

DOCKET NO. 50-263 NSPC...MONTICELLO

CONTROL OF HEAVY LOADS NRC GENERIC LTR 81-07

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RECORDS FACILITY BRANCH

CONTROL OF HEAVY LOADS

NRC GENERIC LETTER 81-07

NORTHERN STATES POWER COMPANY

MONTECELLO NUCLEAR GENERATING PLANT

SEPTEMBER 30, 1981

RESPONSE TO REQUEST FOR  
INFORMATION IN SECTION 2.1  
GENERIC LETTER 81-07

Item 1 (NRC Question 2.1.1)

Report the results of your review of plant arrangements to identify all overhead handling system 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

A survey of the Monticello Plant was performed to identify the overhead handling systems that fall in the category referred to in Question 2.1.1. These handling systems are listed below:

<u>Location</u>	<u>Handling System</u>	<u>Capacity Main/Auxiliary</u>	<u>ID No.*</u>
Turbine Building	Turbine Building Crane	125/5	1
Reactor Buidling	Reactor Building Crane	85/5	2

Item 2 (NRC Question 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

Table 1 lists the overhead handling systems which have been excluded from further consideration because of capacity or physical separation from any system or component required for plant shutdown or decay heat removal. In addition the following handling systems have been eliminated from consideration for the following reasons.

1. Reactor Recirc Pumps Monorail Motor Hoist (Capacity 32,000 lbs) ID No. 6

The function of this load handling device is to assist in the assembly & disassembly of the Reactor Recirculation Pumps during plant shutdown. This device is located in the drywell. The items handled by this handling device would typically consist of the Rx Recirc Pump Drive Motor and the individual parts of the Rx Recirc Pump as it is disassembled. The potential impact item of concern is the applicable loop of of the Rx Recirc System. It is possible, but highly unlikely, that dropping the Rx Recirc drive motor could rupture the recirc system piping of the loop being repaired. When this device is used to disassemble a Rx

\* Identification number (ID No) used to identify overhead handling systems in attached tables and figures.

Recirc Pump the applicable pump will be isolated. It is physically impossible to drop this heavy load and disable both Rx Recirc loops. Therefore this load handling device is eliminated because of system redundancy.

2. MSRV Drywell Monorail (Capacity 10,000 lbs) ID No. 14

The function of this load handling device is to assist in moving equipment, tools and other components from the 935' elevation in the drywell to the 948' elevation when the Rx is in a shutdown condition. Equipment typically handled by this device consists of, Main Steam Safety Relief valves, 1000 lbs, Motor Operated Valve Components 1000 lbs and tools. In the past it has been used to lift piping and other materials used for modification projects. If a heavy load were dropped it is possible for the heavy load to impact on the A Rx Recirc loop piping and/or the A RHR injection header, the RHR shutdown cooling suction header or the B Rx Recirc loop piping and/or the B RHR loop injection header. It is not physically possible to damage both the A Rx Recirc loop & A RHR injection header and the B Rx Recirc loop & B RHR injection header. If the RHR suction header were damaged an alternate shutdown cooling suction would be available through the steam line, safety relief valve and the torus. Therefore this load handling device is eliminated because of system redundancy.

3. Torus Monorail (Capacity 10,000 lbs) ID No. 15

The function of this device is to assist in maintenance activities in the torus. Loads typically handled by this device would consist of, torus to drywell vacuum breaker valves, tools and other miscellaneous equipment. In the past this device has been used to handle piping and structural materials used to make modifications in the torus. This load handling device is only used when the reactor is in a cold shutdown condition and if loads were handled that were 1000 lbs the torus would typically be drained. No component or system required for plant shutdown or decay heat removal would be affected by a load drop at that time.

4. HPCI Turbine Monorail (Capacity 8,000 lbs) ID No. 17

The function of this load handling device is to assist in the assembly and disassembly of the HPCI turbine. This device would only be used when the HPCI system is not required to be operable per plant technical specifications. Any load handled by this load handling device could not impact on the redundant system to the HPCI system. The RCIC system would be available to makeup water to the Rx. Therefore this load handling device has been eliminated because of system redundancy.

5. Torus Access Hatch Hoist & Lifting Lug (Capacity 4,000 lbs) ID No. 28

The function of this load handling device is to assist in torus maintenance activities. This device is typically used to move tools, equipment and other components into and out of the torus in support of maintenance activities. In addition it may be used in maintenance activities on motor operated valves for other systems that are located in the area above the torus. A typical load would consist of tools, motor operated valve parts, torus to drywell vacuum breaker valves and other miscellaneous loads within the capacity of the lifting device. It is very unlikely that a load drop from this

device would damage the torus to the point that the water in the torus would be lost. Typically heavy loads would only be handled by this device for torus modification when primary containment is not required and the torus is drained. No other component or system required for plant shutdown or decay heat removal is located in the area of this device.

6. Chlorine Container Monorail and Cylinder Grab (Capacity 4,000 lbs) ID No. 31

The function of this load handling device is to handle cylinders containing liquid chlorine. These containers of liquid chlorine are handled at various intervals depending on the volume used in the plant. It is very unlikely that dropping of one of these chlorine containers would penetrate the floor of the chlorine storage room or that any spalling of the concrete could damage the B RHR-SW loop piping that is located in the area. In the unlikely event that the B RHR-SW loop were disabled the load drop would not damage the redundant A RHR-SW loop. Therefore load handling system has been eliminated because of system redundancy.

7. Radwaste and Fuel Pool Shield Blocks Monorail (Capacity 10,000 lbs) ID No. 36

The function of this load handling device is the removal of shield blocks and the assembly and disassembly of the following components: Fuel Pool Filters (2), Radwaste Floor Drain Filter, Radwaste Equipment Drain Filter and the Radwaste Deep Bed Demineralizer. It is very unlikely that dropping one of the shield plugs would cause the load to penetrate the floors (3) separating the shield plugs from the B Loop RHR & Core Spray systems and render these systems inoperable. In the unlikely event that this were to occur it would not disable the redundant A RHR & Core Spray loops that are located in a separate room. Therefore this load handling device has been eliminated because of system redundancy

8. "A" Turbine Floor Portable A-Frame & Monorail (Capacity 10,000 lbs) ID No. 44

The function of this load handling device is to assist in the assembly & disassembly of the turbine generator. This device is normally used to assemble and disassemble the turbine governor, bypass valves and the stop and control valves. No systems required for safe shutdown or decay heat removal are located below this load handling device during normal use.

9. Reactor Building Floor Drain/Equipment Drain Hatch Lifting Device (Capacity 8,000 lbs) ID No. 45

The function of this load handling device is to remove the shield block above the Rx Building Floor Drain & Equipment Drain Tanks. This device is also used for maintenance activities associated with sump pumps located in these drain tanks. This device is also used to move equipment, tools and other components into and out of the torus area via this tank room. Loads handled by this device could impact on system components associated with the HPCI system, however, the RCIC system would be available to perform as a backup to the HPCI system. Therefore this load handling device has been eliminated from consideration because of system redundancy.

10. RCIC Pump Room Access Hatch Monorail (Capacity 7,800 lbs) ID No. 53

The function of this load handling device is to remove the shield block above the RCIC system steam driven pump and to assist in the assembly, disassembly and the removal of various system components located in the room. This device would not be used to remove the shield plug and disassemble the pump unless the system was not required to be operable per the plant technical specification. If the shield plug were to be dropped and disable the RCIC system it would not disable the alternate method of water makeup to the Rx at rated pressure. The HPCI system can perform this task. Therefore this load handling device has been eliminated because of system redundancy.

11. A RHR Pump Room Access Hatch Lifting Lugs (4) (Capacity 7,500 lbs ea.) Id No. 54

The function of these load handling devices is to provide an attachment for portable lifting devices for the removal of the A RHR Room Shield Plug. This load handling device could also be used to assist in the assembly and disassembly of either the A & C RHR Pumps or the A Core Spray Pump which is also located in this room. Maintenance would not be performed on these pumps unless plant technical specifications permitted. In the event of a heavy load drop in this area that would disable the RHR Pumps and/or the Core Spray Pump located in the room, two redundant RHR Pumps and a redundant Core Spray Pump located in a separate room would not be affected and are capable of performing their functions in the shutdown of the plant and subsequent decay heat removal. Therefore this load handling device is eliminated because of system redundancy.

12. B RHR Pump Room Access Hatch Lifting Lugs (4) (Capacity 7,500 lbs ea.) ID No. 55

The function of these load handling devices is to provide an attachment for portable lifting devices for the removal of the B RHR Room Shield Plugs. This load handling device could also be used to assist in the assembly and disassembly of either the B & D RHR Pumps or the B Core Spray pump which is also located in this room. Maintenance would not be performed on these pumps unless plant technical specifications permitted. In the event of a heavy load drop in this area that would disable the RHR Pumps and/or the Core Spray Pump located in this room, two redundant RHR Pumps and a redundant Core Spray Pump located in a separate room would not be affected and are capable of performing their functions in the shutdown of the plant and subsequent decay heat removal. Therefore this load handling device is eliminated because of system redundancy.

13. B Turbine Building Portable A-Frame & Monorail (Capacity 10,000 lbs) ID No. 61

The function of this load handling device is to assist in the assembly & disassembly of the turbine generator. This device is normally used to assemble and disassemble the turbine governor, bypass valves and the stop and control valves. No systems or components required for safe shutdown or decay heat removal are located below this device during normal use.

14. Drott Mobile Crane (Capacity 6,800 lbs) ID No. 62

The function of this load handling device is to assist in moving equipment that is too heavy or awkward to handle by other methods. This device can only be used in a very limited area of the Reactor Building and in the railroad access area of the turbine building. It would be possible to transport a heavy load over the floor above the A & C RHR pumps and the A Core Spray pump or the B & D RHR and B Core Spray pumps. It is not normally used to assist in the assembly and disassembly of these system components. It would not normally be transporting a heavy load in these areas with the shield blocks removed. If it did transport a heavy load in this area it would be physically impossible to drop the load and disable both loops of these systems. The redundant loop to the disabled system would be available to perform its function in plant shutdown and decay heat removal. Therefore this load handling device has been eliminated because of system redundancy.

Item 3 (NRC Question 2.1.3)

With respect to the design and operation of heavy load handling systems in the reactor building and those load handling systems identified in the response to Question 1 above, provide your evaluation concerning compliance with the guidelines of NUREG 0612, Section 5.1.1. The following specific information should be included in the reply:

Sub Question 2.1.3a

Drawings or sketches sufficient to clearly identify the locations of safe load paths, spent fuel and safe shutdown equipment.

Response

Drawings are attached that show the location of the Reactor Core, the Spent Fuel Pool, Safe Shutdown equipment, and Safe Load path.

Sub Question 2.1.3b

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

Response

Procedures are used to control the handling of loads by the Reactor Building Crane and the Turbine Building Crane. These procedures define the path of movement that are to be followed for each load handled by these cranes. As a part of the interim work for the control of heavy loads, (enclosure 2 of Nuclear Regulatory Commission letter dated 22 December 1980), these procedures were reviewed and revised, as necessary, to ensure that the load paths defined in the procedure were safe load paths. These procedures permit controlled deviations from the specified safe load path.

Sub Question 2.1.3c

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 loads are governed by a written procedure containing, as a minimum, the information identified in NUREG 0612, Section 5.1.1(2).

Response

See Table II.

Procedures were prepared and or revised to meet the requirements of NUREG 0612 Section 5.1.1(2) as part of the interim actions for the control of heavy loads, (Nuclear Regulatory Commission letter dated 22 December 1980).

Sub Question 2.1.3d

Verification that the lifting devices identified in the response to Question 2.1.3c 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

a. Slings ANSI B30.9-1971

The slings used with the Reactor and Turbine Building Cranes for handling heavy loads comply with the design and inspection requirements of ANSI B30.9-1971. The slings have a minimum factor of safety of five (5) and the rated capacity of the slings used for handling heavy loads shall be taken as those listed in tables 3 through 14 of ANSI B30.9. Inspection of these lifting devices will be performed as required by ANSI B30.9-1971, per annual Hoisting Equipment and Rigging Inspection, Preventative Maintenance procedure.

b. Special Lifting Devices ANSI N14.6-1978

The special lifting devices identified in Table II were manufactured as specific tools to be used to handle a specific load. These devices were manufactured prior to the existence of ANSI N14.6-1978. These special lifting devices are not used to handle loads other than the load they were designed to transport. These devices are inspected prior to each use. They have been used to transport the load they were designed to handle many times with no signs of design deficiencies. Inspection of these lifting devices will be performed per ANSI N14.6-1978 sections 5 & 6 Special Lifting Devices for Critical Loads. A procedure will be developed to cover the inspections of special lifting devices that satisfy the requirements of ANSI N14.6-1978. Preparation of this procedure will begin without waiting on staff review so that implementation can occur within 2 years of information requested in section 2.4 of enclosure 3 of Nuclear Regulatory Commission letter dated 22 December 1980.

Sub Question 2.1.3e

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

Procedures for inspection, testing and maintenance of the cranes were reviewed and revised as appropriate as part of the Interim Actions for Control of Heavy Loads, Enclosure 2 of Nuclear Regulatory letter dated 22 December 1980, to comply with the standards of ANSI B30.2-1976, Chapter 2-2. No exception to the standards is taken.

Sub Question 2.1.3f

Verification that crane design complies with the guidelines 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 compliances with these standards is not provided.

Response

These guideline requirements apply to overhead and gantry type, top running, multiple girder, electric, traveling cranes. The reactor building and turbine building cranes were both manufactured prior to the issuance of these guidelines. The respective code committees have been requested to review the adequacy of the earlier codes. A response is expected by November 1981. The NRC Staff will be informed of the results of this review. The reactor building crane has been modified to provide redundant lifting features for Monticello based on Regulatory Guide 1.13. The modification takes into consideration the ANSI B30.2, CMAA Specification 70 requirements and Regulatory Guide 1.104 (subsequently withdrawn). The modifications made were found acceptable with provisions by the NRC as described in the NRC letter of May 19, 1977.

Sub Question 2.1.3g

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

Response

Operator training, qualification and conduct was reviewed as part of the interim actions for the control of heavy loads, Enclosure 2 of Nuclear Regulatory letter dated 22 December 1980. No exception is taken to ANSI B30.2-1976 in this respect.

Attachments:

Table I & II  
Figures 1-34

Table I

List of Overhead Load Handling Devices Not Considered  
Because of Physical Separation or Capacity

<u>Location</u>	<u>Handling Device</u>	<u>Capacity*</u>	<u>ID No.</u>
Rx Building	Refueling Facilities Channel Handling Jib Boom	50 lbs	3
RX Building	Refueling Facilities Motor Drive Jib Crane A	1500 lbs	4
RX Building	Refueling Facilities Motor Drive Jib Crane B	1500 lbs	5
RX Building	Channel Handling Overhead Rigging	50 lbs	7
R.W. Building	Radwaste Conveyor Load-Out Monorail	12000 lbs	8
R.W. Building	Radwaste Centrifuge Hoist A	4000 lbs	9
R.W Building	Radwaste Centrifuge Hoist B	4000 lbs	10
R.W. Building	Radwaste Building Monorail	6000 lbs	11
O.G. Stack	Off Gas Stack Monorail	6000 lbs	12
R.W. Building	Radwaste Building Sump Monorail	6000 lbs	13
Turbine Building	C Turbine Building Portable A Frame Monorail C	1500 lbs	16
Drywell	MSIV Area Lifting Lug	1000 lbs	18

\* A Heavy Load has been defined (per NUREG 0612) as, any load carried in a given area after a plant becomes operational, that weighs more than the combined weight of a single spent fuel assembly and its associated handling tool for the specific plant in question. At Monticello Nuclear Plant this weight has been conservatively calculated to be 1500 lbs.

<u>Location</u>	<u>Handling Device</u>	<u>Capacity</u>	<u>I.D. No.</u>
Drywell	MSIV Area Lifting Lug	1000 lbs	19
Steam Chase	MSIV Area Monorail	6000 lbs	20
Steam Chase	MSIV Area Monorail	6000 lbs	21
D.G. Building	Diesel Generator A Monorail, A & B Lifting Lugs	470 lbs	22
D.G. Building	Diesel Generator B Monorail, A & B Lifting Lugs	470 lbs	23
Turbine Building	Electric Breakers Bridge Hoist Room A	1000 lbs	24
Turbine Building	Electric Breakers Bridge Hoist Room B	1000 lbs	25
R.W. Building	Radwaste Storage Bridge Crane	20000 lbs	26
Hot Machine Shop	Hot Machine Shop Monorail	4000 lbs	27
H <sub>2</sub> Storage Building	CO <sub>2</sub> & H <sub>2</sub> Monorail	4000 lbs	29
Intake Structure	Screen House Bridge Crane	10000 lbs	30
Intake Structure	Trash Basket Jib Crane	4000 lbs	32
Turbine Building	Tube Pulling Pit Monorail & Lifting Lug	2000 lbs	33
R.W. Building	Radwaste Capping Station Monorail	1000 lbs	34
Rx Building	RWCU Filter Shield Block Monorail	10000 lbs	35
Turbine Building	Condensate Drain Holding Pump A Hatch Monorail	6400 lbs	37
Turbine Building	Condensate Drain Holding Pump B Hatch Monorail	6400 lbs	38
Turbine Building	Condensate Drain Holding Pump C Hatch Monorail	6400 lbs	39

<u>Location</u>	<u>Handling Device</u>	<u>Capacity</u>	<u>I.D. No.</u>
Turbine Building	Condensate Drain Holding Pump D Hatch Monorail	6400 lbs	40
Turbine Building	Condensate Drain Holding Pump E Hatch Monorail	6400 lbs	41
R.W. Storage Bldg	New Shipping Building Crane	20000 lbs	42
Rx Building	Rx Refueling Platform Handling Device	1000 lbs	43
Rx Building	Reactor Vessel Service Platform	1500 lbs	46
R.W. Building	Radwaste Devices Entrance Monorail	2000 lbs	47
R.W. Building	Hot Machine Shop Jib Crane and Lifting Lug	2000 lbs	48
O.G. Storage Bldg	Off Gas Storage Building Jib Crane	15000 lbs	49
O.G. Storage Bldg	Off Gas Storage Building Monorails	1000 lbs	50
Rx Building	CRD Rebuild Area Monorail	1000 lbs	51
Rx Building	Drywell Equipment Hatch Monorail & Lifting Device	3000 lbs	52
Rx Building	Low Level Contamination Work Area Monorail	1000 lbs	56
Rx Building	Rx Building Closed Cooling Water Heat Exchange Lifting Lugs	6000 lbs	57
Turbine Building	Rx Feedwater Pump A Monorail	2000 lbs	58
Turbine Building	Rx Feedwater Pump B Monorail	2000 lbs	59
Turbine Building	Miscellaneous Lifting Lugs	6000 lbs	60

Table II

Heavy Loads Handled by the Reactor & Turbine Building Crane

<u>Crane</u>	<u>Load</u>	<u>Weight</u>	<u>Lifting Device</u>	<u>Procedure</u>
Turbine Bldg	Turbine H.P. Hood	108,420 lbs	Slings	Yes
	Turbine L.P. Hood A	60,515 lbs	Slings	Yes
	Turbine L.P. Hood B	60,515 lbs	Slings	Yes
	L.P. Inner Closing A	103,280 lbs	Slings	Yes
	L.P. Inner Closing B	103,280 lbs	Slings	Yes
	L.P. Rotor A & B	226,000 lbs	Strongback & Slings	Yes
	H.P. Rotor	82,583 lbs	Strongback & Slings	Yes
	L.P. Turbine Diaphragms	9000-12000 lbs	Slings	Yes
	L.P. Turbine Diaphragms	12000-18000 lbs	Slings	Yes
	Bypass Valves Shield Block	2,700 lbs	Slings	Yes
	Generator Rotor	281,832 lbs	Slings	Yes
	Generator Endbells	12,000 lbs	Slings	Yes
	Exciter Hood	22,000 lbs	Slings	Yes
	Exciter Rotor	35,000 lbs	Slings	Yes
	R.F.P. Motor	35,000 lbs	Slings	Yes
	Condensate Pump Shield Block	10,800 lbs	Slings	Yes
	Condensate Pump	18,600 lbs	Slings	Yes
	Condensate Pump Motor	12,900 lbs	Slings	Yes
	HIP Heaters	45,100 lbs	Slings	Yes
	HP Heaters	46,900 lbs	Slings	Yes
	Turbine Gen Bearing Diaphragms	5,580 lbs	Slings	Yes
	Palets & Miscellaneous Material	2,000 lbs	Palet Lifting Device	Yes
	Turbine Rotor Stands	22,400 lbs	Slings	Yes

<u>Crane</u>	<u>Load</u>	<u>Weight</u>	<u>Lifting Device</u>	<u>Procedure</u>
Rx Building	Vessel Service Platform	6,000 lbs	Slings	Yes
	Stud Detentioner Carousel	20,000 lbs	RPV Head Strongback	Yes
	Fuel Pool Shield Blocks (3)	10,000 lbs	Slings	Yes
	RPV Head	90,000 lbs	RPV Head Strongback	Yes
	Drywell Head	80,000 lbs	DW Head Strongback	Yes
	Fuel Pool Skimmer Tank Shield Blocks (3)	6,000 lbs	Slings	No*
	Steam Separator	66,000 lbs	Dryer Separator Strongback & Slings	Yes
	Steam Dryer	44,000 lbs	Dryer Separator Strongback & Slings	Yes
	Rx Head Insulation	9,000 lbs	Slings	Yes
	Refueling Canal Shield	30,000 lbs	Slings	Yes
	Spent Fuel Shipping Cask	49,464 lbs	Special Device	No*
	New Fuel Storage Shield Block (3)	5,000 lbs	Slings	No*
	GE Model 1600 Cask	25,950 lbs	Special Device	Yes
	Equip Storage Pool Shield Block (3)	87,000 lbs	Slings	Yes
	Rx Gavity Shield Block (6)	100,000 lbs	Slings	Yes
	Fuel Pool Shield Blocks	10,000 lbs	Slings	Yes
	New Fuel Shipping Container	2,000 lbs	Slings	Yes
	Drywell Radiation Shield	30,000 lbs	Slings	Yes
	RPV Head Piping	2,000 lbs	Slings	Yes
	Fuel Preparation Machine	10,000 lbs	Slings	Yes
	RPV In vessel Work Platform	100,000 lbs	Slings	No*

\* Procedures will be written prior to the handling of these heavy loads.

FIGURES

FIG. 1  
 Designated Safe Load Path for  
 GE Model 1600 Cask  
 Procedure 8111 Rev. 1

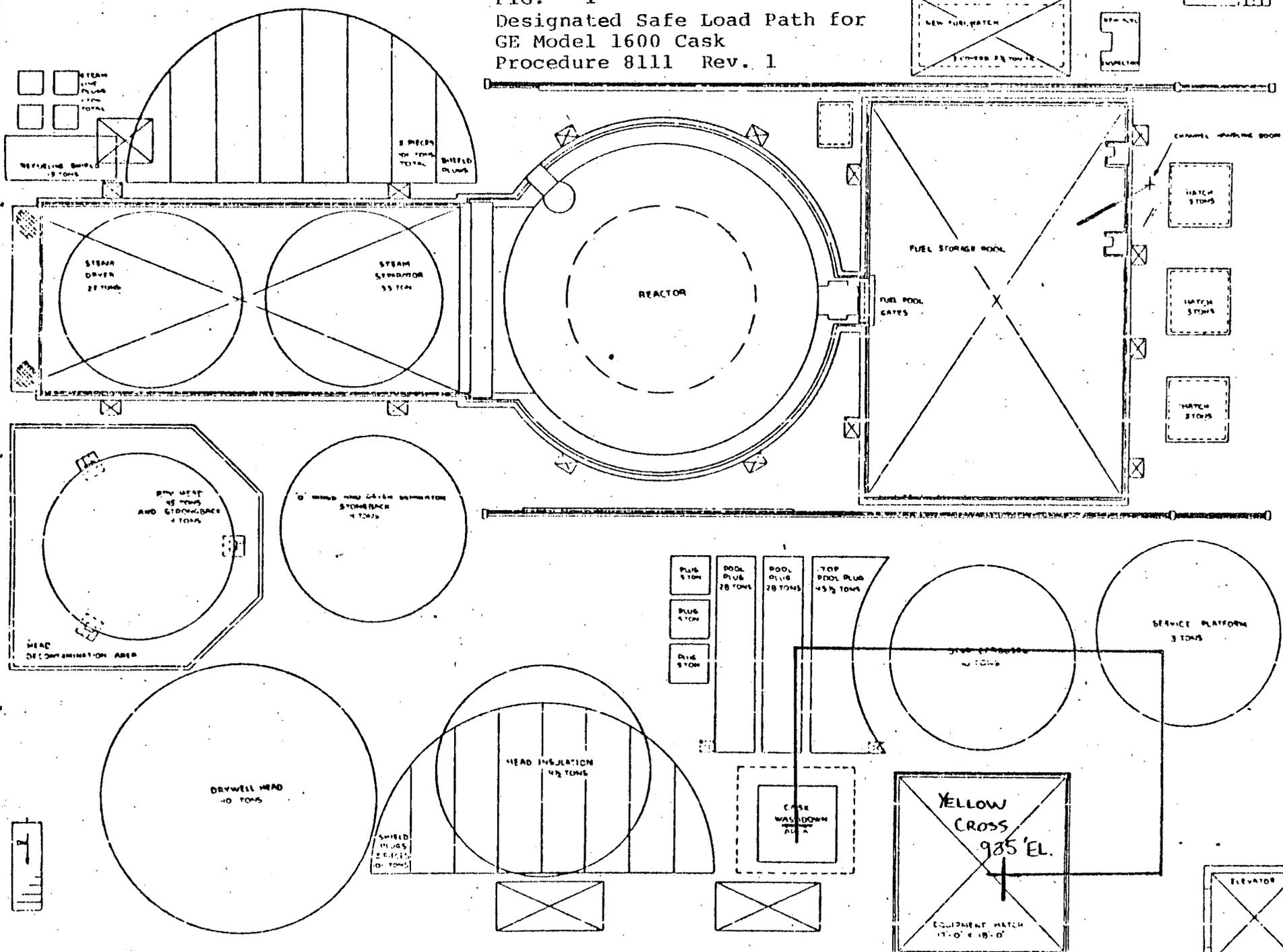






Fig. 4  
 Designated Safe Load Path for the  
 Removal of 7 Shield Blocks on the  
 Refueling Floor  
 Procedure 9209 Rev. 5

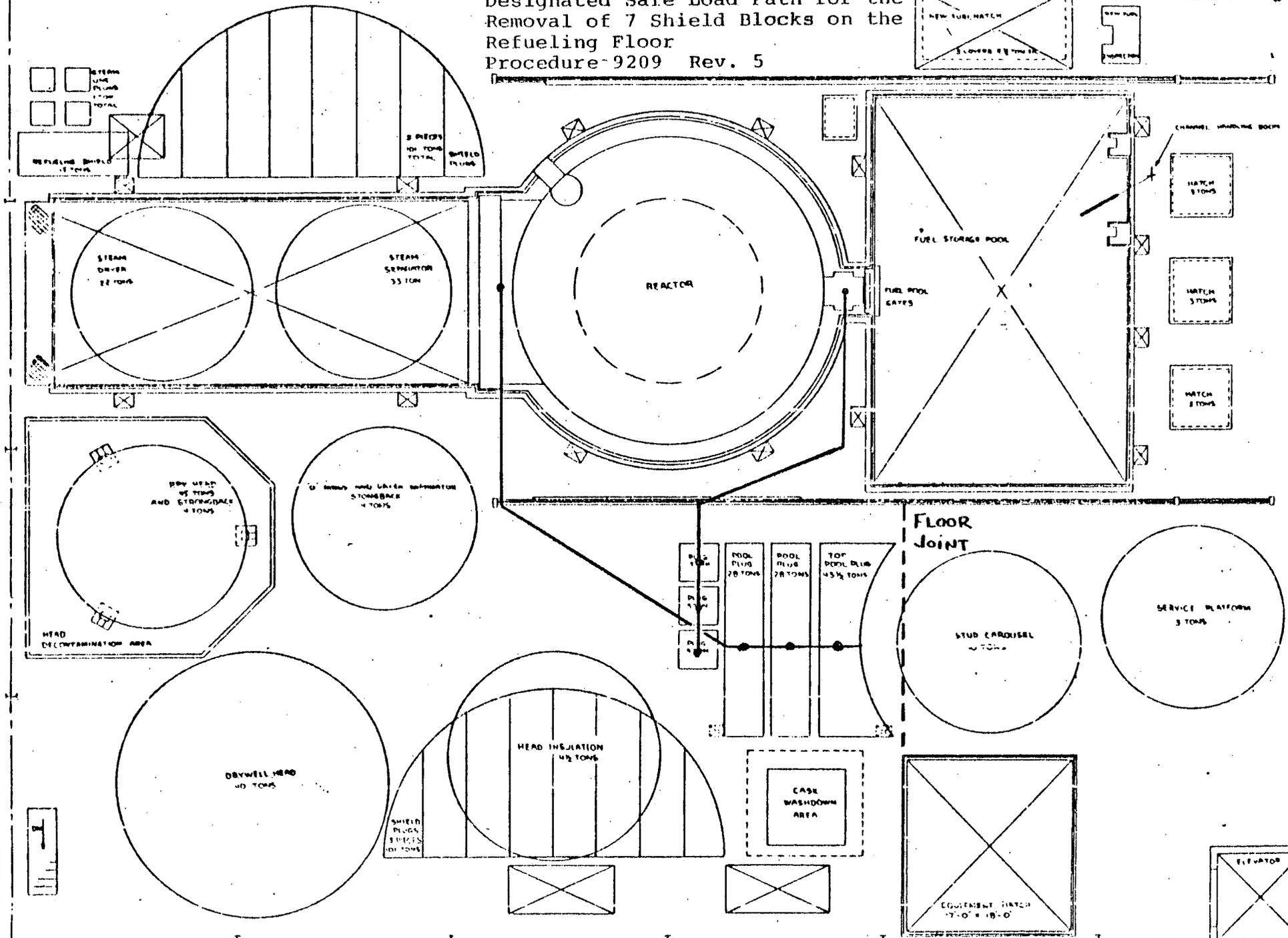


Fig. 5  
 Designated Safe Load Path for the  
 Removal of the RPV Head Insulation  
 Procedure No. 9213 Rev. 4

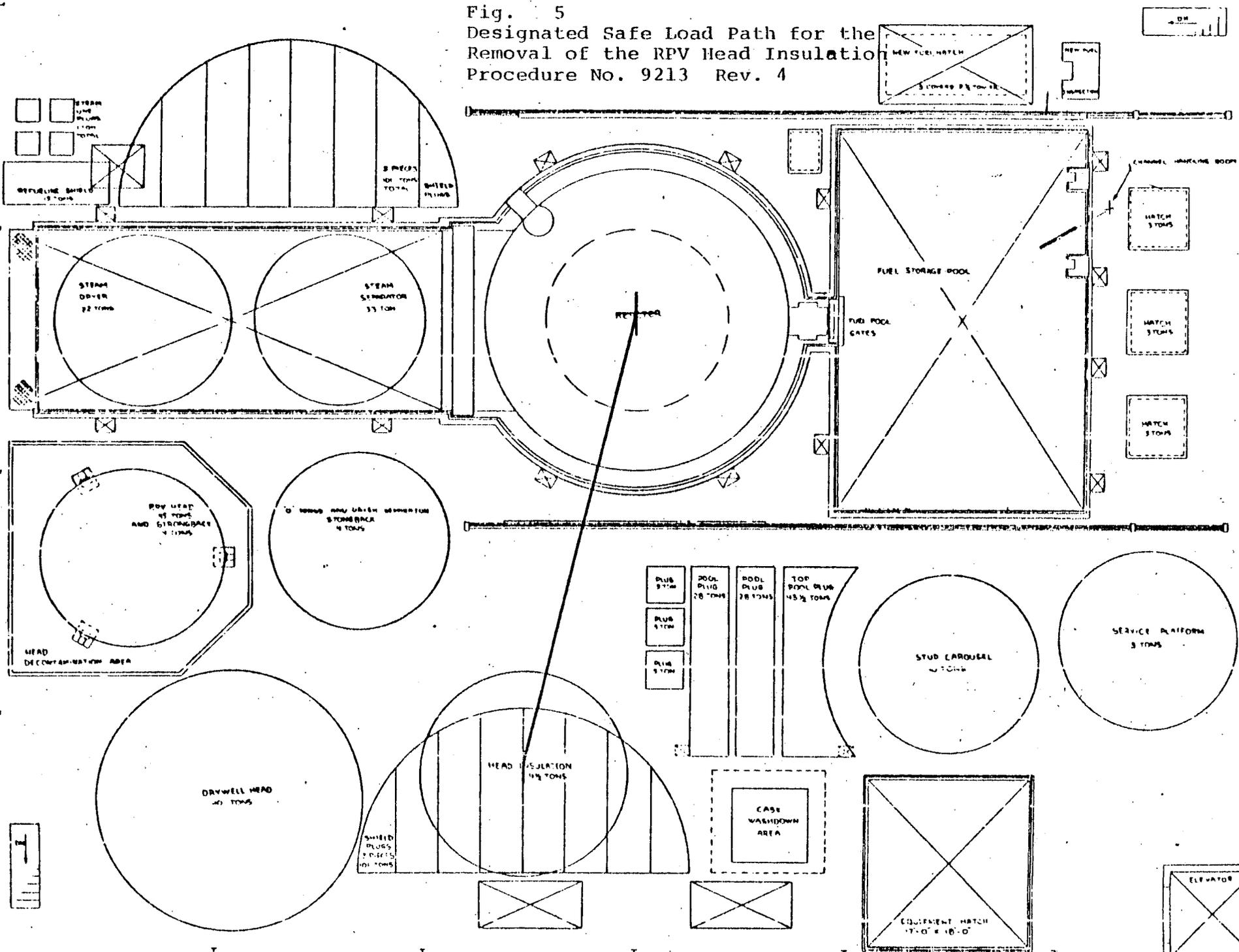


Fig. -6  
 Designated Safe Load Path for the  
 Installation of the Carousel and  
 Detension RPV Head Bolts  
 Procedure No. 9214 Rev. 4

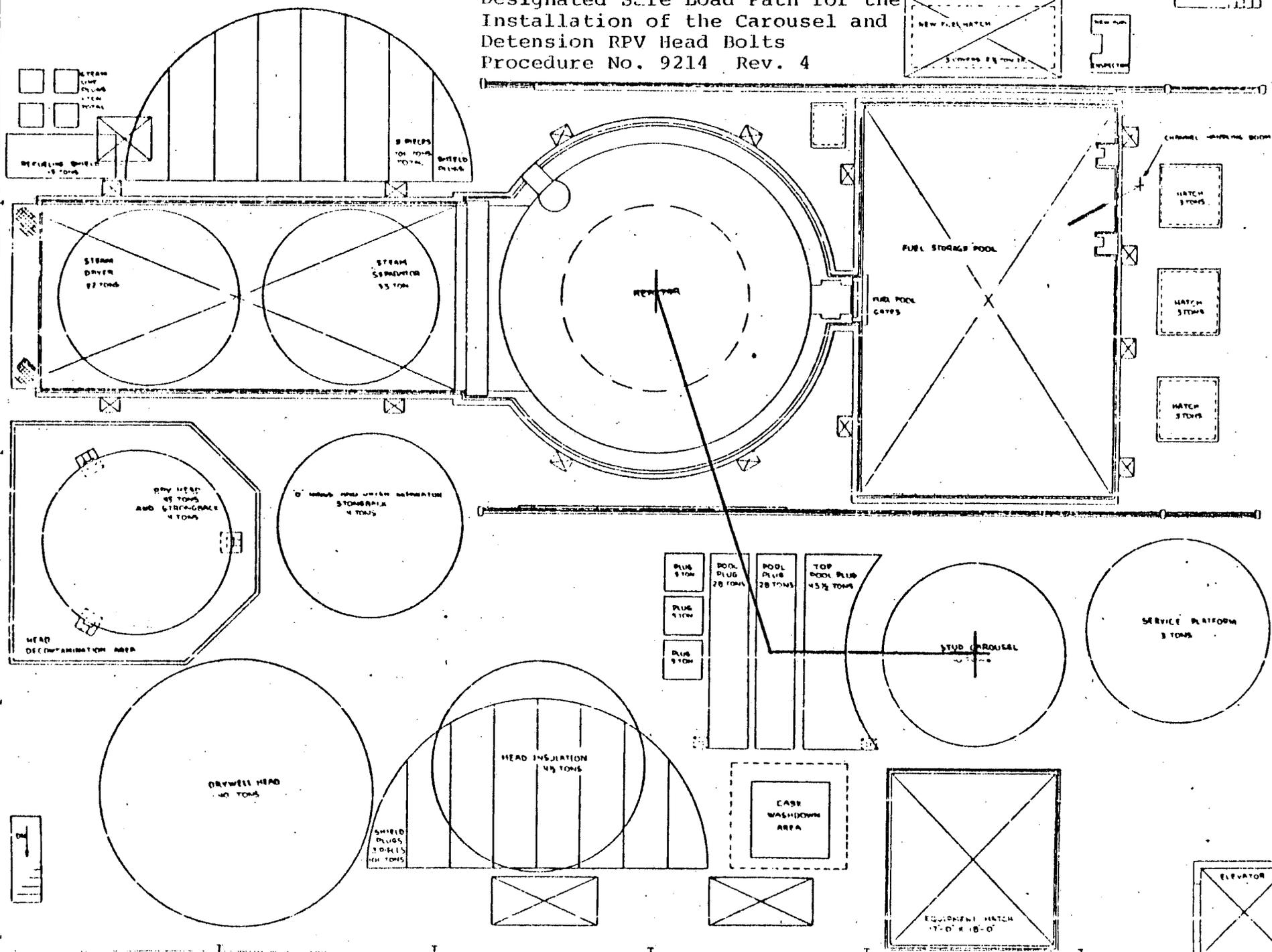




Fig. 8  
 Designated Safe Load Path for the  
 Removal of the RPV Head  
 Procedure No. 9220 Rev. 4

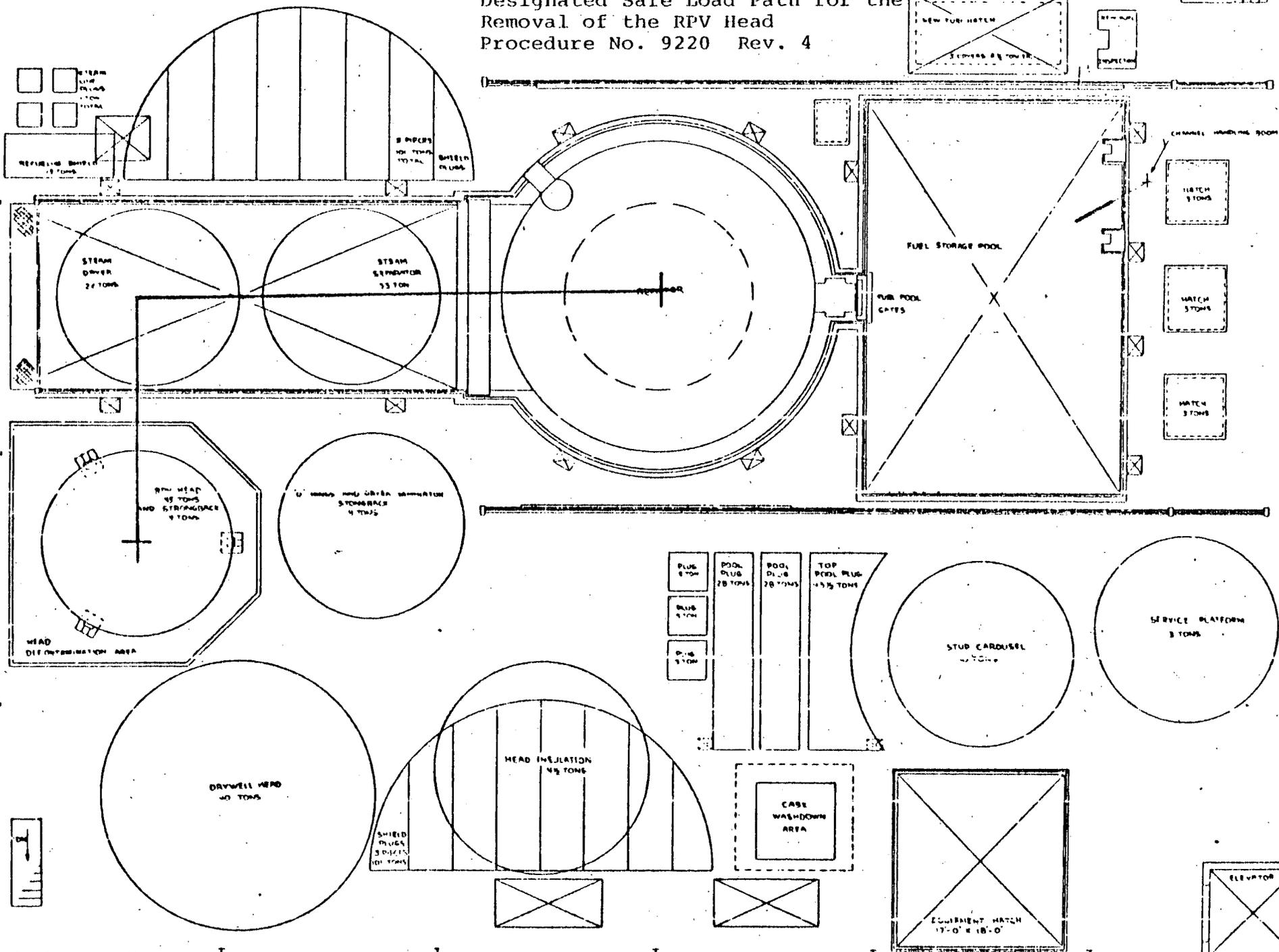




Fig. 1-10  
 Designated Safe Load Path for the  
 Installation of the Drywell Radiation  
 Shield  
 Procedure No. 9226 Rev. 6

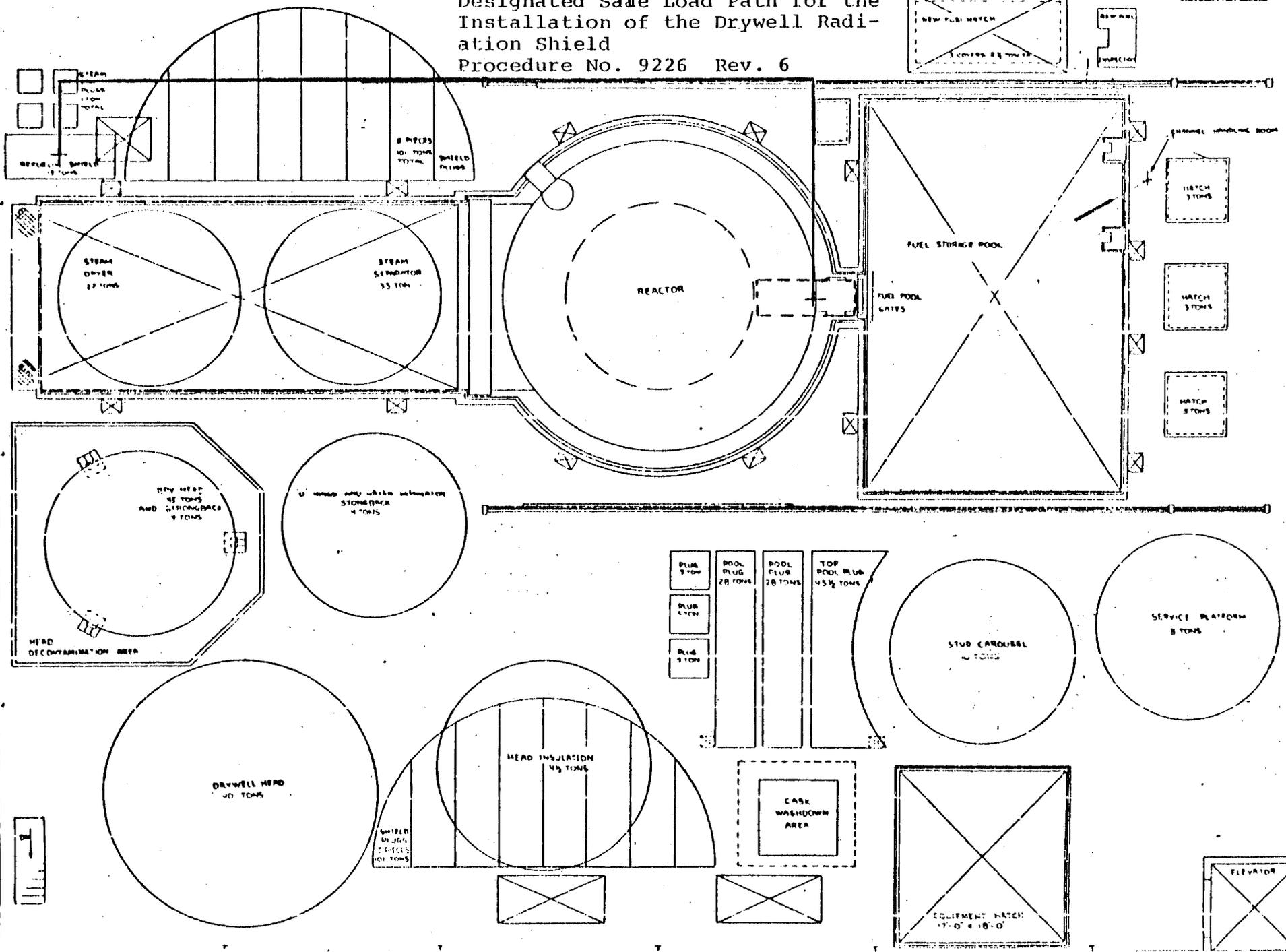




Fig. 1  
 Designated Safe Load Paths for the  
 Removal of the Fuel Pool Gates  
 Procedure No. 9229, Rev. 0

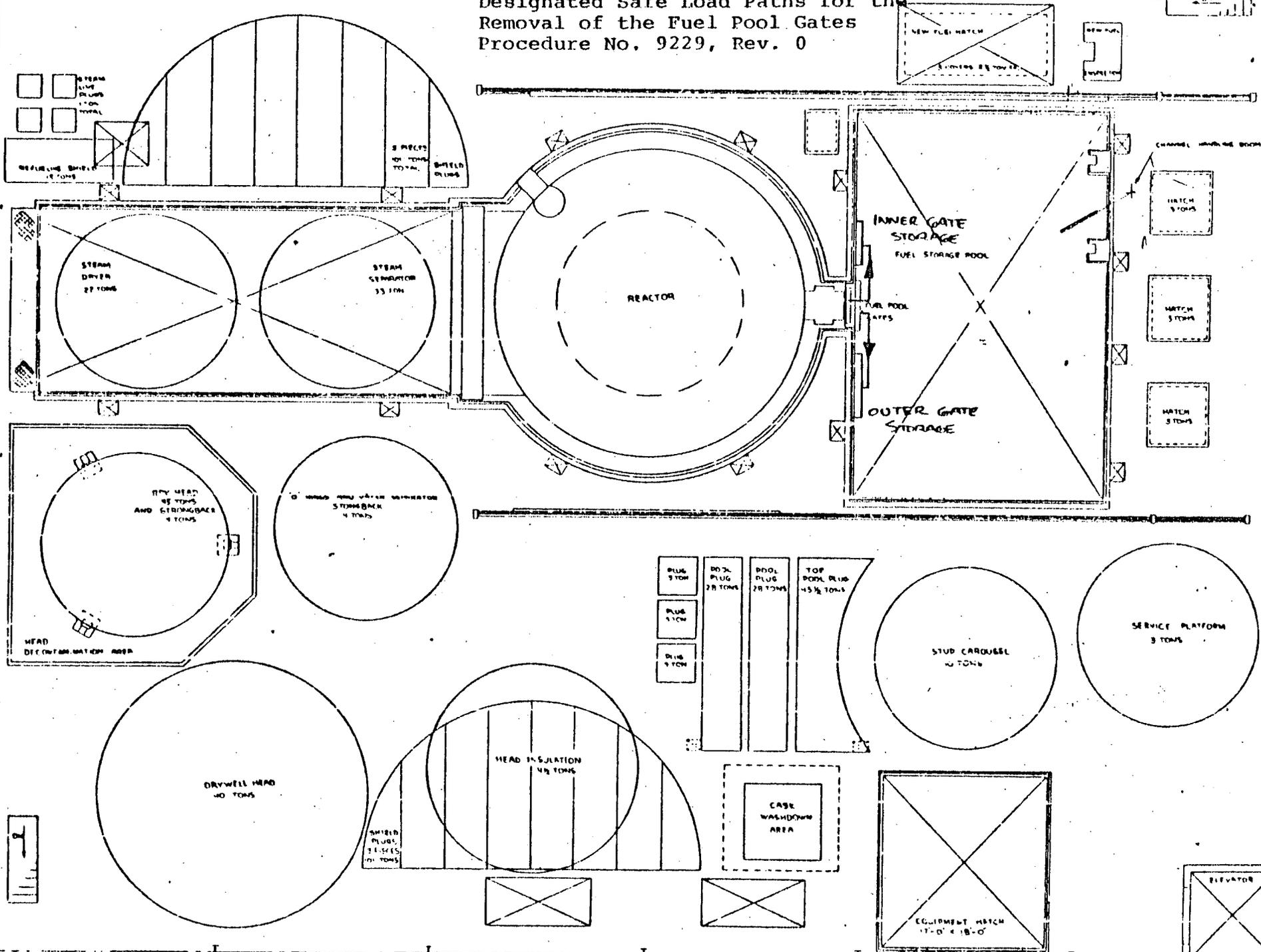




Fig. # 14  
 Designated Safe Load Path for the  
 Installation of the Service  
 Platform  
 Procedure No. 9243, Rev. 3

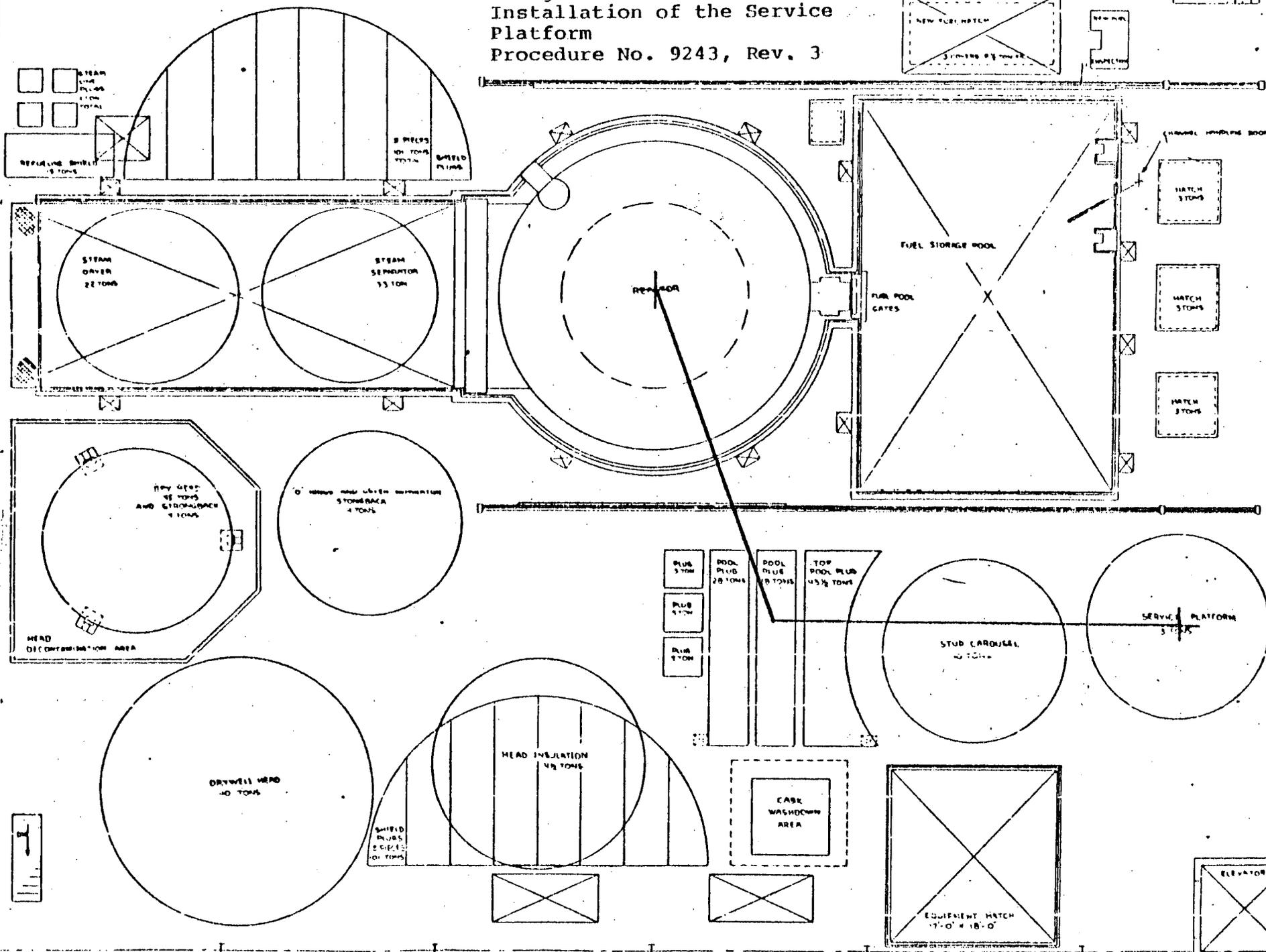


Fig. 15  
 Designated Safe Load Path for the  
 Removal of the Service Platform  
 Procedure No. 9245, Rev. 3

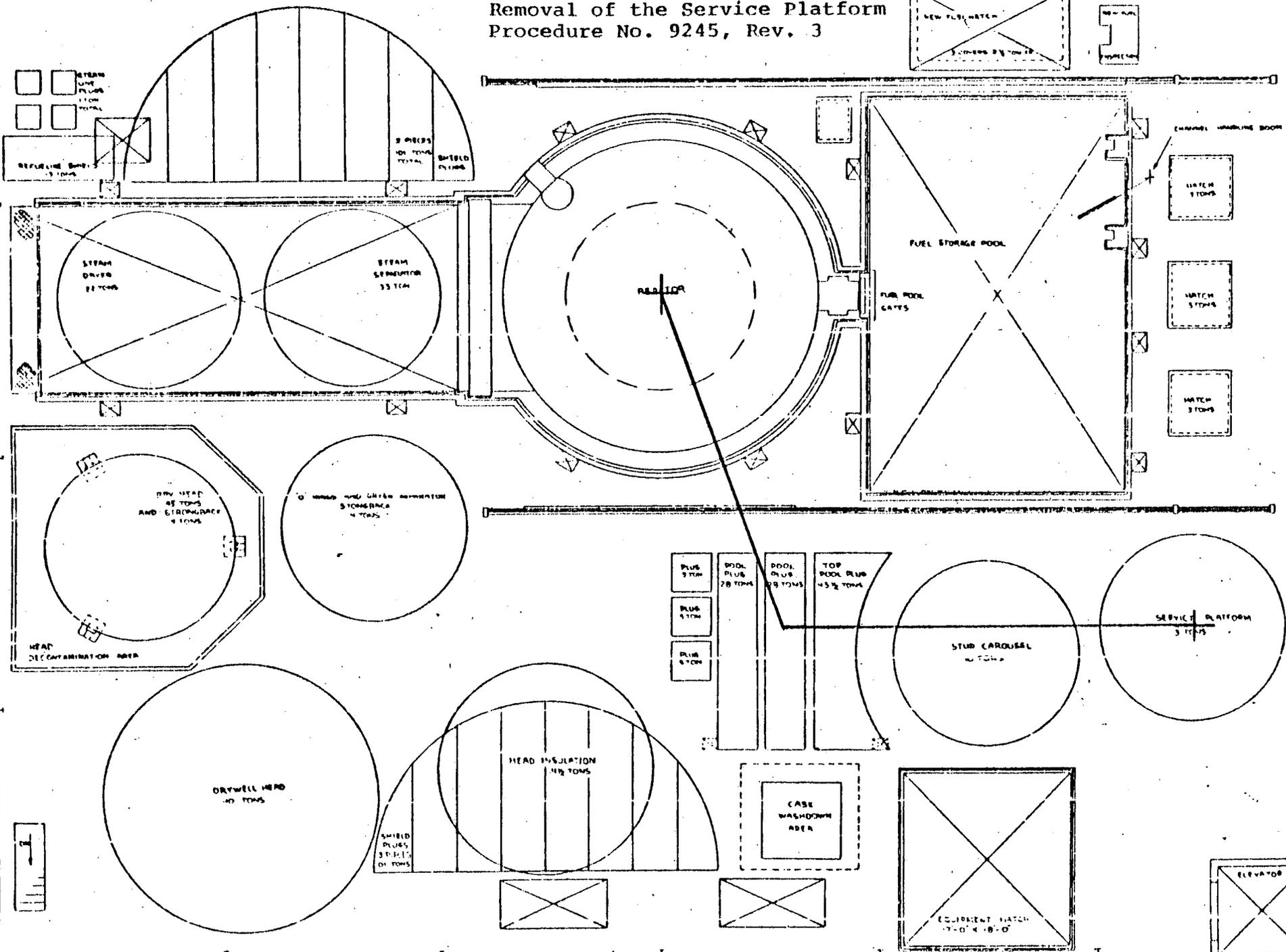


Fig. 10  
 Designated Safe Load Paths for  
 the Installation of the Fuel  
 Pool Gates  
 Procedure No. 9250, Rev. 0

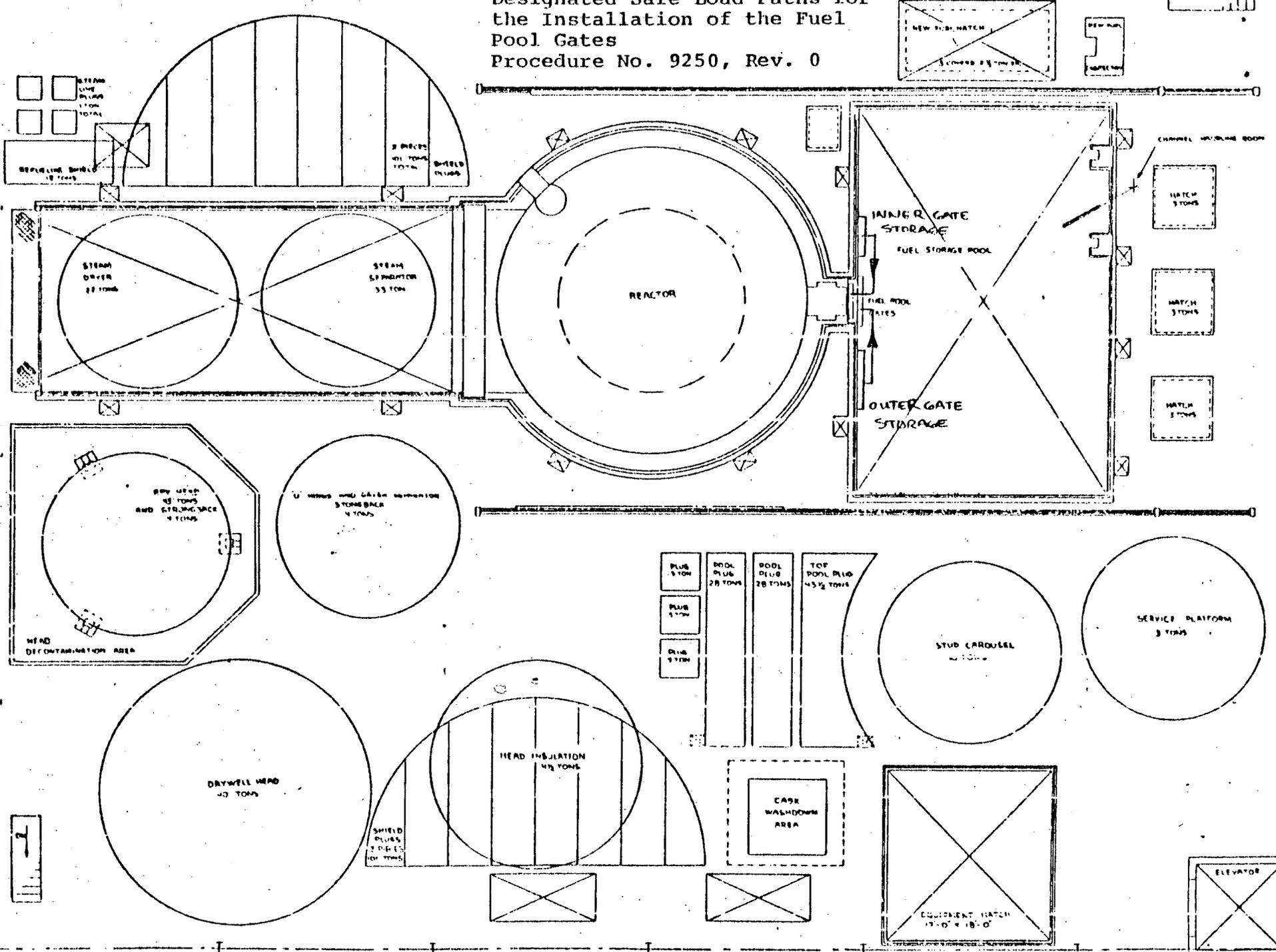




Fig. 4  
 Designated Safe Load Path for the  
 Removal of the Drywell Radiation  
 Shield.  
 Procedure No. 9256, Rev. 3

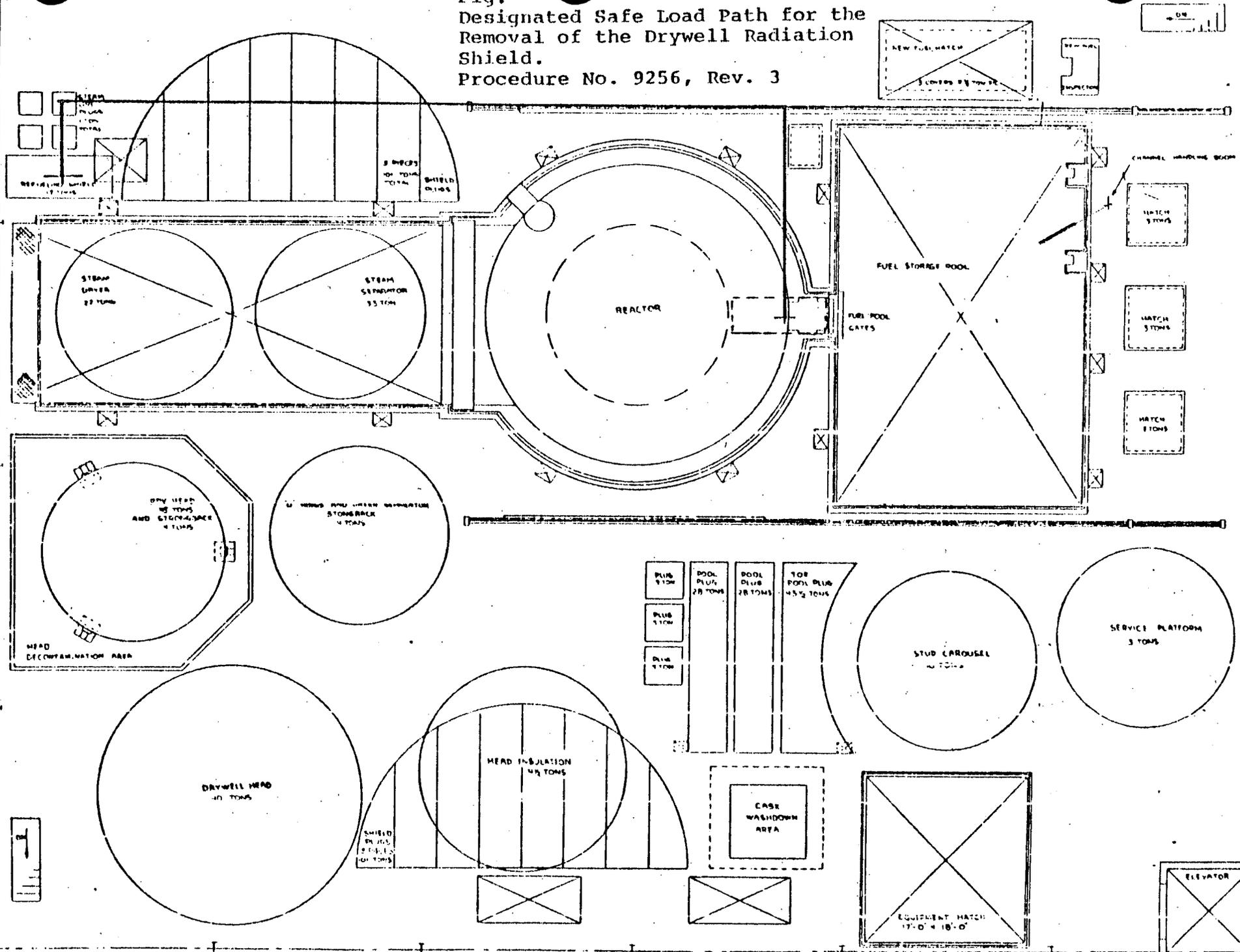






Fig. 21  
 Designated Safe Load Path for the  
 Installation of the RPV Stud  
 Tensioner  
 Procedure No. 9267, Rev. 6

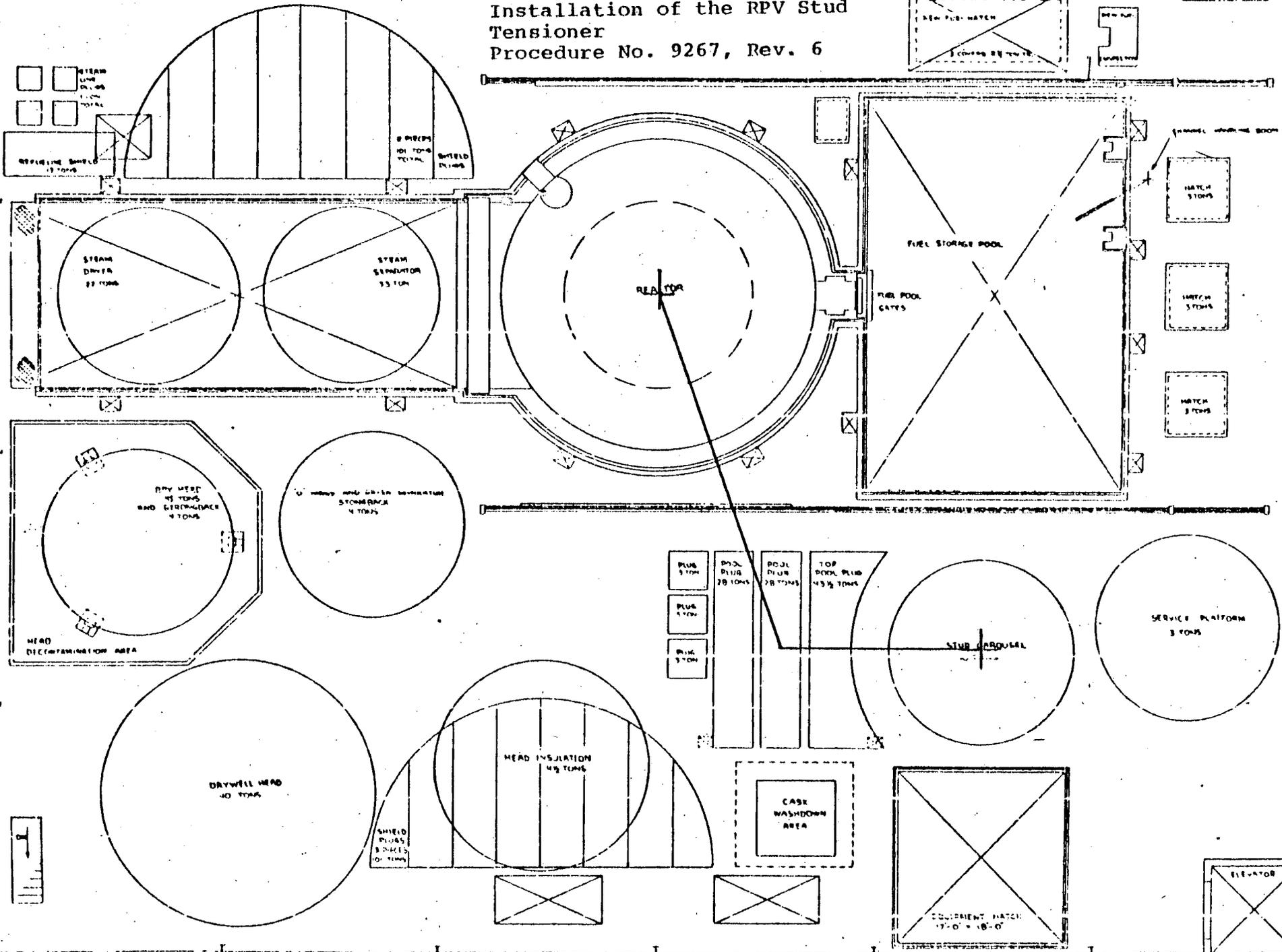




Fig. 23  
 Designated Sfae Load Path for the  
 Installation of the Drywell Head  
 Procedure No. 9275 Rev. 4

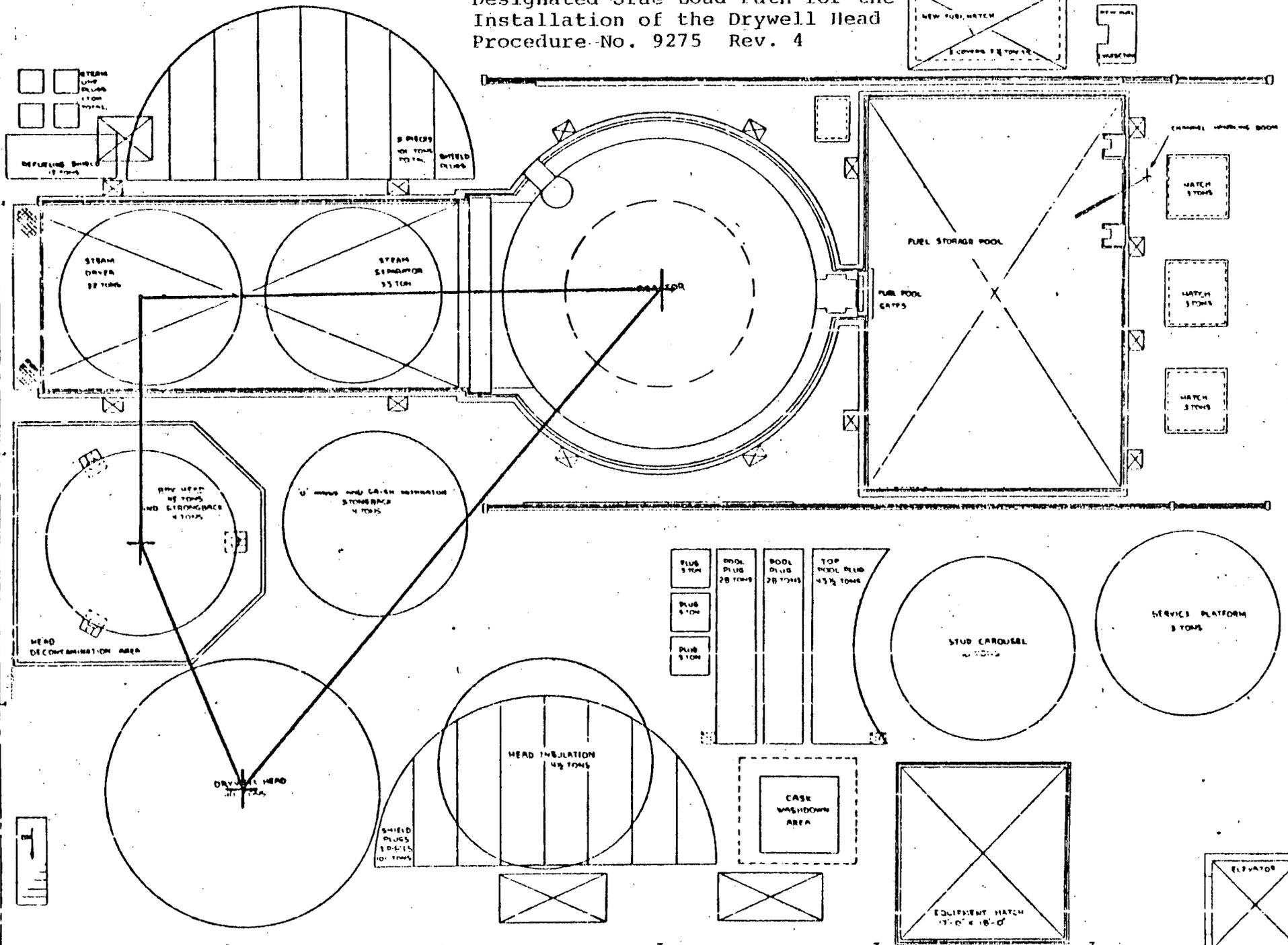
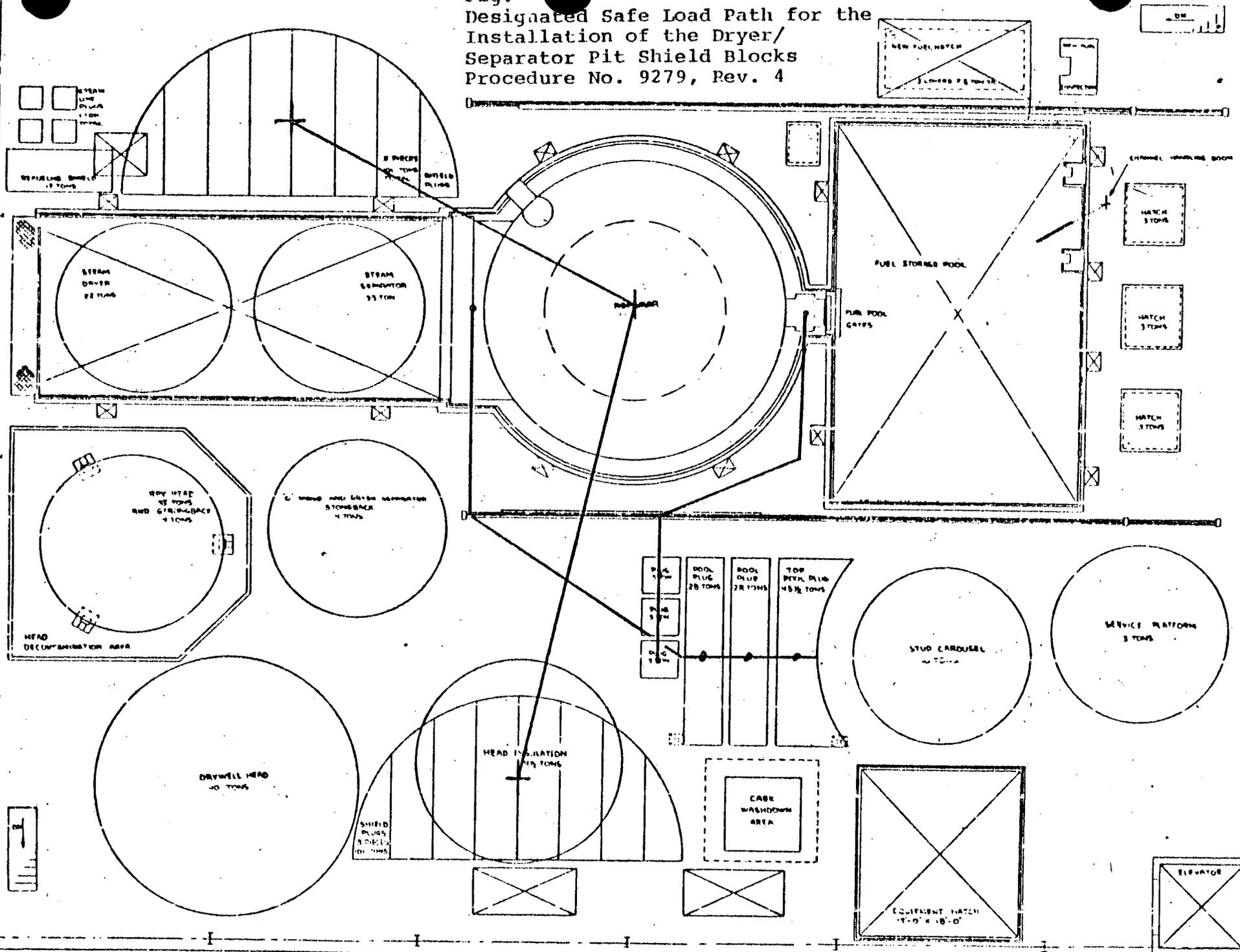
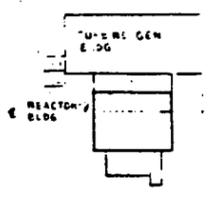
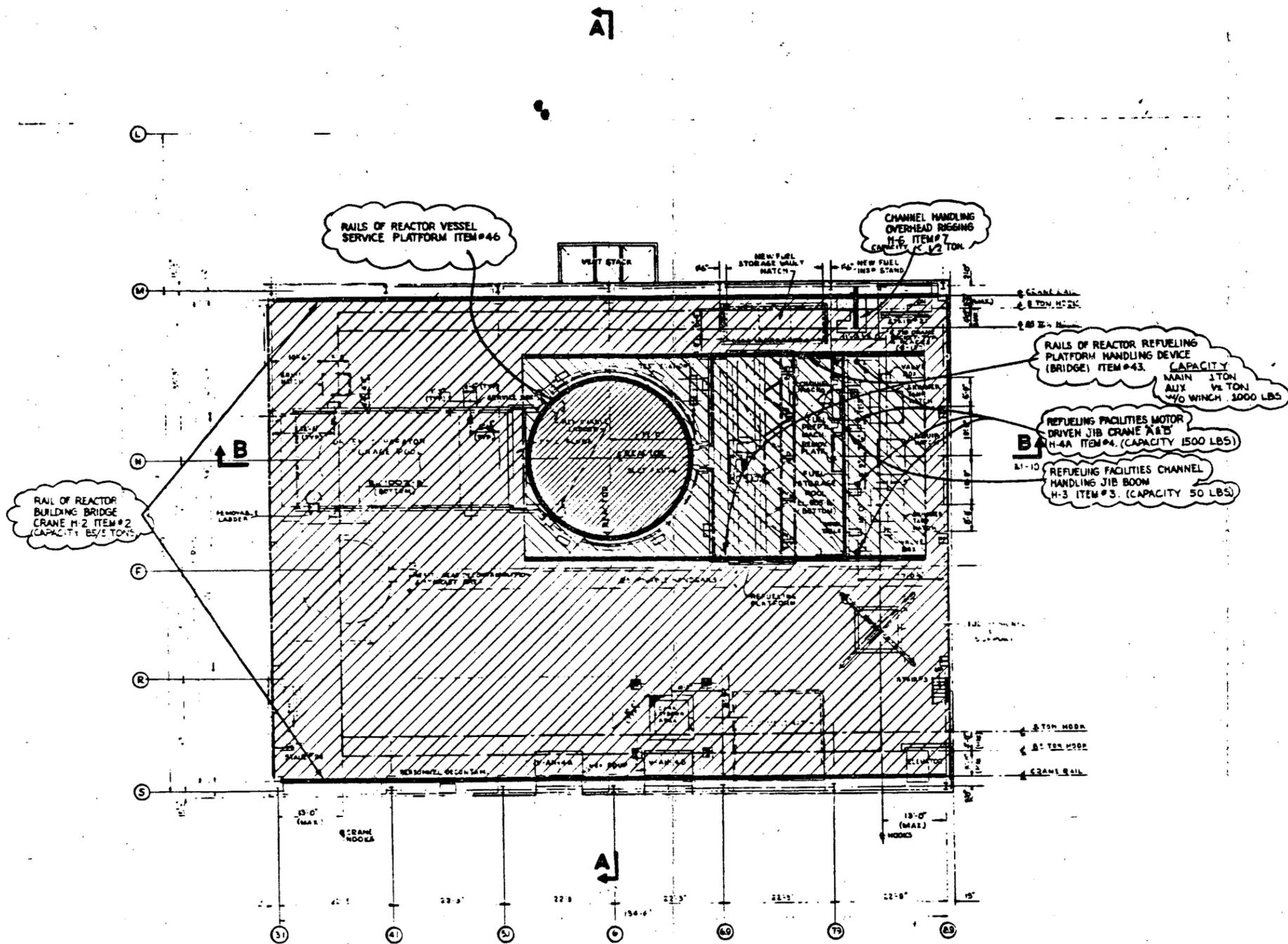


Fig. 1  
 Designated Safe Load Path for the  
 Installation of the Dryer/  
 Separator Pit Shield Blocks  
 Procedure No. 9279, Rev. 4

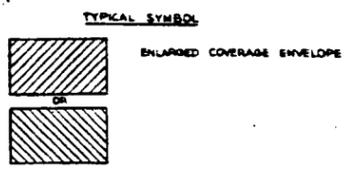




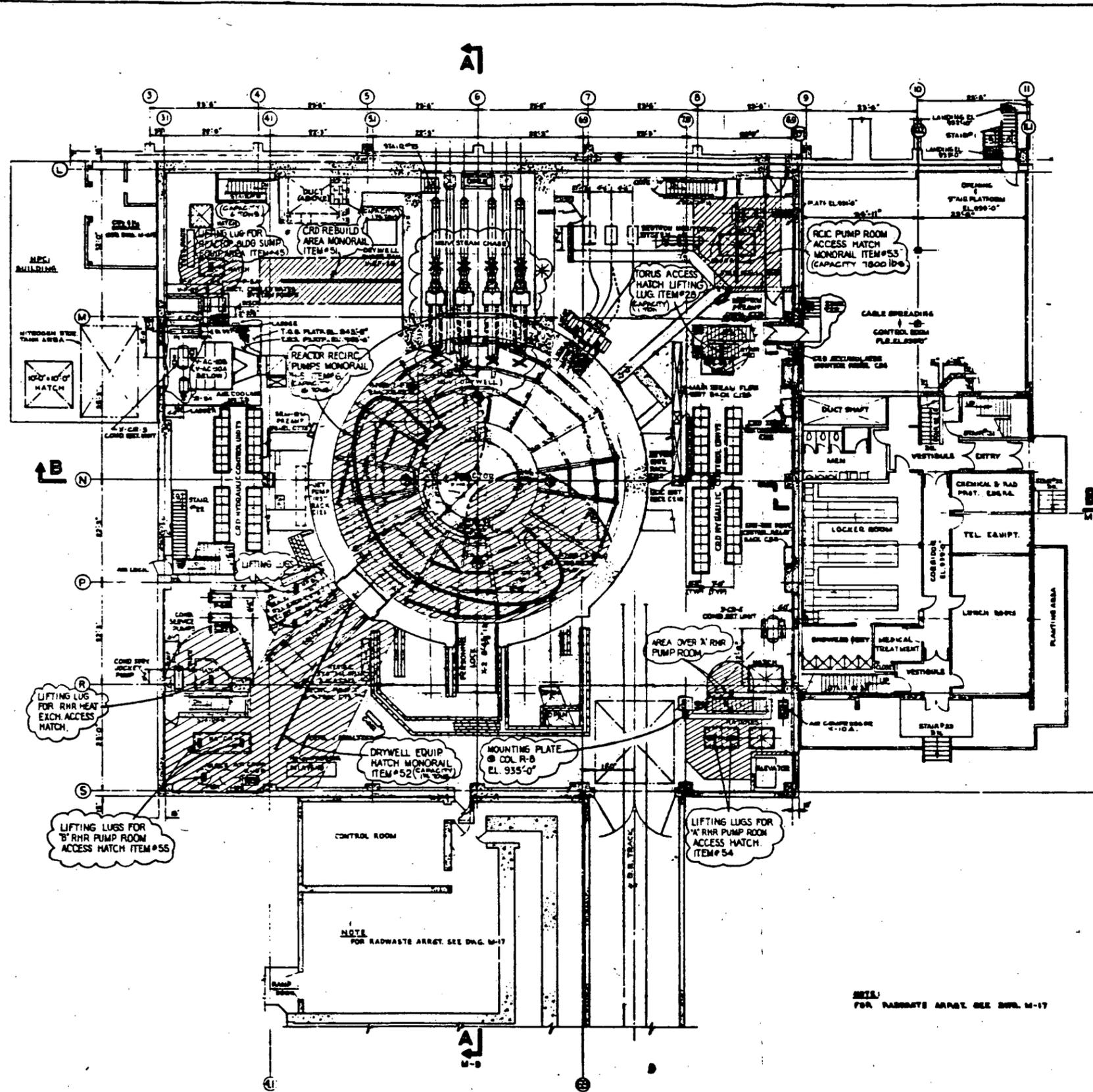


KEY PLAN

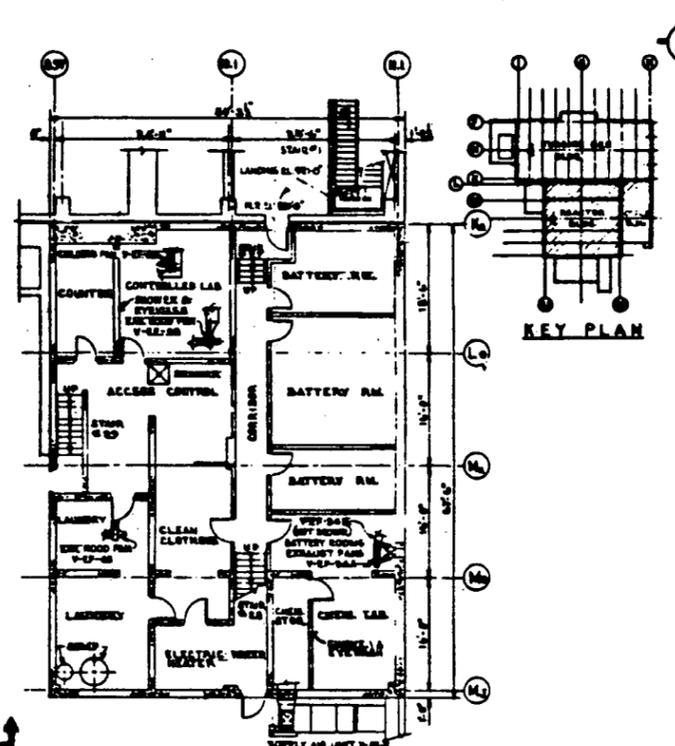
PLAN AT EL 1027-B



AUGUST 1961 FIG 26	CHEMICAL NUCLEAR FUELING PLANT - UNIT 1 LOAD HANDLING DEVICES - REACTOR BLDG PLAN AT EL 1027-B NORTHERN STATES POWER COMPANY
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PLAN AT EL. 935'-0"



PLAN AT EL. 928'-0"

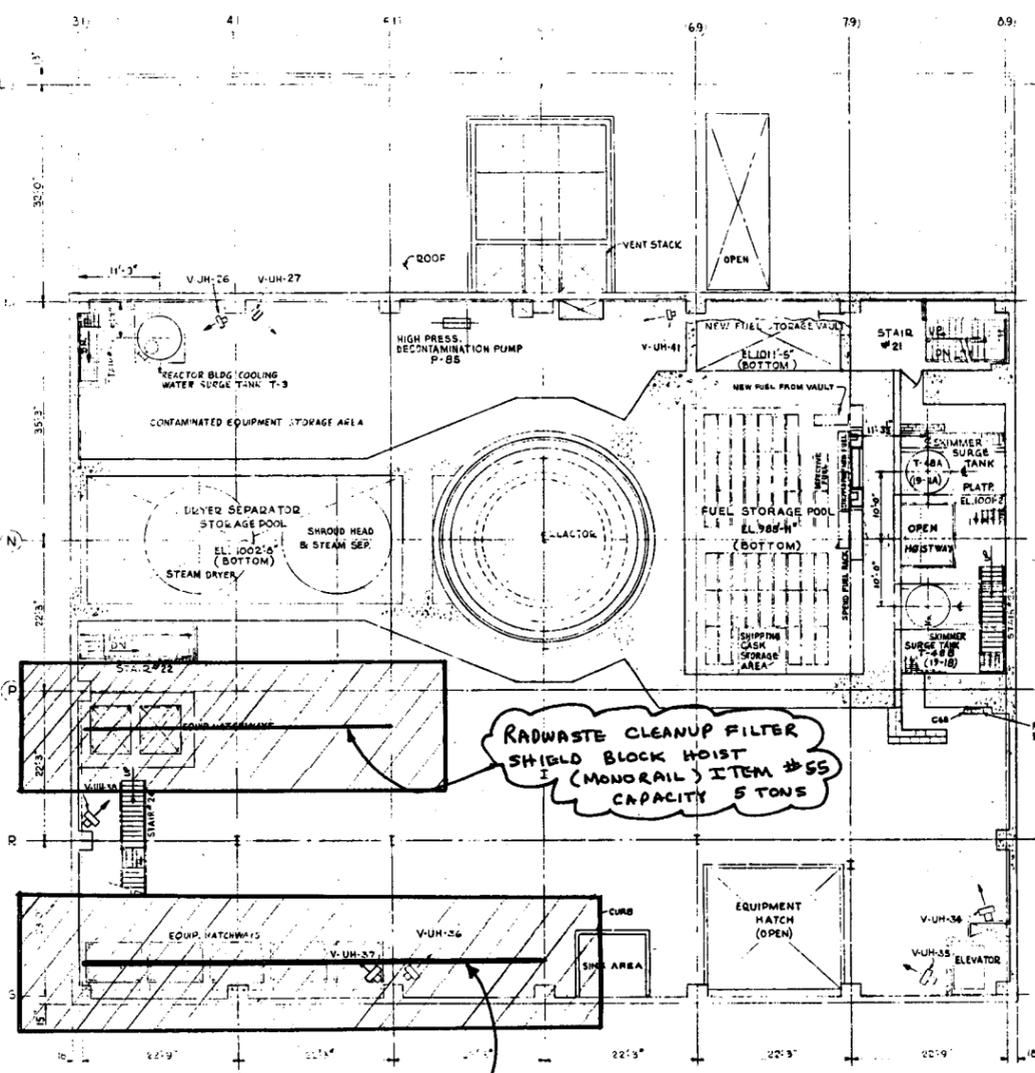
NOTE:  
 \* THIS AREA INCLUDES ITEMS 18 THROUGH 21 MAIN STEAM ISOLATION VALVES MONORAILS/LIFTING LUGS. EXACT LOCATION TO BE CONFIRMED LATER.

NOTE:  
 FOR RADWASTE ARREST SEE DWG. M-17

TYPICAL SYMBOL

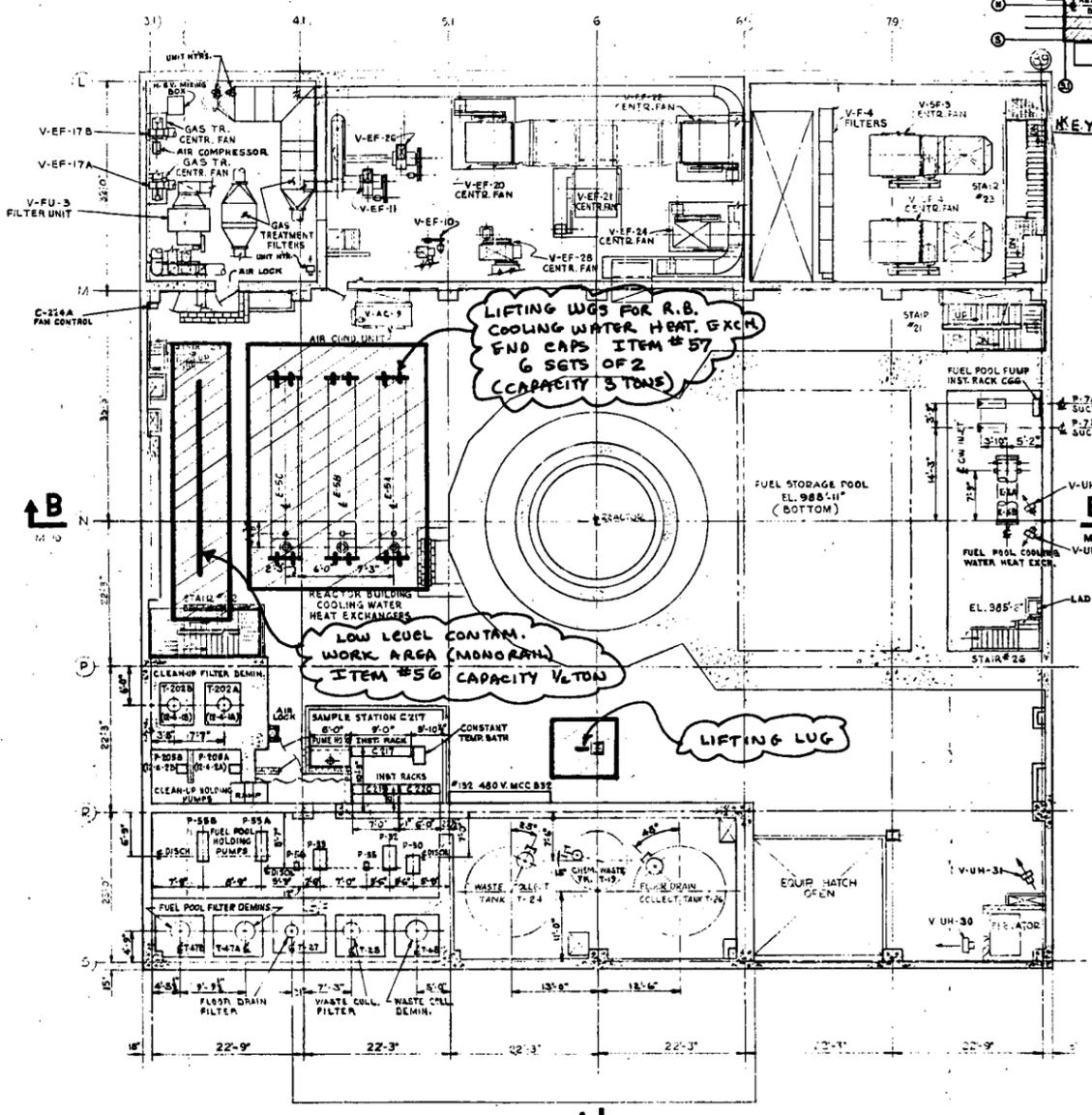


AUGUST 1981	REACTOR BUILDING OPERATIONS PLAN - SHEET 1
FIG. 27	LOAD HANDLING DEVICES: REACTOR BLDG. PLAN AT EL. 935'-0" & OFFICE BLDG. PLANS AT EL. 928'-0" & EL. 933'-0"



RADWASTE & FUEL POOL SHIELD BLOCK HOIST (MONORAIL) ITEM #36 (CAPACITY 5 TONS)

RADWASTE CLEANUP FILTER SHIELD BLOCK HOIST (MONORAIL) ITEM #55 (CAPACITY 5 TONS)



LOW LEVEL CONTAM. WORK AREA (MONORAIL) ITEM #56 (CAPACITY 1/2 TON)

LIFTING LUGS FOR R.B. COOLING WATER HEAT. EXCH. END CAPS ITEM #57 (6 SETS OF 2 (CAPACITY 3 TONS))

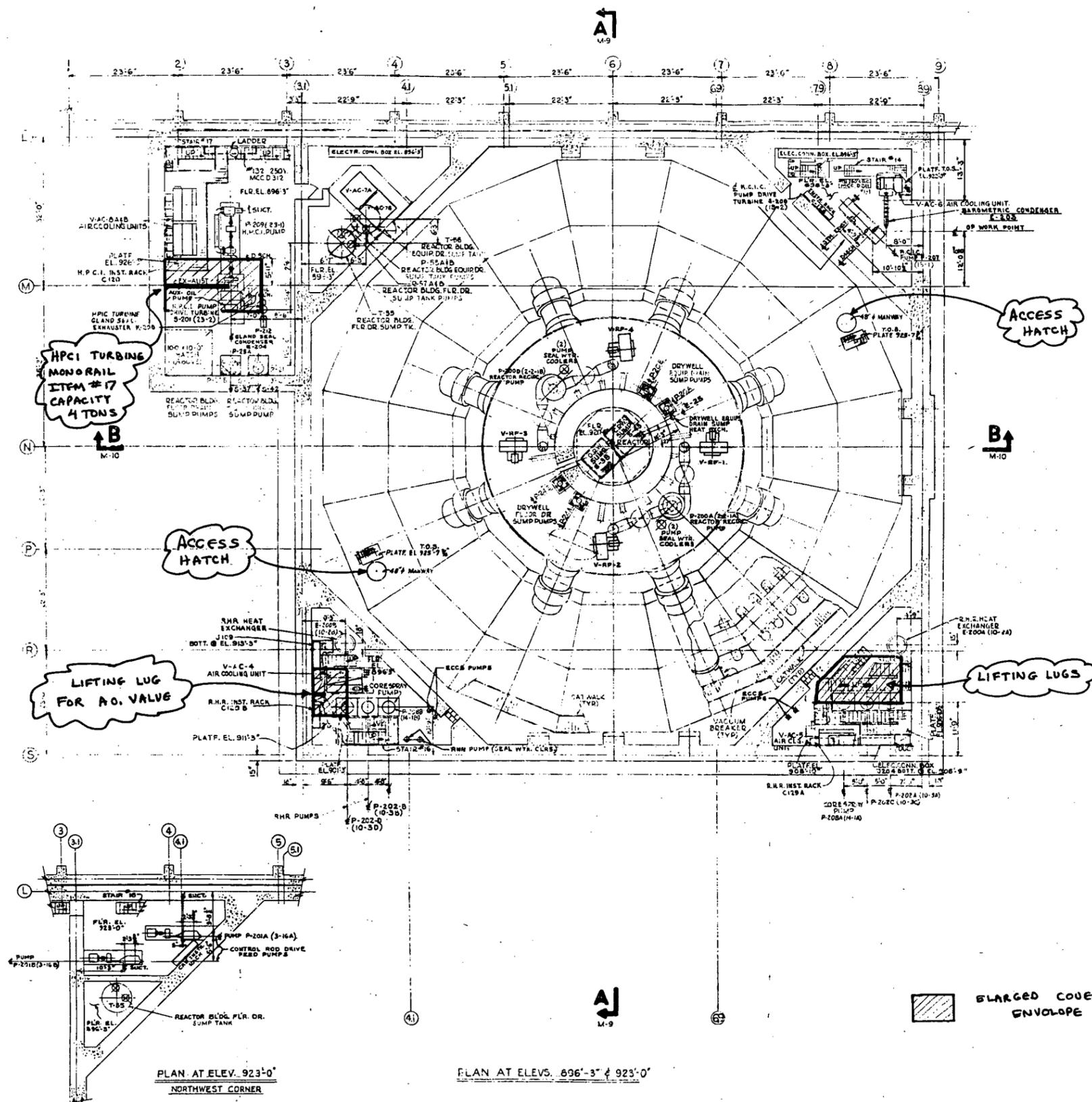
LIFTING LUG

ENLARGED COVERAGE ENVELOPE

REVISOR	REVISION	DATE	BY	CHKD
▲	REVISED TO AS BUILT CONDITIONS	10/21/70	WJ	WJ
▲	REVISED AS INDICATED	10/21/70	WJ	WJ
▲	REVISED FOR CONSTRUCTION	10/21/70	WJ	WJ
▲	EL. FOR ENLARGED COVERAGE ENVELOPE	10/21/70	WJ	WJ

<b>BECHTEL</b>		JOB NO. 5828
SAN FRANCISCO		DWG. NO. M-4
<b>GENERAL ELECTRIC</b>		REV. 1
ATOMIC POWER EQUIP. DEPT.		SAN JOSE, CALIF.
<b>FIG 28</b>	MONTICELLO NUCLEAR GENERATING PLANT - UNIT 1	
DESIGNED BY	SIGNIFICANT NO. 1700	
EQUIPMENT LOCATION - REACTOR BLDG. PLANS AT EL. 985'-6" & 1001'-2"		
NORTHERN STATES POWER COMPANY		NF-36057C



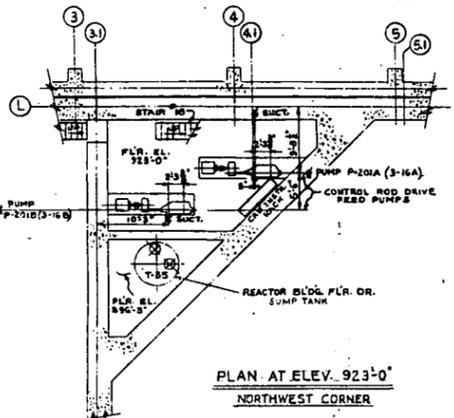
HPCI TURBINE MONORAIL ITEM #17 CAPACITY 4 TONS

ACCESS HATCH

LIFTING LUG FOR A.O. VALVE

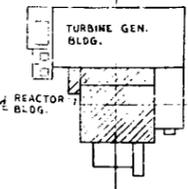
ACCESS HATCH

LIFTING LUGS



PLAN AT ELEV. 923'-0" NORTHWEST CORNER

PLAN AT ELEV. 896'-3" & 923'-0"



KEY PLAN 1" = 100'-0"

REVISIONS

1	AS BUILT SECURITY SYSTEM
2	REVISIONS PER O&G TURNOVER PER OTRR AND CHANGES
3	DWN BK DATE: 6-8-79
4	CHK'D BY: PROJ. S.C. 77E.060
5	FILMED: 6-12-79

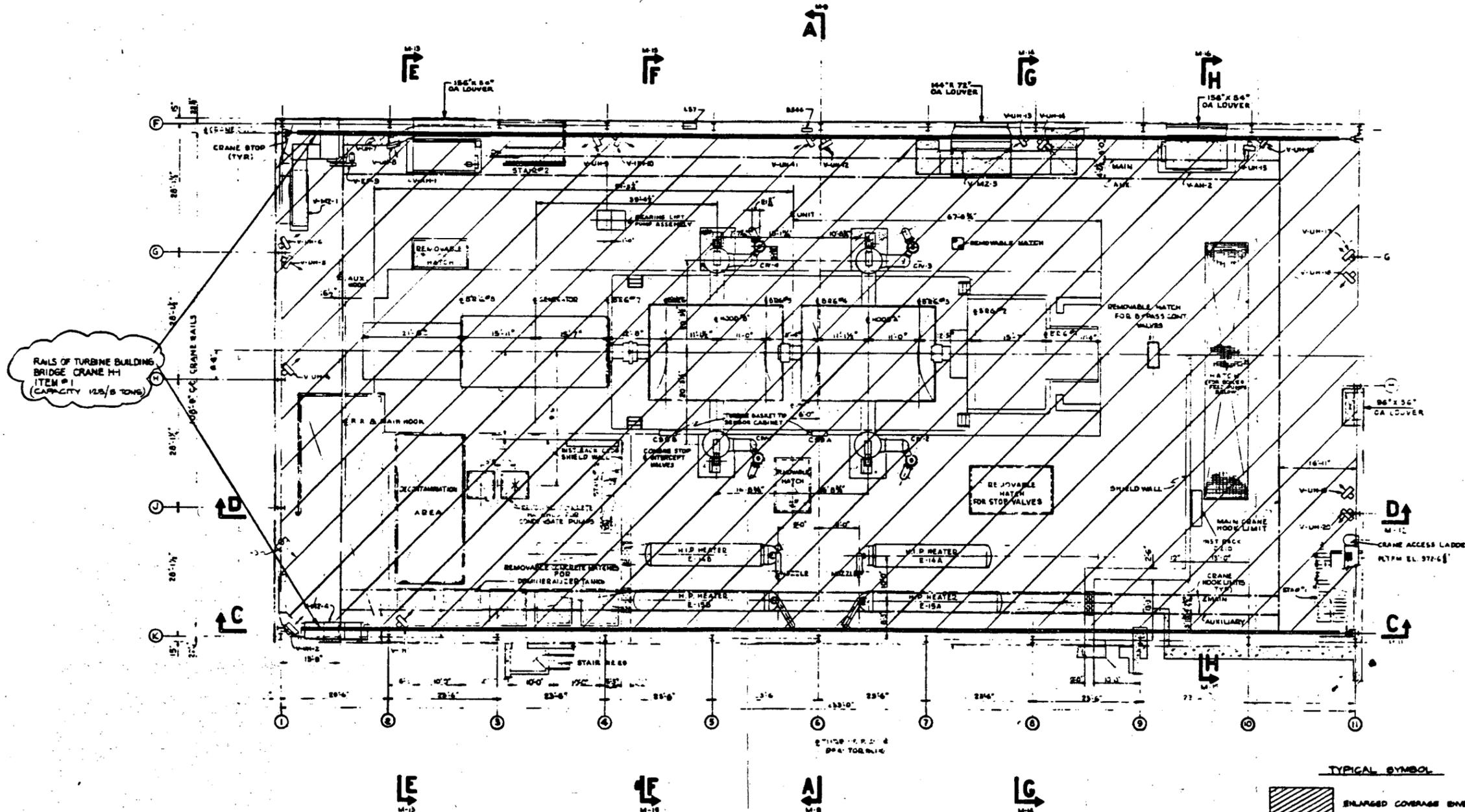
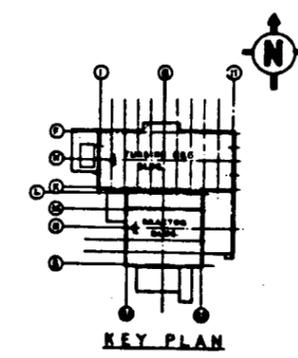
REVISION TO AS BUILT CONDITIONS	DATE	BY	CHK'D
REVISION AS INDICATED			
ISSUED FOR CONSTRUCTION			
ISSUED FOR INFORMATION			
ISSUED FOR ESTIMATE			

**BECHTEL** JOB NO. 5828  
 SAN FRANCISCO  
 DWG. NO. M-1 REV. 2  
**GENERAL ELECTRIC** RD  
 ATOMIC POWER EQUIP. DEPT. SAN JOSE, CALIF.

**FIG 29** MONTICELLO NUCLEAR GENERATOR UNIT - UNIT 1  
 SIGNIFICANT NO. 8700  
 EQUIPMENT LOCATION - REACT. B. PLUG.  
 PLAN AT ELEV. 896'-3" 923'-0"

NORTHERN STATES POWER COMPANY  
 NP-38074

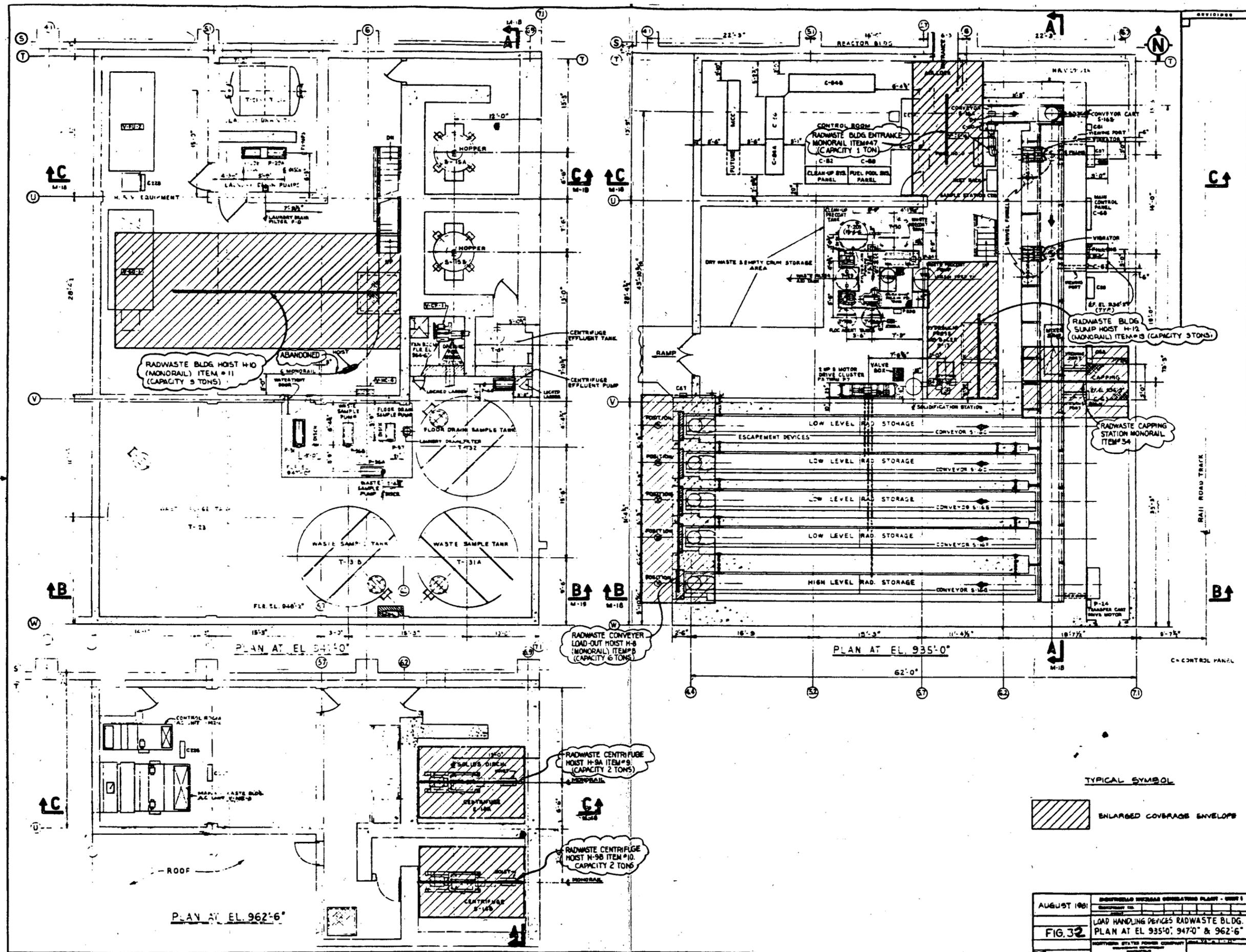
I hereby certify that this drawing was prepared by me or under my direct supervision and that I am a duly licensed professional engineer in the State of California.  
 Date: 11/21/79  
 No. 10 380



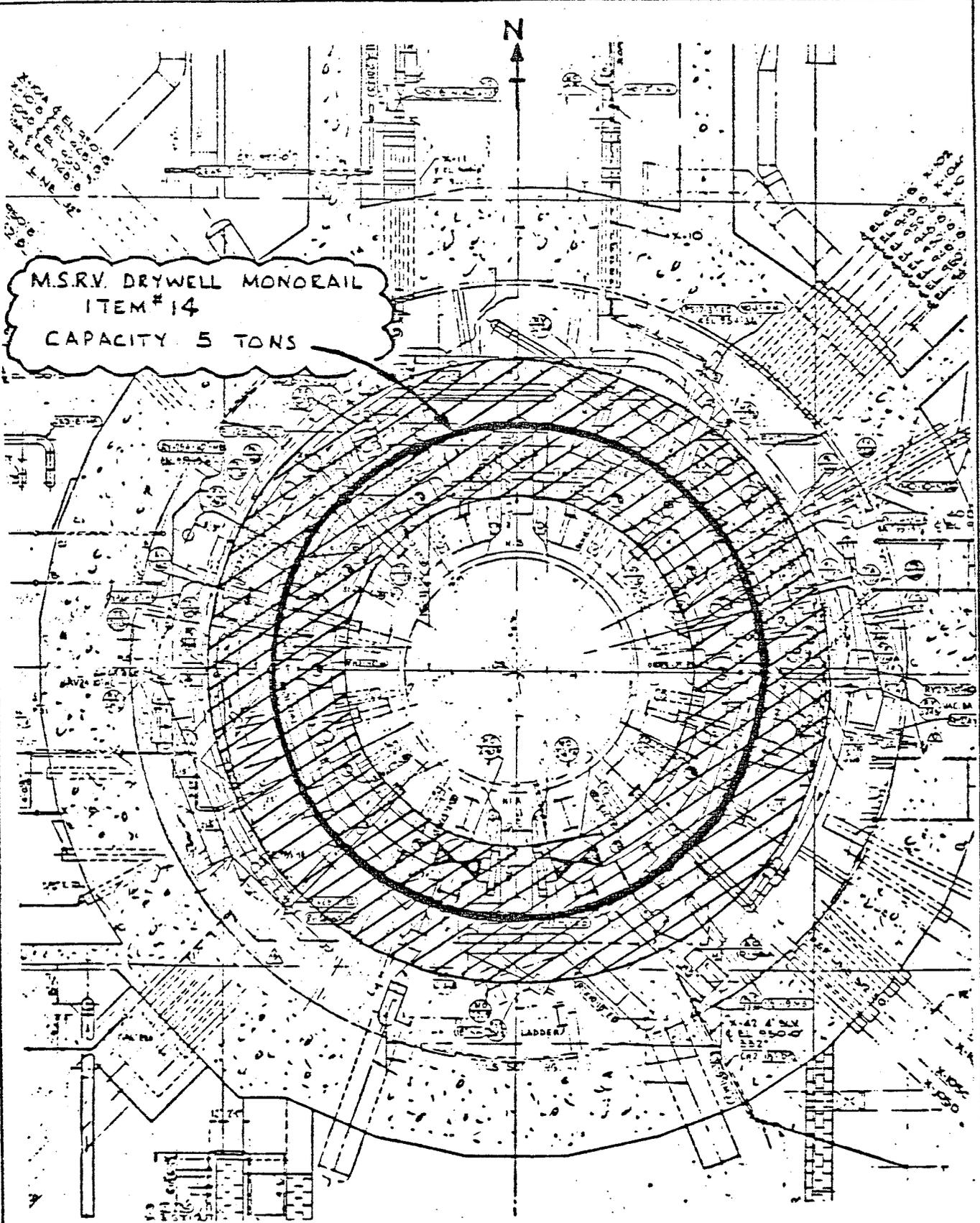
PLAN AT EL.951'-0"—OPERATING FLOOR

AUGUST 1981	NORTON'S NUCLEAR GENERATOR PLANT - UNIT 1
FIG 3-6	TURBINE BUILDING BRIDGE CRANE OPERATING FLOOR-PLAN AT EL 951'-0"
	NORTON'S STATE POWER COMPANY









M.S.R.V. DRYWELL MONORAIL  
 ITEM #14  
 CAPACITY 5 TONS

AUGUST 1981	MORTON R. NUCLEAR GENERATING PLANT - UNIT 1
FIG 34	LOAD HANDLING DEVICES PLAN AT EL. 948'-0"
	NORTHERN STATES POWER COMPANY ENGINEERING DEPARTMENT