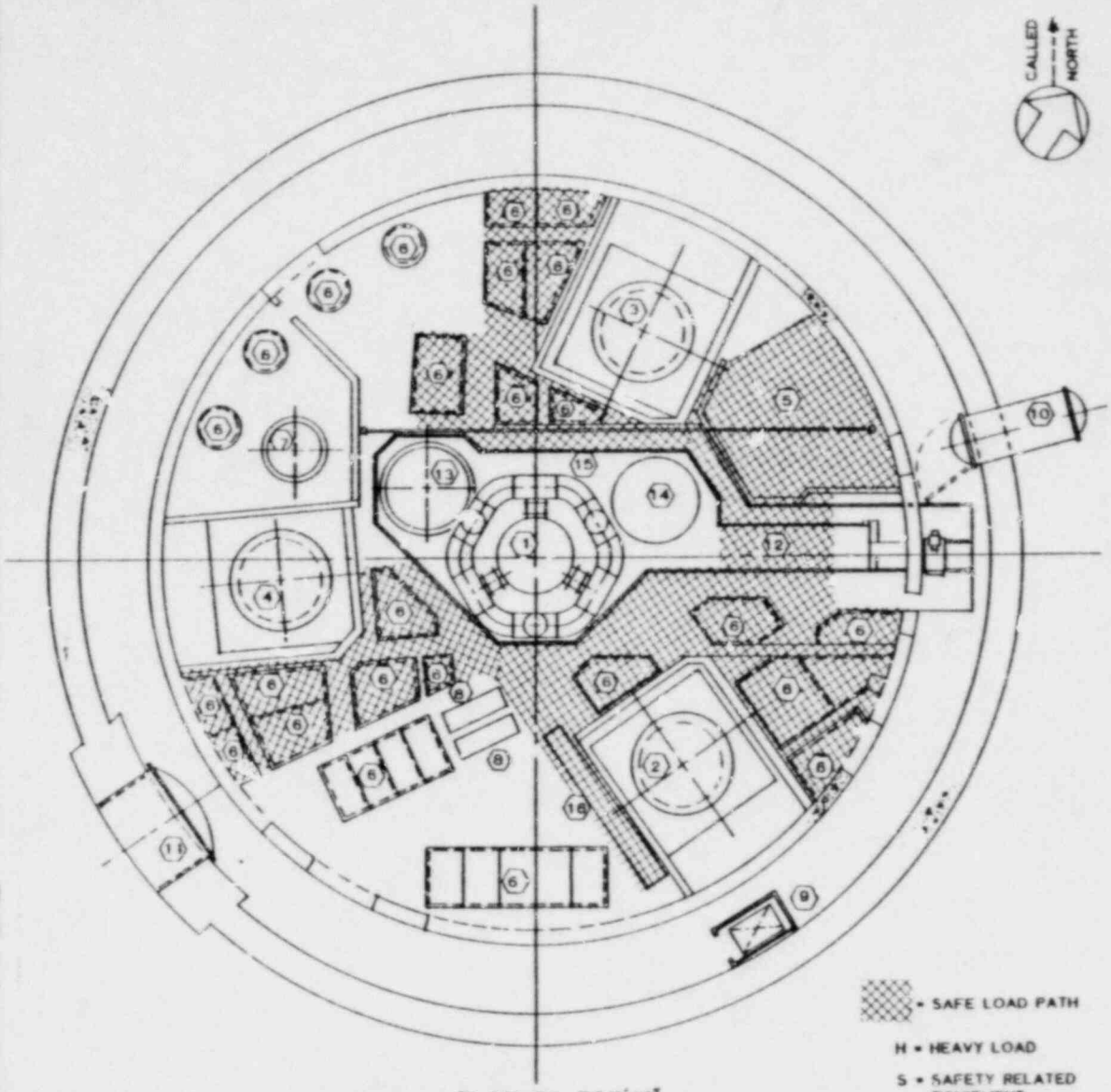
NO	EQUIPMENT NO	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-ES-5	UPPER INTERNALS LIFTING RIG	H
3	RC-ES-6	LOWER INTERNALS STORAGE	H
4	RC-E-1A	STEAM GENERATOR	S
5	RC-E-1B	STEAM GENERATOR	S
6	RC-E-1C	STEAM GENERATOR	S
7	RC-P-1A	REACTOR COOLING PUMP	H,S
8	RC-P-1B	REACTOR COOLING PUMP	H,S
9	RC-P-1C	REACTOR COOLING PUMP	H,S
10	RC-TK-1	PRESSURIZER	S
11	RS-E-1A	CONTAINMENT RECIRC. SPRAY COOLER	H
12	RS-E-1B	CONTAINMENT RECIRC. SPRAY COOLER	H
13	RS-E-1C	CONTAINMENT RECIRC. SPRAY COOLER	H
14	RS-E-1D	CONTAINMENT RECIRC. SPRAY COOLER	H
15		REMOVABLE COVER	
16		REMOVABLE SLAB	H
17	RH-P-1A,1B	RESIDUAL HEAT REMOVAL PUMPS (EL 692'-11")	D
18	VS-F	VENT. FAN	H
19	VS-F-2B	VENT. FAN	H
20	VS-F-2C	VENT. FAN	H
21		ELEVATOR	

FIGURE 1B

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 738'-10"



LEGEND

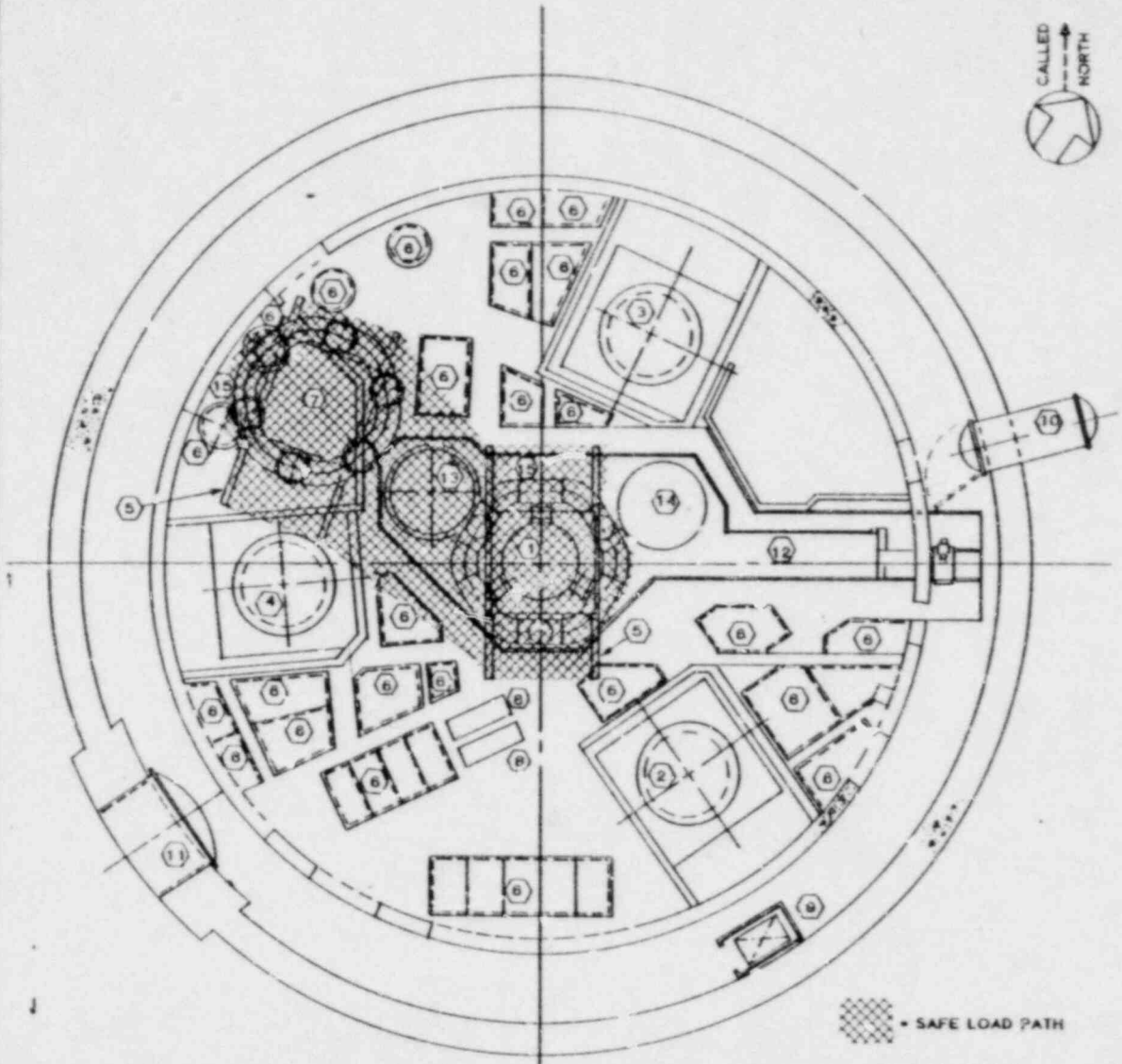
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-E-1A	STEAM GENERATOR	S
3	RC-E-1B	STEAM GENERATOR	S
4	RC-E-1C	STEAM GENERATOR	S
5		REMOVABLE SLAB STORAGE AREA	
6		REMOVABLE SLABS	H
7	RC-TK-1	PRESSURIZER	S
8		ELEC. JUNCTION BOXES (FOR CRDM CABLES)	
9		ELEVATOR	
10		PERSONNEL HATCH	
11		EQUIPMENT HATCH	
12		FUEL TRANSFER CANAL	
13	RC-ES-5	UPPER INTERNALS LIFTING RIG (EL 738'-10")	H
14	RC-ES-6	LOWER INTERNALS STORAGE (EL 738'-10")	H
15		CRDM VENTILATION RING DUCT	H
16		CRANE RAIL & GRATING TEMP. STORAGE AREA	

FIGURE: 2A

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 767'-10"



LEGEND

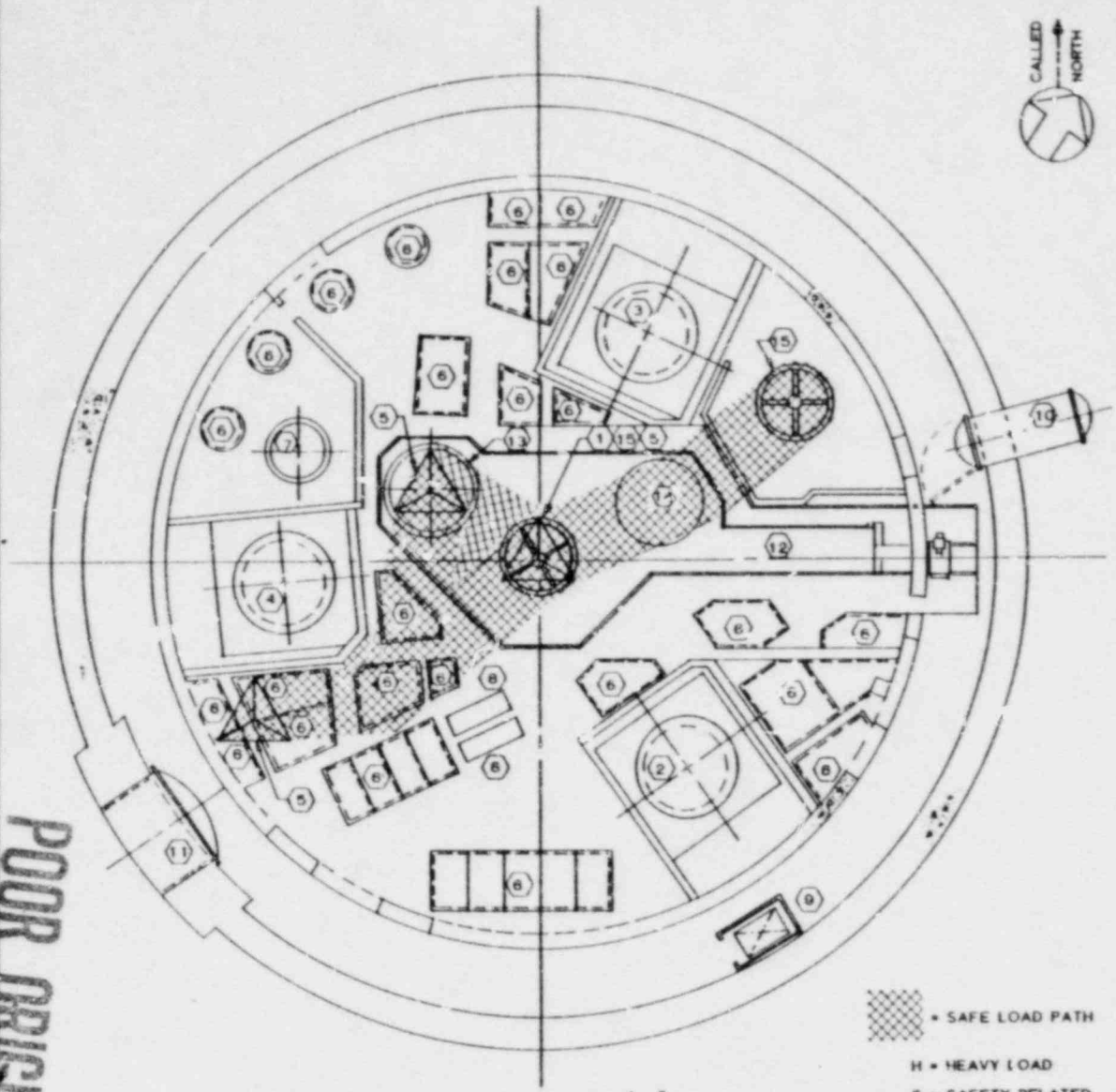
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-E-1A	STEAM GENERATOR	S
3	RC-E-1B	STEAM GENERATOR	S
4	RC-E-1C	STEAM GENERATOR	S
5		CRDM SHIELD	H,S
6		REMOVABLE SLABS	
7	RC-TK-1	PRESSURIZER	S
8		ELEC. JUNCTION BOXES (FOR CRDM CABLES)	
9		ELEVATOR	
10		PERSONNEL HATCH	
11		EQUIPMENT HATCH	
12		FUEL TRANSFER CANAL	
13	RC-ES-5	UPPER INTERNALS LIFTING RIG (EL 738'-10")	H
14	RC-ES-6	LOWER INTERNALS STORAGE (EL 738'-10")	H
15		CRDM VENTILATION RING DUCT	H

FIGURE: 2B

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 767'-10"



LEGEND

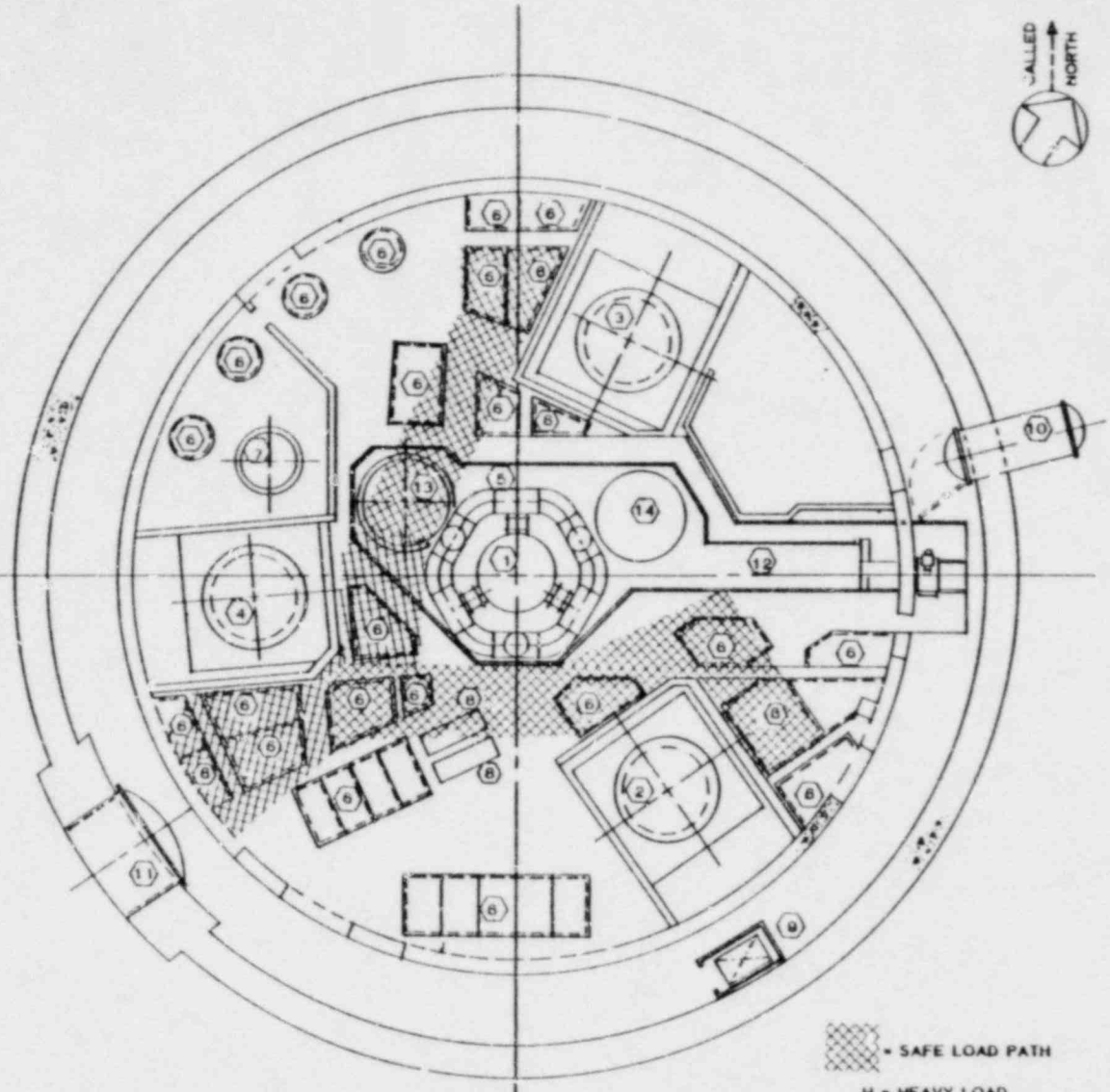
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-E-1A	STEAM GENERATOR	S
3	RC-E-1B	STEAM GENERATOR	S
4	RC-E-1C	STEAM GENERATOR	S
5		INTERNALS LIFTING RIG TRIPOD	H
6		REMOVABLE SLABS	H
7	RC-TK-1	PRESSURIZER	S
8		ELEC. BOXES	
9		ELEVATOR	
10		PERSONNEL HATCH	
11		EQUIPMENT HATCH	
12		FUEL TRANSFER CANAL	
13	RC-ES-5	UPPER INTERNALS LIFTING RIG (EL 738-10")	H
14	RC-ES-6	LOWER INTERNALS STORAGE (EL 738-10")	H
15		STUD TENSIONER HANDLING FRAME	H

FIGURE: 2C

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 767'-10"



LEGEND

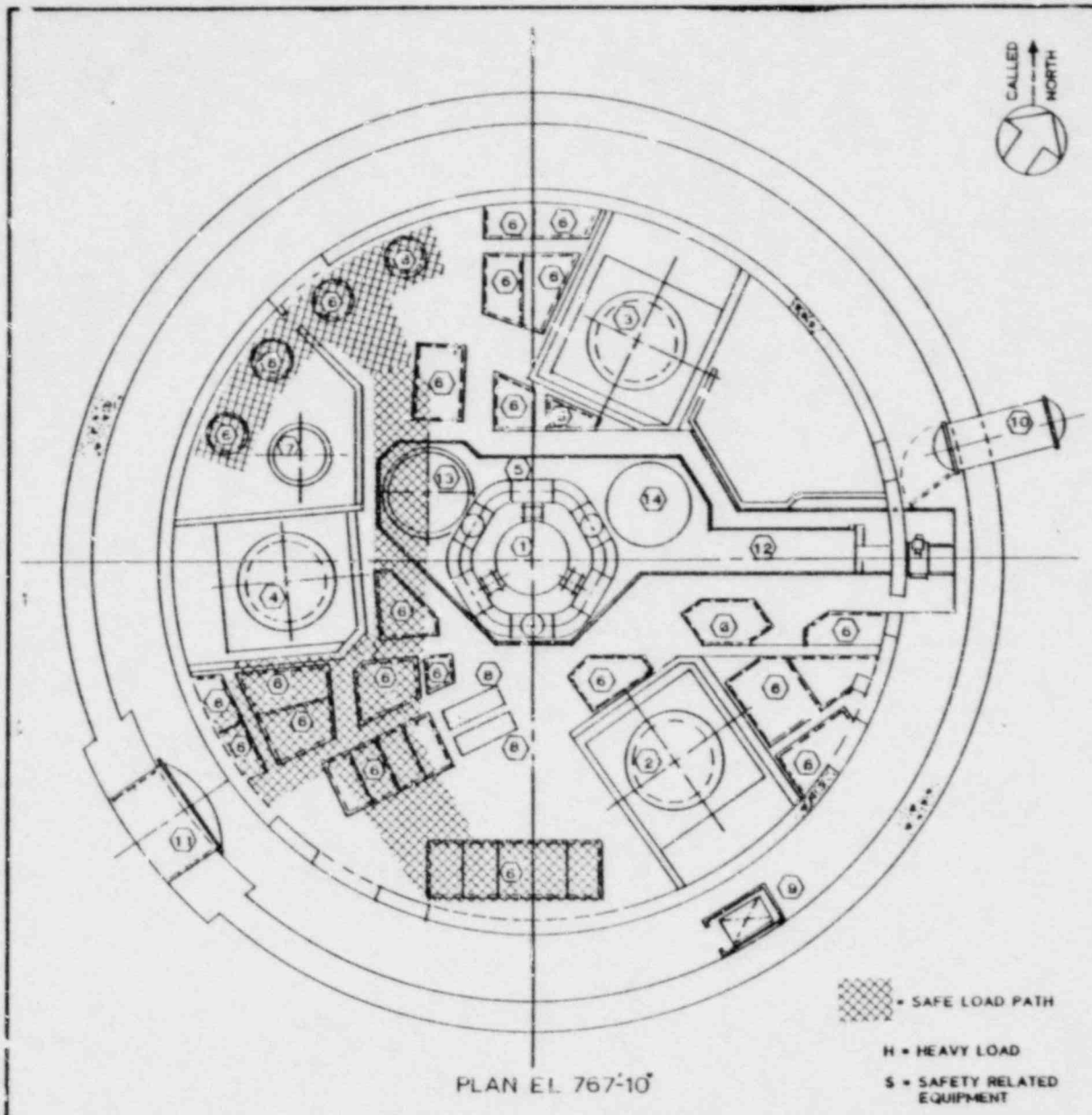
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-E-1A	STEAM GENERATOR	S
3	RC-E-1B	STEAM GENERATOR	S
4	RC-E-1C	STEAM GENERATOR	S
5		CRDM VENTILATION RING DUCT	H
6		REMOVABLE SLABS	H
7	RC-Tk-1	PRESSURIZER	S
8		ELEC BOXES	
9		ELEVATOR	
10		PERSONNEL HATCH	
11		EQUIPMENT HATCH	
12		FUEL TRANSFER CANAL	
13	RC-ES-5	UPPER INTERNALS LIFTING RIG (EL 738-10")	H
14	RC-ES-6	LOWER INTERNALS STORAGE (EL 738-10")	H

FIGURE: 2D

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 767'-10"



LEGEND

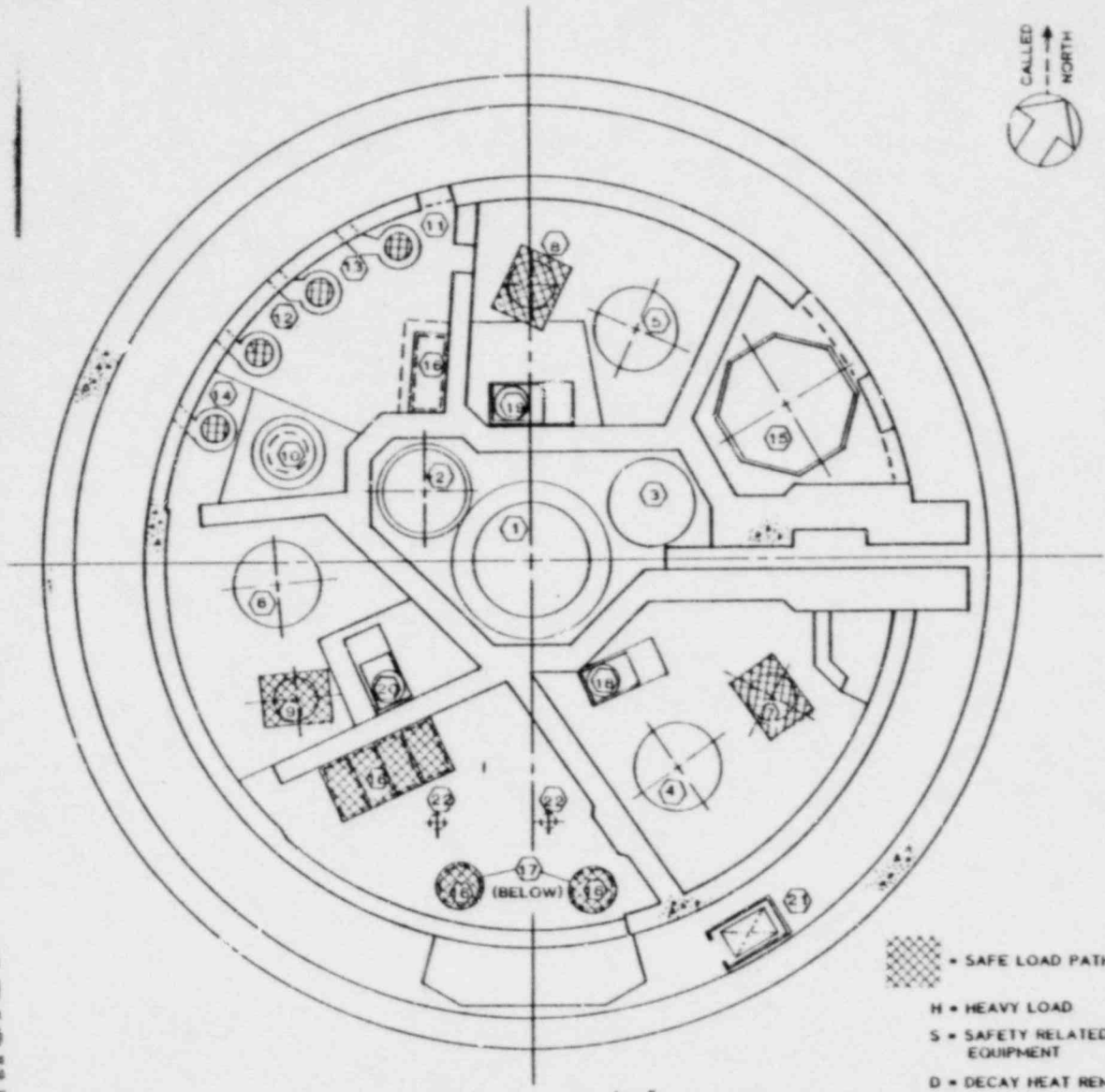
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-E-1A	STEAM GENERATOR	S
3	RC-E-1B	STEAM GENERATOR	S
4	RC-E-1C	STEAM GENERATOR	S
5		CRDM VENTILATION RING DUCT	H
6		REMOVABLE SLABS	H
7	RC-TK-1	PRESSURIZER	S
8		ELEC. BOXES	
9		ELEVATOR	
10		PERSONNEL HATCH	
11		EQUIPMENT HATCH	
12		FUEL TRANSFER CANAL	
13	RC-ES-5	UPPER INTERNALS LIFTING RIG (EL 738'-10")	H
14	RC-ES-6	LOWER INTERNALS STORAGE (EL 738'-10")	H

FIGURE: 2E

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 767'-10"



PLAN EL 738'-10"

LEGEND

NO	EQUIPMENT NO	DESCRIPTION	NOTES
1	RC-R-1	REACTOR	S
2	RC-ES-5	UPPER INTERNALS LIFTING RIG	H
3	RC-ES-6	LOWER INTERNALS STORAGE	H
4	RC-E-1A	STEAM GENERATOR	S
5	RC-E-1B	STEAM GENERATOR	S
6	RC-E-1C	STEAM GENERATOR	S
7	RC-P-1A	REACTOR COOLING PUMP	H,S
8	RC-P-1B	REACTOR COOLING PUMP	H,S
9	RC-P-1C	REACTOR COOLING PUMP	H,S
10	RC-TK-1	PRESSURIZER	S
11	RS-E-1A	CONTAINMENT RECIRC. SPRAY COOLER	H
12	RS-E-1B	CONTAINMENT RECIRC. SPRAY COOLER	H
13	RS-E-1C	CONTAINMENT RECIRC. SPRAY COOLER	H
14	RS-E-1D	CONTAINMENT RECIRC. SPRAY COOLER	H
15	—	REMOVABLE HATCH	
16	—	REMOVABLE SLAB	H
17	RH-E-1A,1B	RESIDUAL HEAT REMOVAL EXCHANGERS	D,H
18	VS-F-2A	VENT FAN	H
19	VS-F-2B	VENT FAN	H
20	VS-F-2C	VENT FAN	H
21	—	ELEVATOR	
22	RH-P-1A,B	RESIDUAL HEAT REMOVAL PUMPS (EL 692'-11")	D

▨ = SAFE LOAD PATH

H = HEAVY LOAD

S = SAFETY RELATED EQUIPMENT

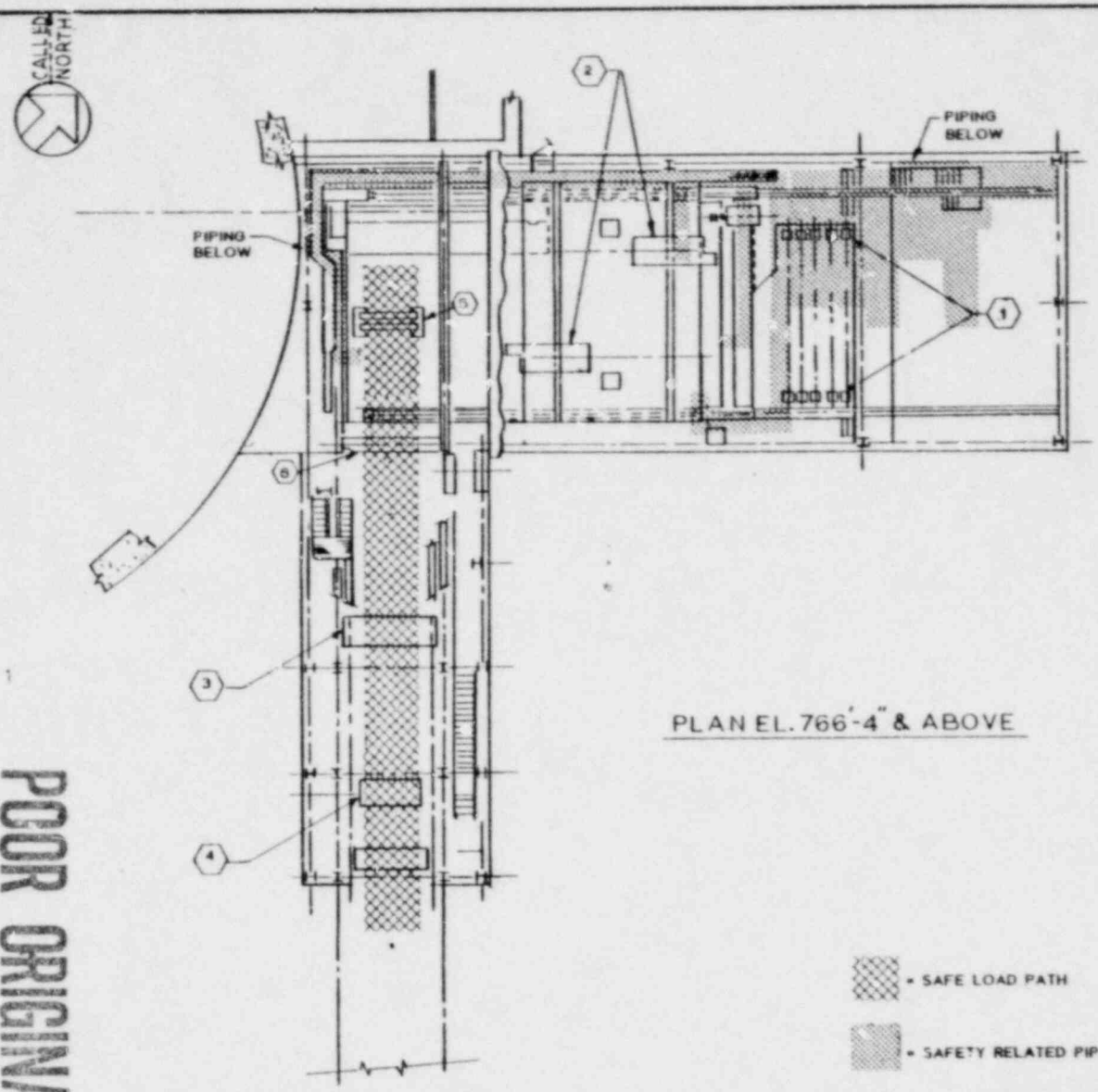
D = DECAY HEAT REMOVAL

FIGURE: 2F

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

CONTAINMENT PLAN EL 738'-10"



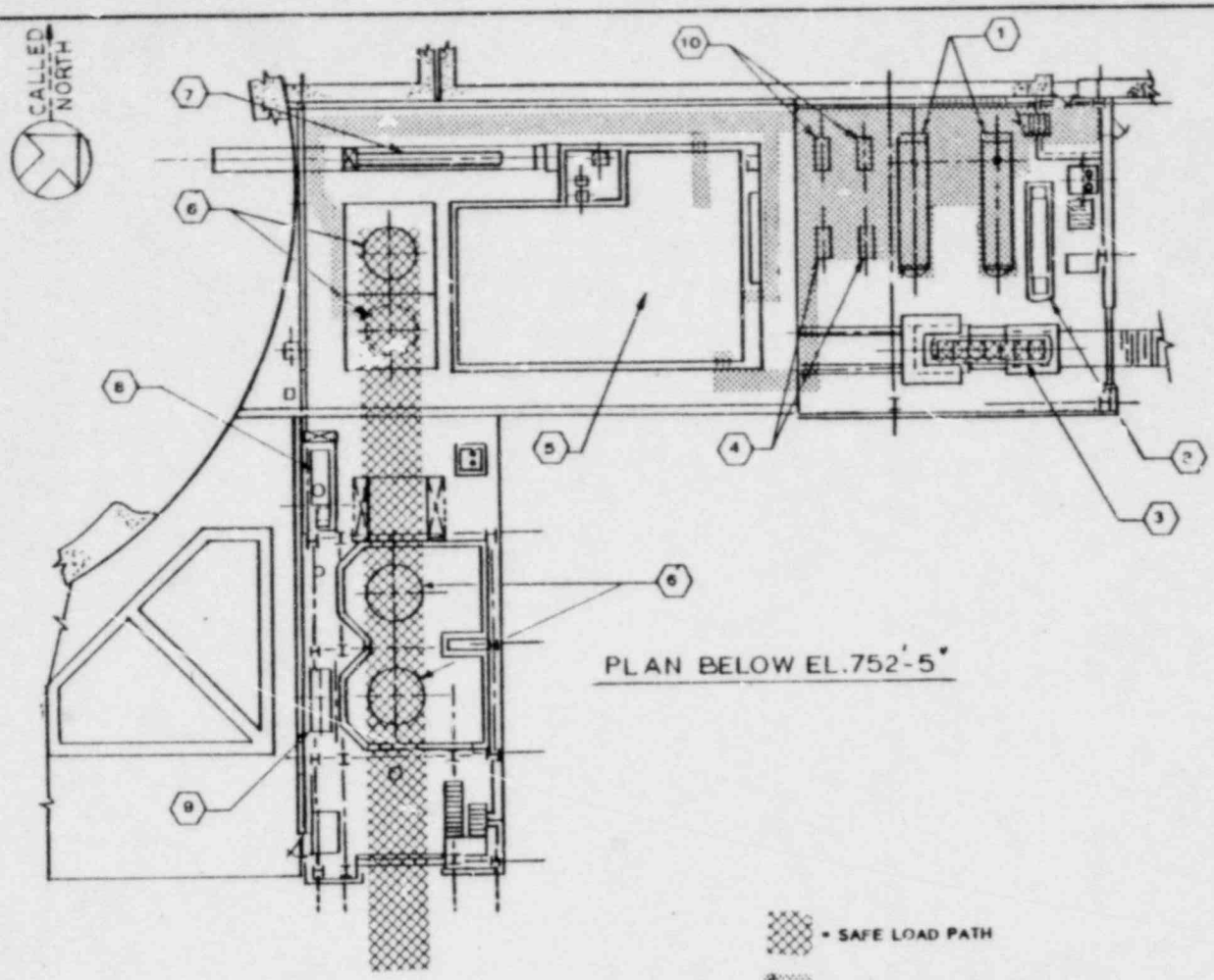
PLAN EL. 766'-4" & ABOVE

LEGEND			
NO	EQUIPMENT NO.	DESCRIPTION	NOTES
1		NEW FUEL STORAGE RACKS	
2	CR-27	MOVABLE PLATFORM AND HOISTS	
3	CR-30	DECON BUILDING CRANE	
4	HS-CUH-19	CENTRIFUGAL FAN UNIT HEATER	
5	CR-15	FUEL CASK CRANE	
6		ROLLING STEEL DOOR	

= SAFE LOAD PATH

= SAFETY RELATED PIPING

FIGURE: 3A
BEAVER VALLEY POWER STATION - UNIT 1
CONTROL OF HEAVY LOADS
FUEL & DECONTAMINATION BUILDING

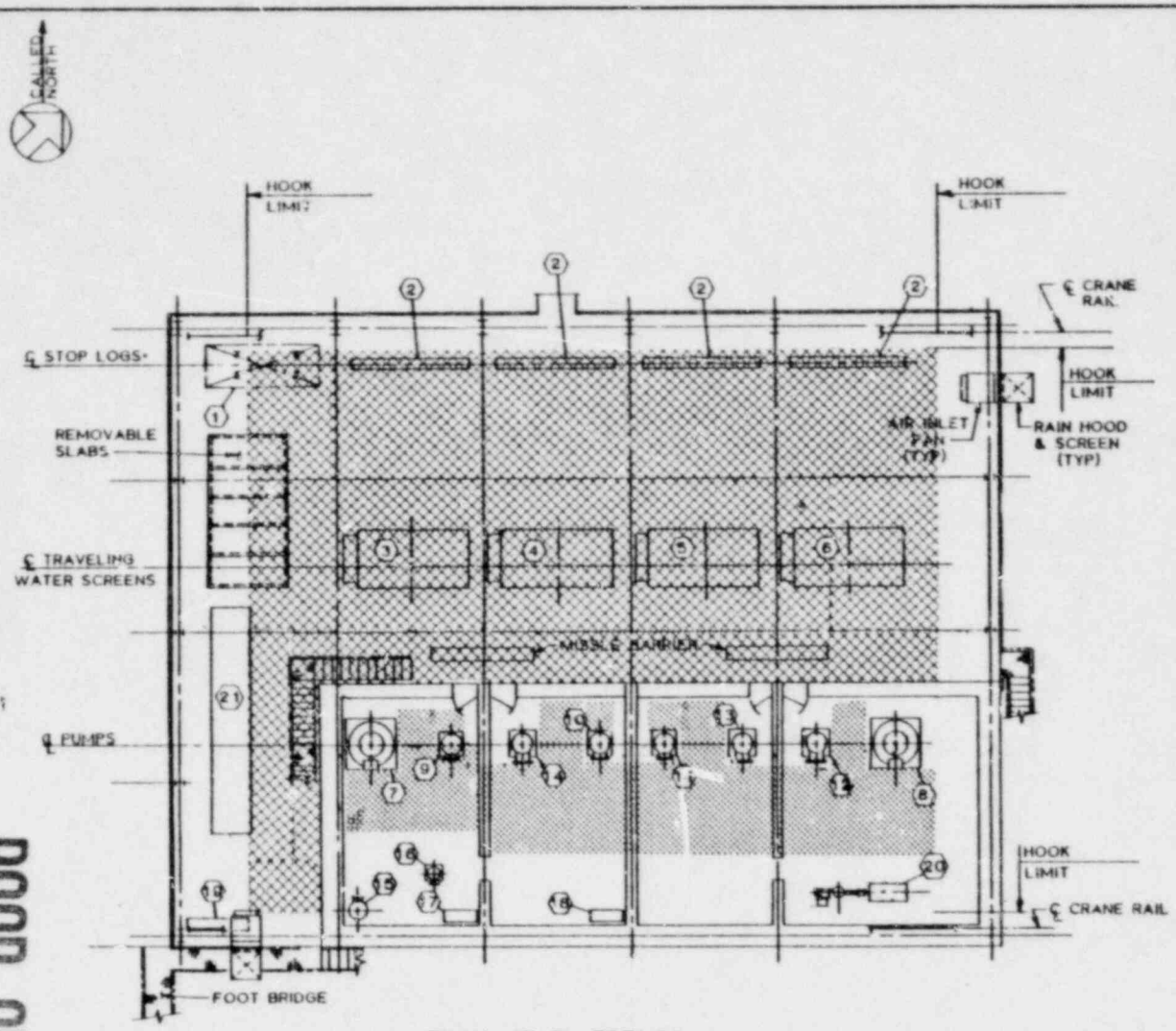


LEGEND

NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	FC-E-1A, 1B	FUEL POOL HEAT EXCHANGERS	S
2		FUEL CONTAINER COVER	
3		NEW FUEL CNTNR & FLAT CAR	H
4	FC-P-1A,1B,	FUEL POOL PUMPS	S
5		SPENT FUEL POOL	
6		SPENT FUEL CASK	H
7		UPENDER	
8		FILTER BANK	
9	DC-TK-1	FLUID WASTE TREATING TANK	
10	FC-P-4A,4B	POOL PURIFICATION PUMPS	

FIGURE: 3B

BEAVER VALLEY POWER STATION-UNIT 1
CONTROL OF HEAVY LOADS
FUEL & DECONTAMINATION BUILDING



PLAN AT EL 705'-0"

LEGEND			
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	———	STOP LOG STORAGE AREA	
2	———	STOP LOGS	H
3	CW-S-1A	TRAVELING SCREEN	H
4	CW-S-1B	TRAVELING SCREEN	H
5	CW-S-1C	TRAVELING SCREEN	H
6	CW-S-1D	TRAVELING SCREEN	H
7	WR-P-6A	RAW WATER PUMP	H
8	WR-P-6B	RAW WATER PUMP	H
9	WR-P-1A	RIVER WATER PUMP	H,S
10	WR-P-1B	RIVER WATER PUMP	H,S
11	WR-P-1C	RIVER WATER PUMP	H,S
12	2SWS-P21A	SERVICE WATER PUMP (UNIT 2)	*H,S
13	2SWS-P21B	SERVICE WATER PUMP (UNIT 2)	*H,S
14	2SWS-P21C	SERVICE WATER PUMP (UNIT 2)	*H,S
15	FP-TK-1	HYDRO-PNEUMATIC TANK	H
16	FP-P-1	ELECTRIC FIRE WATER PUMP	H
17	MCC-1-E1	MOTOR CONTROL CENTER	S
18	MCC-1-E2	MOTOR CONTROL CENTER	S
19	MCC-1-22	MOTOR CONTROL CENTER	
20	FP-P-2	DIESEL ENGINE & PUMP	H
21	1-5	SUB STATION	

▨ = SAFE LOAD PATH

▨ = SAFETY RELATED PIPING

H = HEAVY LOAD

S = SAFETY RELATED EQUIP.

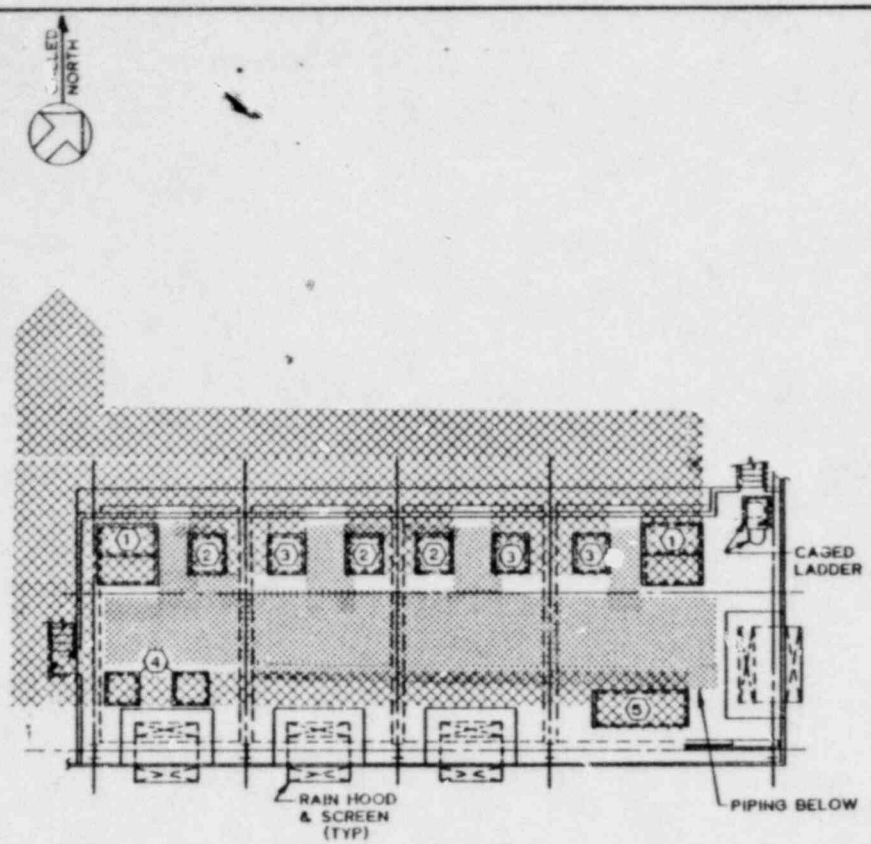
* = NOT INSTALLED AT PRESENT TIME

FIGURE: 4A

BEAVER VALLEY POWER STATION UNIT 1

CONTROL OF HEAVY LOADS

INTAKE STRUCTURE AT EL 705'-0"



PLAN AT EL 730'-0"

LEGEND

NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	—	RAW WATER PUMP REMOVAL HATCH	H
2	—	RIVER WATER PUMP REMOVAL HATCH	H
3	—	SERVICE WATER PUMP REMOVAL HATCH	H
4	—	FIRE PUMP REMOVAL HATCH	H
5	—	DIESEL ENGINE & PUMP REMOVAL HATCH	H

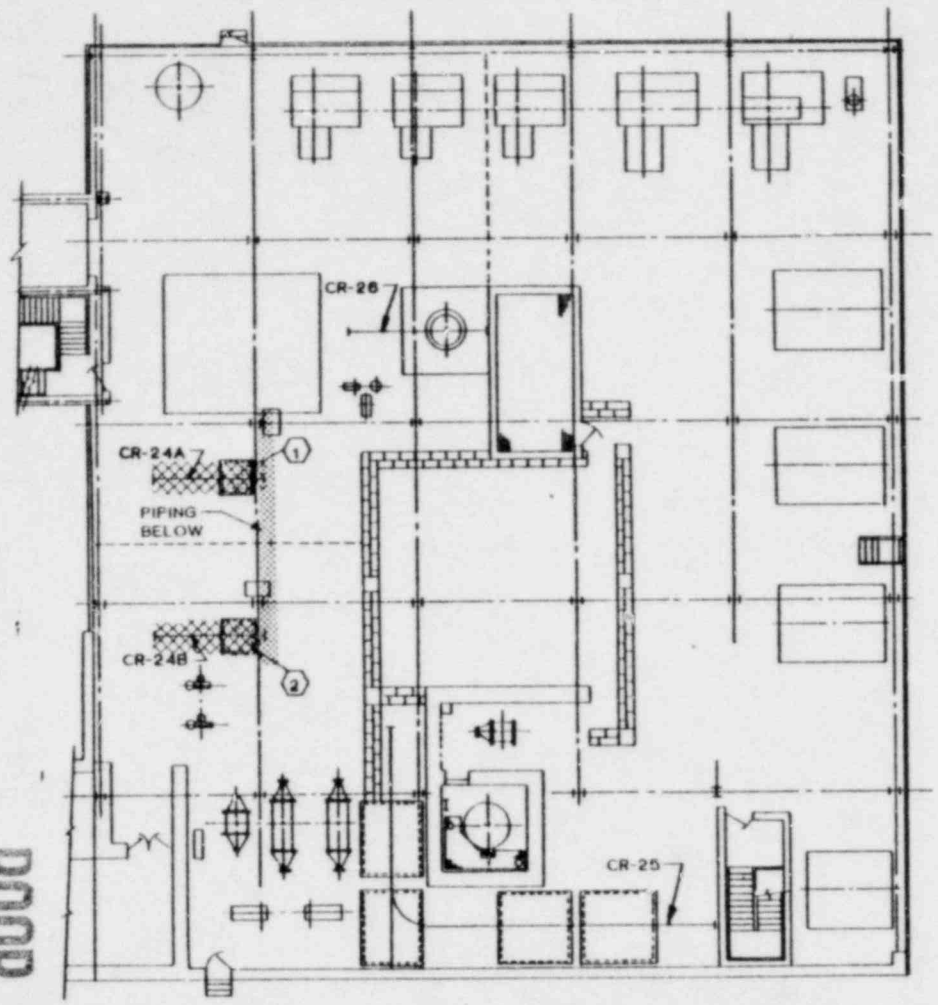
▪SAFE LOAD PATH

▪SAFETY RELATED PIPING

H = HEAVY LOAD

FIGURE: 4B

BEAVER VALLEY POWER STATION UNIT 1
CONTROL OF HEAVY LOADS
INTAKE STRUCTURE AT EL 730'-0"



PLAN EL 768'-7"

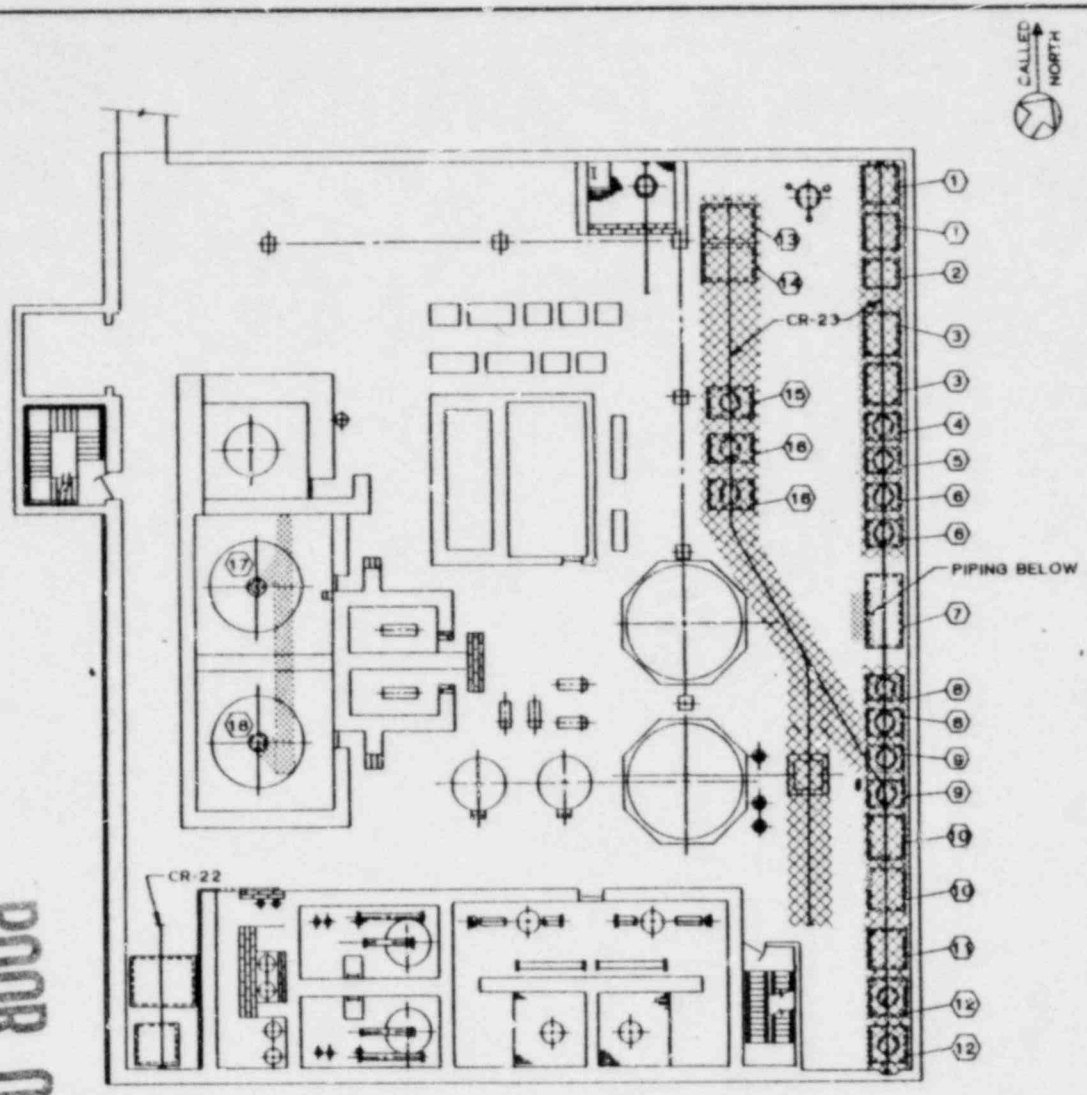
LEGEND			
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	——	REMOVABLE HATCH	H
2	——	REMOVABLE HATCH	H

*SAFE LOAD PATH

*SAFETY RELATED PIPING

H =HEAVY LOAD

FIGURE: 5A
BEAVER VALLEY POWER STATION - UNIT 1
CONTROL OF HEAVY LOADS
AUXILIARY BUILDING EL 768'-7"



PLAN EL. 752'-6"

LEGEND			
NO	EQUIPMENT NO	DESCRIPTION	NOTES
1	———	REMOVABLE HATCH FOR MIXED BED DEMIN.	H
2	———	REMOVABLE HATCH FOR CATION DEMIN.	H
3	———	REMOVABLE HATCH FOR DEBORATING DEMIN.	H
4	———	FLTR. BSKT. REMV. PLUG FOR REAC. COOL FLTR.	H
5	———	FLTR. BSKT. REMV. PLUG FOR SEAL WTR. FLTR.	H
6	———	FLTR. BSKT. REMV. PLUGS FOR SEAL WTR. INS. FLTR.	H
7	———	SHIPPING HATCH	H
8	———	FLTR. BSKT. REMV. PLUGS FOR EVAP. BOT. FLTR.	H
9	———	FLTR. BSKT. REMV. PLUGS FOR COOLANT RCVY. FLTR.	H
10	———	REMOVABLE HATCH FOR CESIUM REM. ION EXCH.	H
11	———	REMOVABLE HATCH FOR FUEL POOL ION EXCH.	H
12	———	FLTR. BSKT. REMV. PLUGS FOR FUEL POOL FLTR.	H
13	———	REMOVABLE HATCH FOR NONREGENRATIVE HEAT EXCH.	H
14	———	REMOVABLE HATCH FOR SEAL WTR. HEAT EXCH.	H
15	———	FLTR. BSKT. REMV. PLUG FOR BORIC ACID FLTR.	H
16	———	FLTR. BSKT. REMV. PLUGS FOR EFFLUENT FLTR.	H
17	CH-TK-1A	BORIC ACID TANK	S
18	CH-TK-1B	BORIC ACID TANK	S

▨ =SAFE LOAD PATH

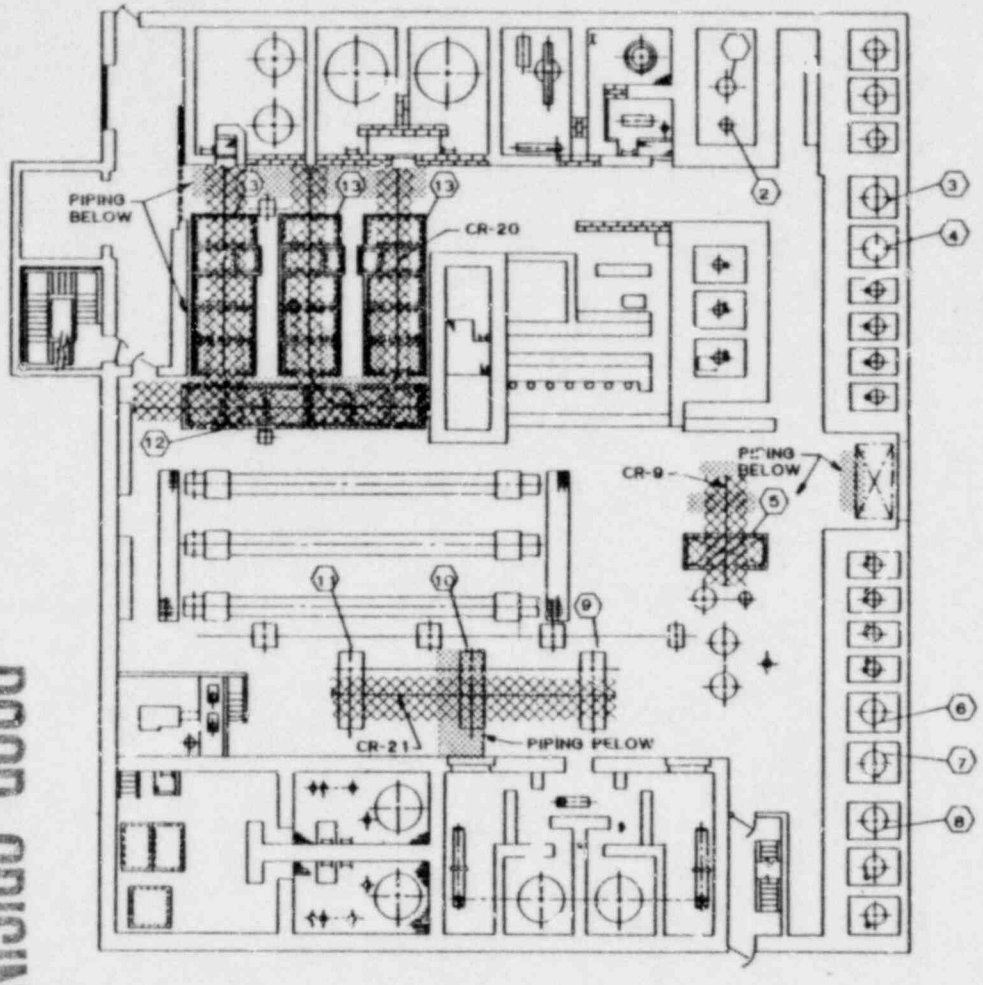
▨ =SAFETY RELATED PIPING

H =HEAVY LOAD

$ =SAFETY RELATED EQUIPMENT

FIGURE: 5B

BEAVER VALLEY POWER STATION - UNIT 1
CONTROL OF HEAVY LOADS
AUXILIARY BUILDING EL 752'-6"



PLAN EL 735'-6"

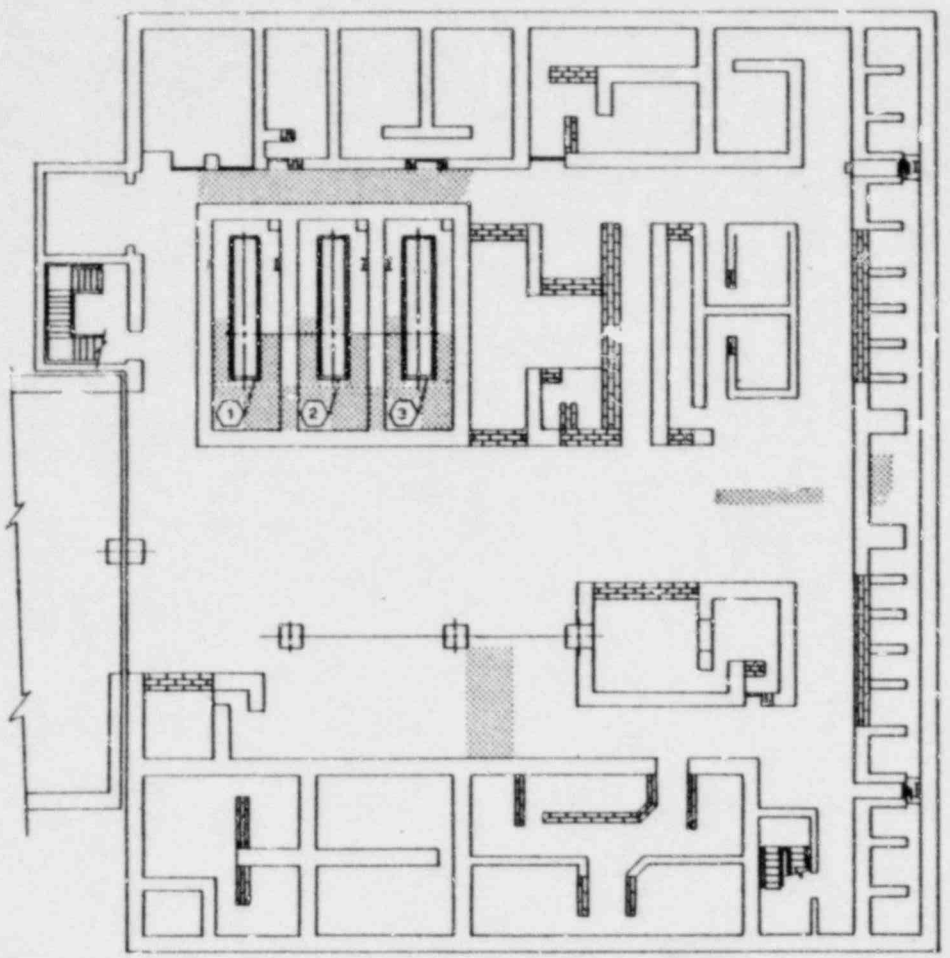
LEGEND			
NO	EQUIPMENT NO	DESCRIPTION	NOTES
1	CH-E-2 (W)	NONREGENERATIVE HEAT EXCH W	H
22	CH-E-1 (W)	SEAL WATER HEAT EXCHANGER W	H
3	CH-I-3A	DEBORATING DEMINERALIZER	—
4	CH-I-3A	DEBORATING DEMINERALIZER	—
5	—	SHIPPING HATCH	—
6	BR-I-1B	CESIUM REMOVAL ION EXCHANGER	H
7	BR-I-1A	CESIUM REMOVAL ION EXCHANGER	H
8	FC-I-1	FUEL POOL ION EXCHANGER	H
9	CC-P-1C	COMPONENT COOLING WATER PUMP	H
10	CC-P-1B	COMPONENT COOLING WATER PUMP	H
11	CC-P-1A	COMPONENT COOLING WATER PUMP	H
12	—	REMOVABLE HATCH	H
13	—	REMOVABLE HATCH FOR CH-P-1A,B,C	H

▨ = SAFE LOAD PATH

▨ = SAFETY RELATED PIPING

H = HEAVY LOAD

FIGURE: 5C
BEAVER VALLEY POWER STATION - UNIT 1
CONTROL OF HEAVY LOADS
AUXILIARY BUILDING EL 735'-6"



PLAN EL 722'-6"

CALLED NORTH

LEGEND			
NO.	EQUIPMENT NO.	DESCRIPTION	NOTES
1	CH-P-1A	CHARGING PUMP	H,S
2	CH-P-1B	CHARGING PUMP	H,S
3	CH-P-1C	CHARGING PUMP	H,S

▨ = SAFE LOAD PATH

▨ = SAFETY RELATED PIPING

H = HEAVY LOAD

S = SAFETY RELATED EQUIPMENT

FIGURE: 5D

BEAVER VALLEY POWER STATION - UNIT 1
CONTROL OF HEAVY LOADS
AUXILIARY BUILDING EL 722'-6"

TABLE 1
HEAVY LOADS

Crane Mark No.	Capacity (Tons)	Heavy Load Identification	Load Weight (Tons)	Lifting Device
CR-1	Bridge-200 Tons Trolley No. 1-130/15 Tons Trolley No. 2-130	Reactor Vessel Head & Attachments	117.3*	Vessel Head Lifting Device
		Reactor Vessel Internals Package	64.8*	Internal Lifting Rig
		Reactor Core Barrel Assembly	124	
		Reactor Coolant Pump - Motor	41.1	RCP-Motor Handling Fixture
		Reactor Vessel Seal Ring- 4 segments (each)	[illegible].5	
		Recirculation Spray Coolers	7.4	
		Recirculation Spray Pump Motor	1.2	
		CRDM Missle Shield	38.6	
		Ventilation Supply Ducting (To CRDM)	3.0	
		Ventilation Ring Duct (To CRDM)	5.0	
		Ventilation Fans	3.1	
		Stud Carriers (Full)	3.8	
		Residual Heat Removal Exchanger	12.5	
		Residual Heat Removal Pump-Motor	1.5	
		Regenerative Heat Exchangers	3.1	
		Polar Cranes-Bottom Block & Hook	5.4	

TABLE I
HEAVY LOADS

Crane Mark No.	Capacity (Tons)	Heavy Load Identification	Load Weight (Tons)	Lifting Device
		R. C. Operating Floor Removable Plugs (20) - Heaviest Plug	14.9	
CR-9	7 1/2 Tons	Has no Specified Loads		
CR-15	125 Tons	Spent Fuel Shipping Cask	21.5	
CR-17	15 Tons	River Water Pumps	6.5	
		River Water Motors	2.7	
		Raw Water Pumps	9.3	
		Raw Water Motors	3.8	
		Elect. Fire Pump	3.0	
		Elect. Fire Pump Motor	2.0	
		Diesel Fire Pump	3.0	
		Diesel Engine	1.9	
		Hydro-Pneumatic Tank	1.2	
		Removable Covers (largest)	4.3	
		Unit 2 Serv. Water Pumps & Motors	13.8	
		Traveling Water Screens (heaviest sect.)	10.4	
		Stoplogs	10	

TABLE 1
HEAVY LOADS

Crane Mark No.	Capacity (Tons)	Heavy Load Identification	Load Weight (Tons)	Lifting Device
CR-19	15 Tons	Has no specified loads		
CR-20	10 Tons	Charging Pumps - Pump	3.8	
		Charging Pumps - Motor	2.0	
		Cubicle Covers (largest)	5	
CR-21	6 Tons	Component Cooling Water Pump	1.5	
		Component Cooling Water Motor	1.7	
CR-23	30 Tons	Seal Water Heat Exchanger	1.1	
		Non Regenerative Heat Exchanger	4.3	
		Deborating Demineralizer	1.0	
		Cesium Removal Ion Exchanger	1.0	
		Fuel Pool Ion Exchanger	1.0	
		Removable Covers (largest)	8.5	
CR-24A 24B	6 Tons Each	Removable Covers	3.0	
CR-27	5 Tons Each	New Fuel Shipping Containment (fully loaded)	2.5	
		Failed Fuel Assy Storage Can (Full)	1.5	

NOTE: Where no lifting device is listed, there is no specific lifting device for this item.

* Indicates Lifting Device weight included