

NSP

NORTHERN STATES POWER COMPANY

MINNEAPOLIS, MINNESOTA 55401

December 26, 1979

Director
Office of Nuclear Reactor Regulation
US Nuclear Regulatory Commission
Washington, DC 20555

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
Docket Nos. 50-282 License Nos. DPR-42
50-306 DPR-60

Information Relating to Fire Protection Modifications

Section 3.1 of the Prairie Island Fire Protection Safety Evaluation Report issued by the NRC Staff on September 6, 1979 requires additional information in the form of design details, test results, or acceptance criteria to be provided to assure that the design of certain modifications is acceptable. Information relating to the following modifications was requested.

- 3.1.1(1) Auxiliary Feed Pump Area Trench Barrier
- 3.1.1(2) Penetration Seal Upgrading
- 3.1.1(4) Foam Seal Upgrading
- 3.1.4(1) Hydrogen Seal Oil Unit Trench
- 3.1.4(10) Hatch Area Sprinkler System
- 3.1.5(1) Protection of Structural Members
- 3.1.6(1) Combustible Gas Cylinders
- 3.1.9(1) Timely Containment Fire Suppression Water
- 3.1.12(1) Alternate Shutdown Capability
- 3.1.14(1) Pre-Fire Strategies
- 3.1.18(1) Reactor Coolant Pump Oil Drainage

Information concerning items 3.1.1(2) and 3.1.1(4) was provided in our letter dated November 30, 1979, "Evaluation of Penetration Seals and Fire Detectors Required by the Fire Protection Safety Evaluation." Information concerning item 3.1.12(1) was provided in our letters dated October 22, 1979, "Fire Protection Safe Shutdown Reanalysis," and October 23, 1979, "Fire Protection Safe Shutdown Reanalysis-Transmittal of Cable Routing Drawings." The purpose of this letter is to provide information relating to all of the remaining items listed above. Refer to the attached descriptive information and drawings. Additional information will be provided when available on item 3.1.5(1).

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To permit us to complete these modifications on schedule, we request that any NRC Staff comments be sent to us by March 1, 1980.

Please contact us if you have any comments or questions relating to our planned modifications.

L.O. Mayer

L O Mayer, PE
Manager of Nuclear Support Services

LOM/DMM/jh

cc J G Keppler
G Charnoff

Attachment

90000033

Attachment
Director NRR, USNRC
December 26, 1979

Information Relating to Fire Protection Modifications

3.1.1 (1) Auxiliary Feed Pump Area Trench Barrier

We propose to pour a 12" thick slab (see Figures 1, 2, and 3) that will be offset from the barrier walls, but will be centered under the sliding fire door. As shown on the figures, the slab will fill the entire trench to floor level.

In addition, the trench grating will be covered with a plate from the slab to a point approximately two feet outside each of the entrance doors.

3.1.4 (1) Hydrogen Seal Oil Unit Trench

We propose to cut out the concrete around each seal oil unit to form a 6" x 6" trench. This trench will have a grating surface and a slight grade drop to the turbine room drain. (See Figures 3, 4, and 5.) All turbine room drains go to their respective unit sumps located in the condenser pits. The sumps have oil absorbent pillows in them. The sumps are inspected monthly with pillows replaced as necessary.

3.1.4 (10) Hatch Area Sprinkler System

The proposed sprinkler addition is shown on Figures 6 and 7. The installation has the approval of American Nuclear Insurers. Material has been received and prefabrication started. Final installation will be completed following NRC Staff approval of the design. During the January, 1980, Unit No. 2 outage, we will tie the system into the main fire header in the Unit No. 2 side of the Auxiliary Building. This must be done to permit completion by October, 1980.

3.1.5 (1) Protection of Structural Members

The project of selecting columns that need protection, procuring an approved coating, and a supplier has been assigned to the NSP Plant Engineering and Construction Department. Application of the retardant will be in accordance with an approved UL or FM design. At this time, a review of materials and vendor qualified procedures is being made. Details of the coating selected and application method will be provided to the NRC Staff by May 1, 1980.

3.1.6 (1) Combustible Gas Cylinders

The use of diamethylamine gas has been discontinued and the gas cylinder removed from the Auxiliary Building.

We are proposing to move the propane cylinder located outside the Cold Lab to a rack located outside the turbine room (see Figure 8). Piping, valves, and fittings from the cylinder to the present penetration into the Cold

90000034

Attachment
Director NRR, USNRC
December 26, 1979

Lab will be welded steel pipe and will be installed in accordance with NFPA 58.

We have reviewed extending the above piping into the Auxiliary Building to the Hot Lab to replace the propane cylinder used there. Considering that safety evaluations must be done for each of the three penetrations through rated barriers in addition to fire hazard review of routing gas piping through three fire zones containing safe shut-down cabling and equipment, we have concluded this was not an appropriate solution. We then considered the Hot Lab construction which is a poured concrete region within the Auxiliary Building. It is a separate fire area protected by a wet pipe sprinkler system. No safe shut-down equipment or cables are located in the area.

Other flammables, used in the day to day operation of lab, are present within the lab so we propose to move the propane cylinder inside this area. Mounting of the tank, piping, and valves will be in accordance with NFPA 58.

3.1.9 (1) Timely Containment Fire Suppression Water

At present, fire protection water for use within the containment is isolated during reactor operation. This is accomplished by breaking a flanged connection. When fire protection water is required, the connection must be made-up. Following completion of the containment cooling system modifications and additions now underway, it will no longer be necessary to make-up the fire protection system in the containment.

The existing containment fire line will be supplied by a four-inch cross-connect from the four-inch supply to the CRDM Shroud Cooling Coils. The cross-connect will have a capacity of approximately 350 gpm and will be available during plant operations. The cross-connect will include two manually operated four inch gate valves located within six feet of the personnel access air-lock.

The standards and codes under which all work will be performed, including fabrication and installation, will meet or exceed the existing standards and codes to which the plant was built.

The limiting time in pressurizing a containment fire line will be only that time required for personnel entry.

During the January, 1980, Unit No. 2 outage we will tie the containment fire water line into the cooling system with a tee and isolation valve. The existing fire water supply will therefore be functional until the cooling system modification project is completed next year.

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Attachment
Director NRR, USNRC
December 26, 1979

3.1.14 (1) Pre-Fire Strategies

Attached are draft copies of fire strategies for the diesel generator rooms. These strategies provide for the isolation of fuel transfer pumps in the event of fire.

Draft strategies for other plant areas have been completed and are currently undergoing review by the plant technical staff and operations personnel. They will be incorporated in the Operations Manual fire fighting section following review and incorporation of comments.

3.1.18 (1) Reactor Coolant Pump Oil Drainage

In past discussions with the NRC Staff, we agreed to route the reactor coolant pump oil collection drain piping to sump A in the basement of each containment.

In a plant modification made to control radioactive contamination from pump seal water leakage, oil collection piping was routed from the collection pan outlet over and into the nearest floor drain (see Figure 9). All floor drains are routed to sump A.

This installation is a slight deviation from the method proposed, but accomplishes the same result using less pipe and reducing the tripping hazard in the containment sump area.

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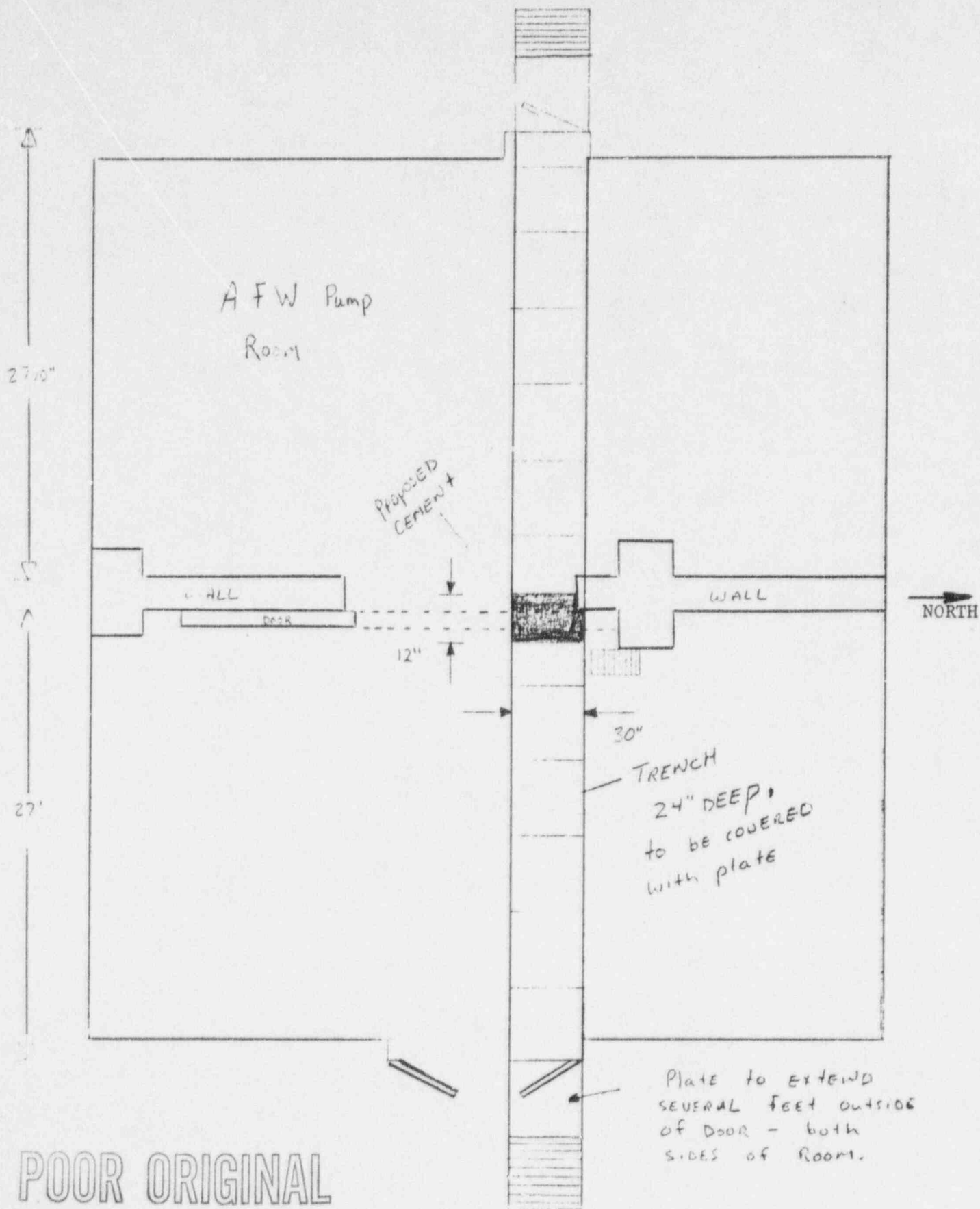


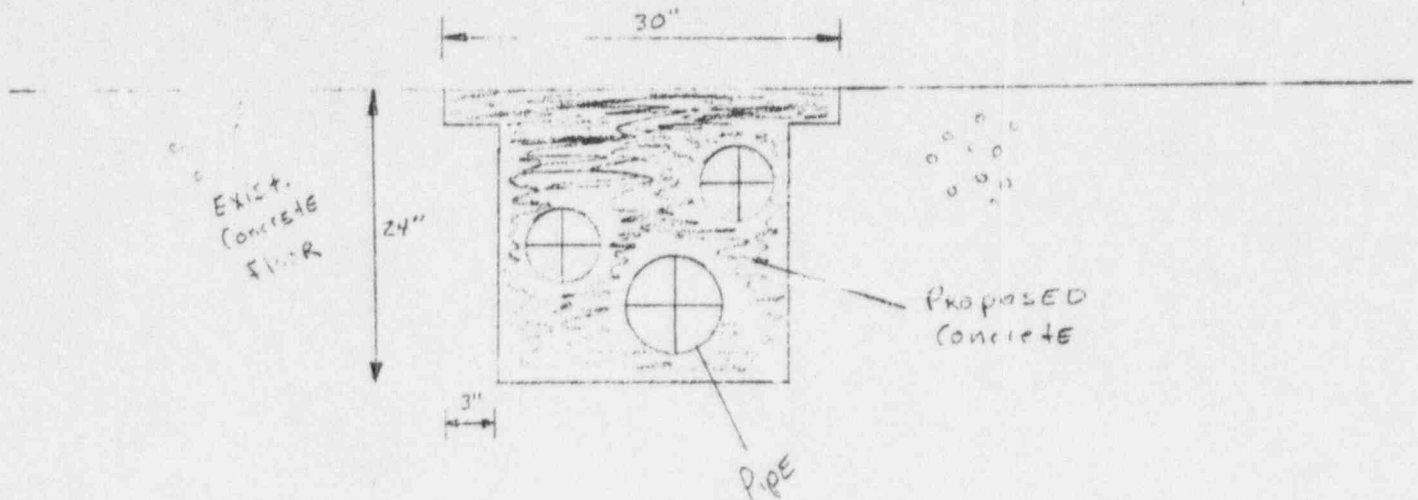
FIGURE 1

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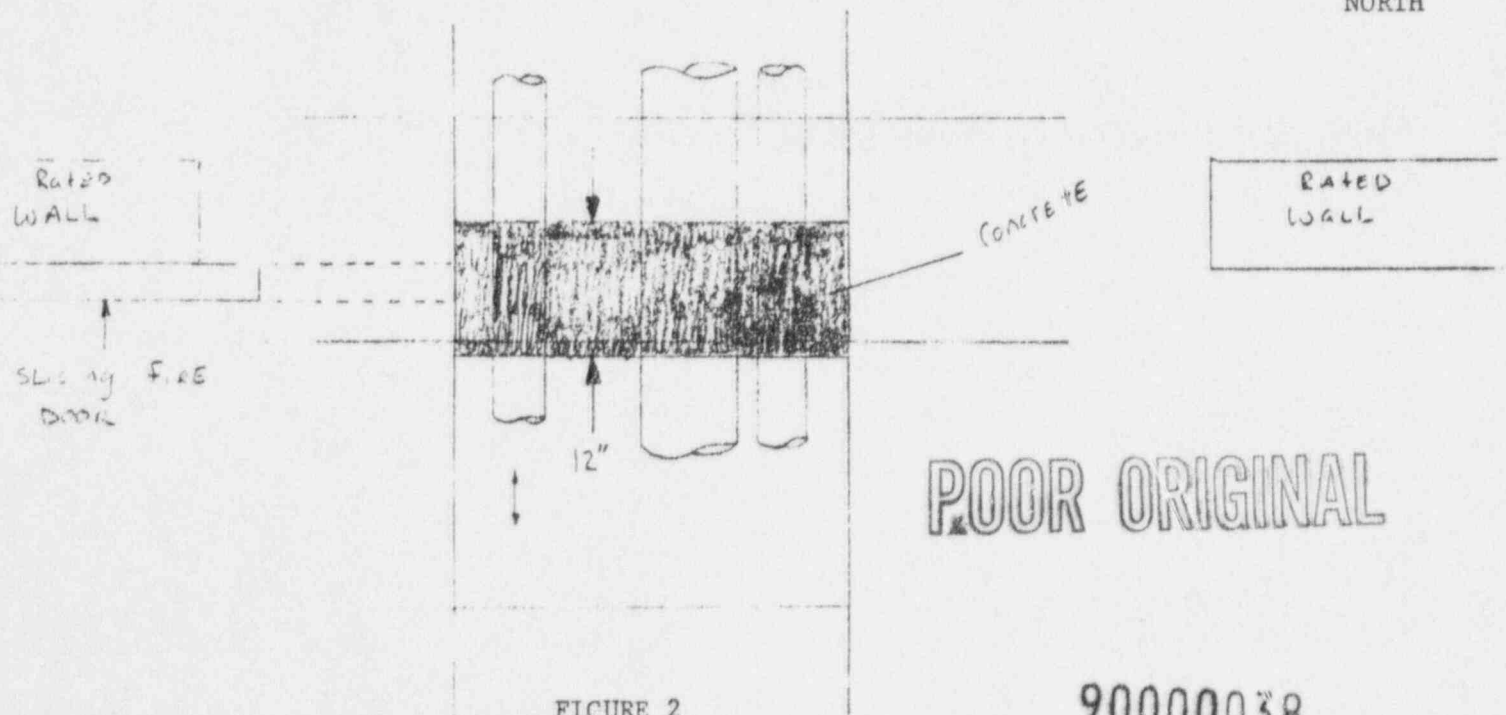
Concrete barrier between AFW Room

TRENCH BARRIER

SIDE VIEW



NORTH →



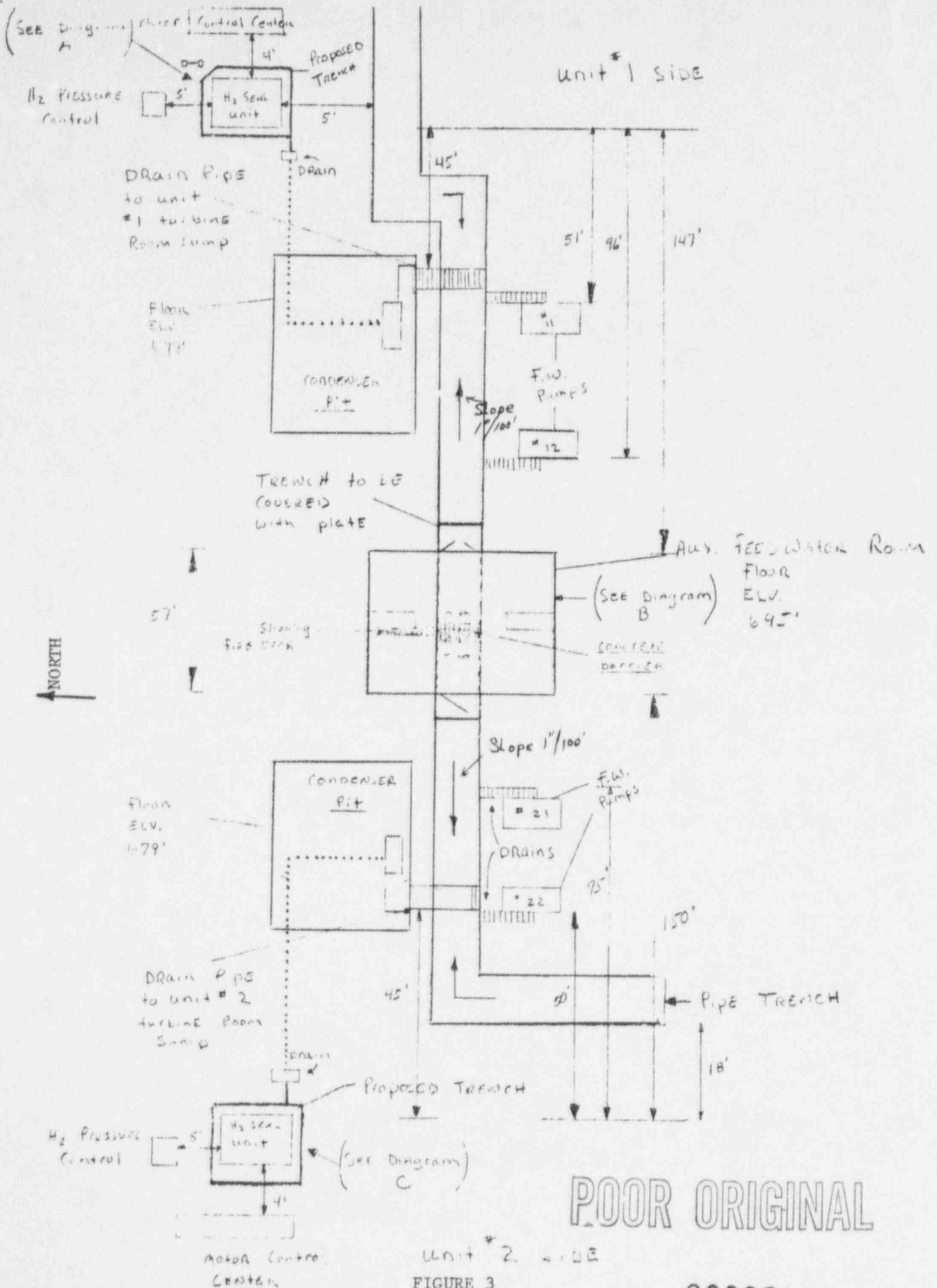
POOR ORIGINAL

FIGURE 2

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TRENCH BARRIER

Top VIEW

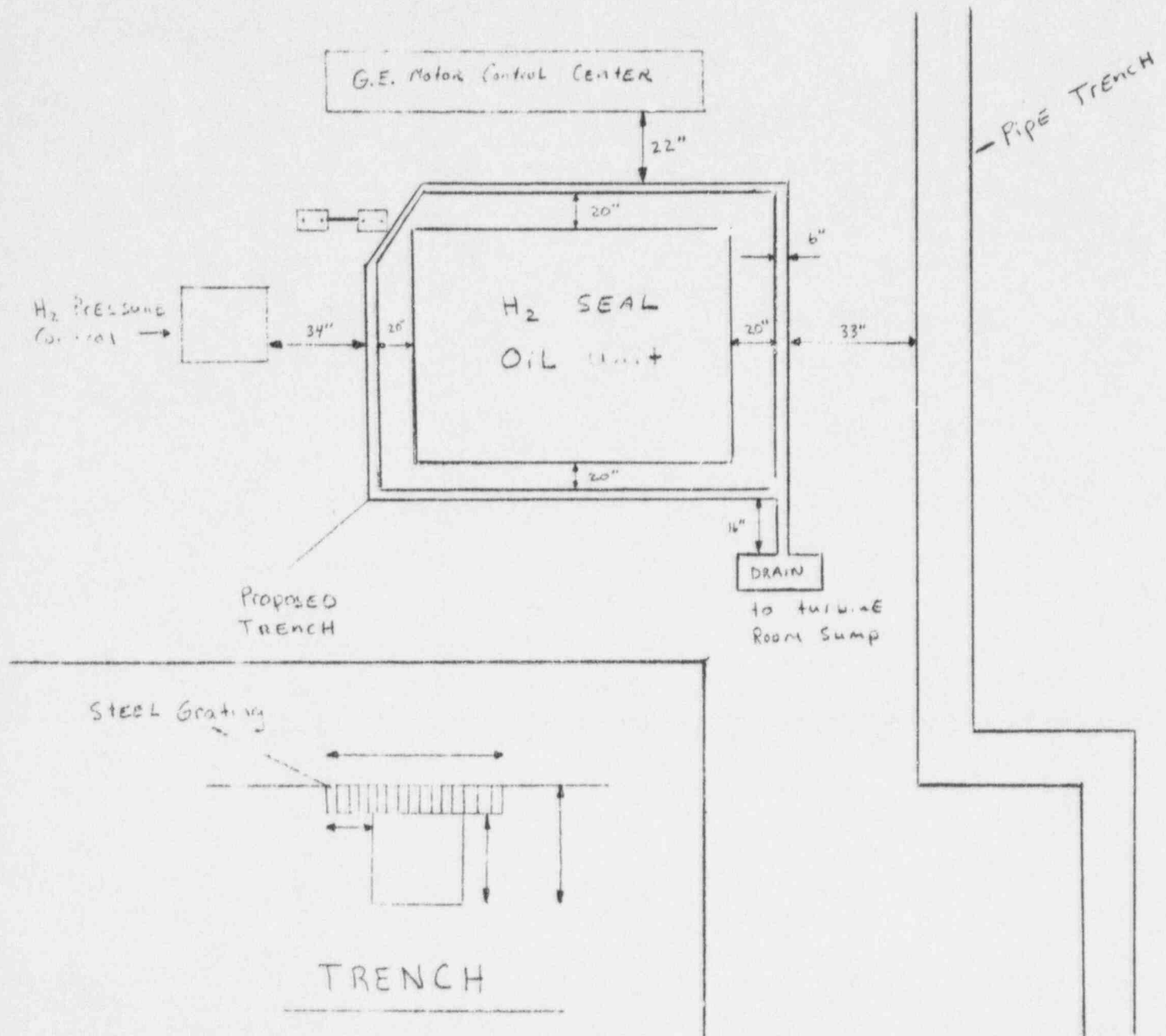


Unit #2 Side
 FIGURE 3

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UNIT #1 SIDE

EAST



POOR ORIGINAL

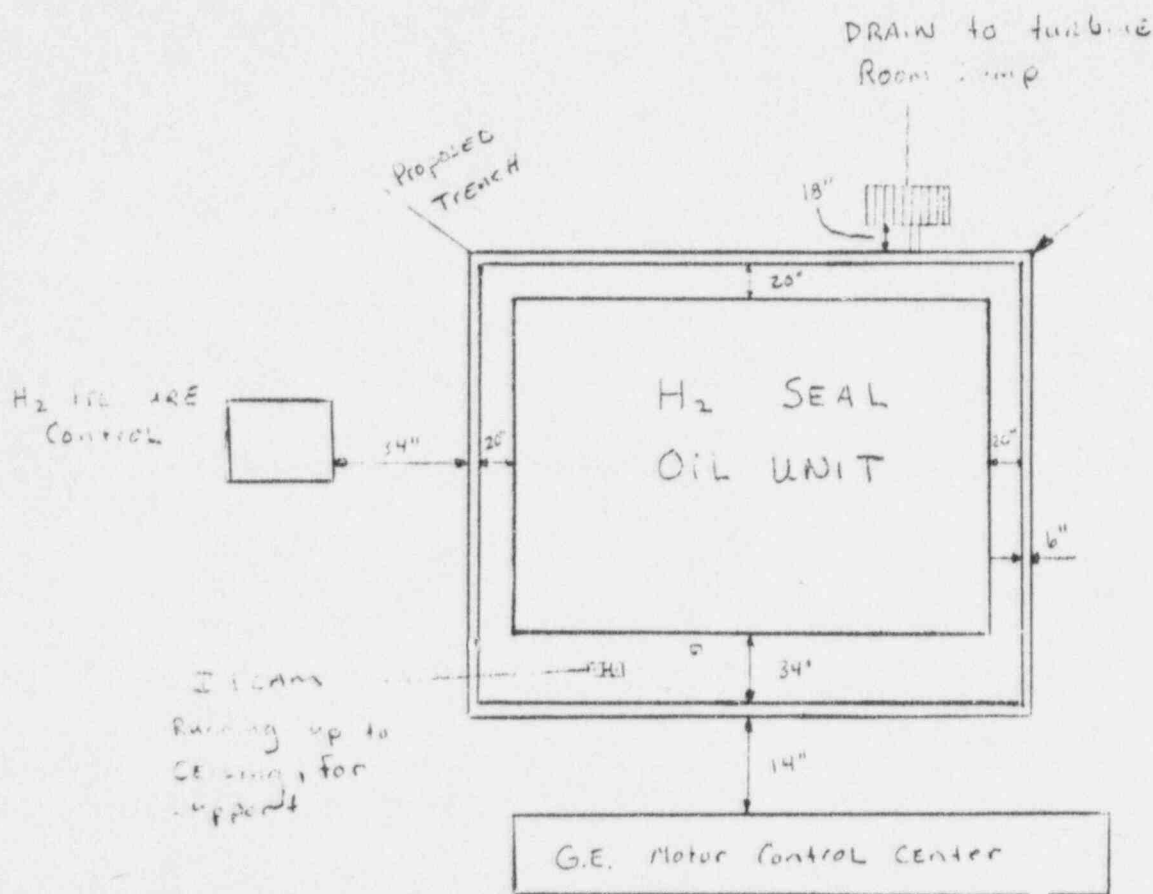
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FIGURE 4

UNIT # 2 SIDE



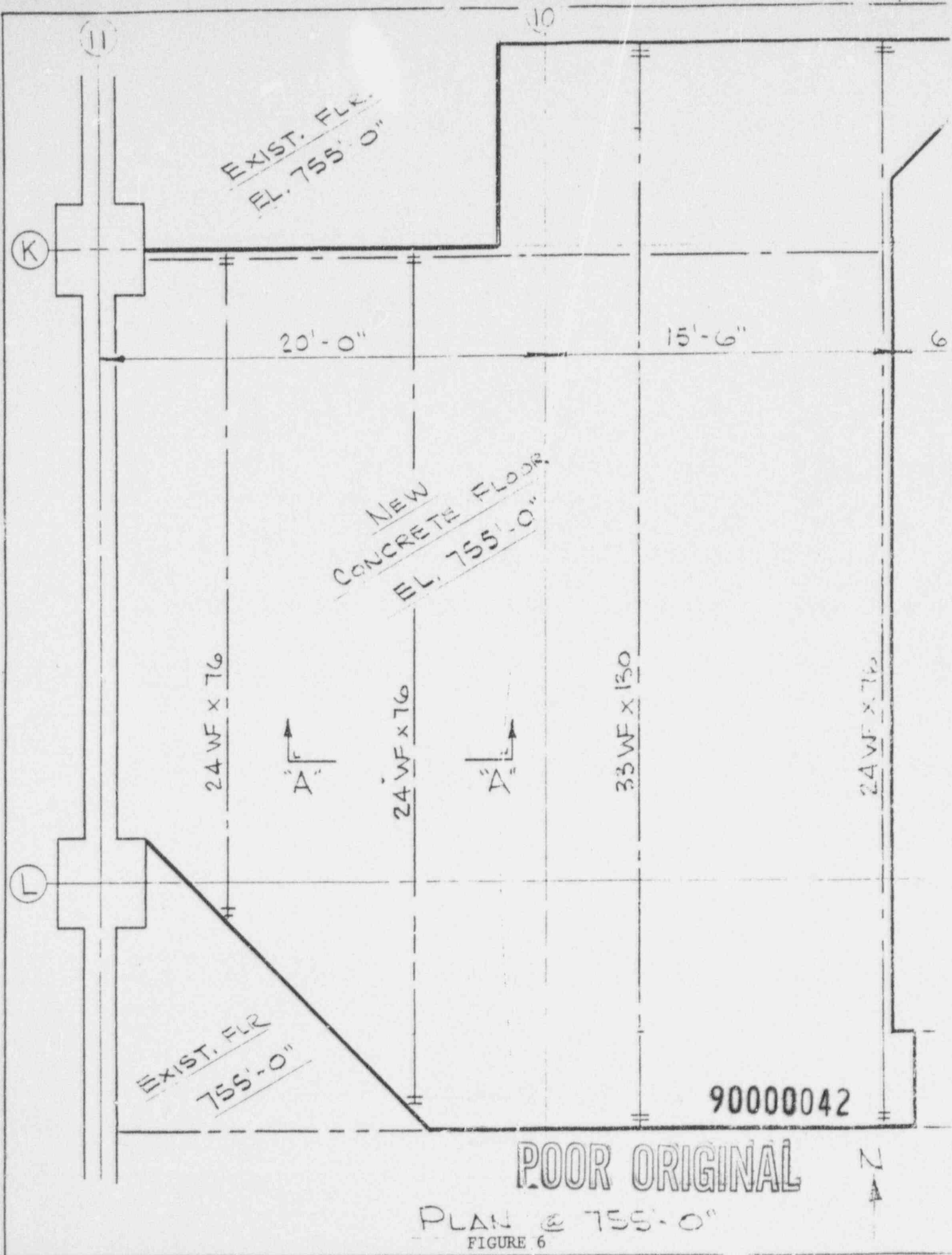
Pipe
TRENCH



POOR ORIGINAL

90000041

FIGURE 5



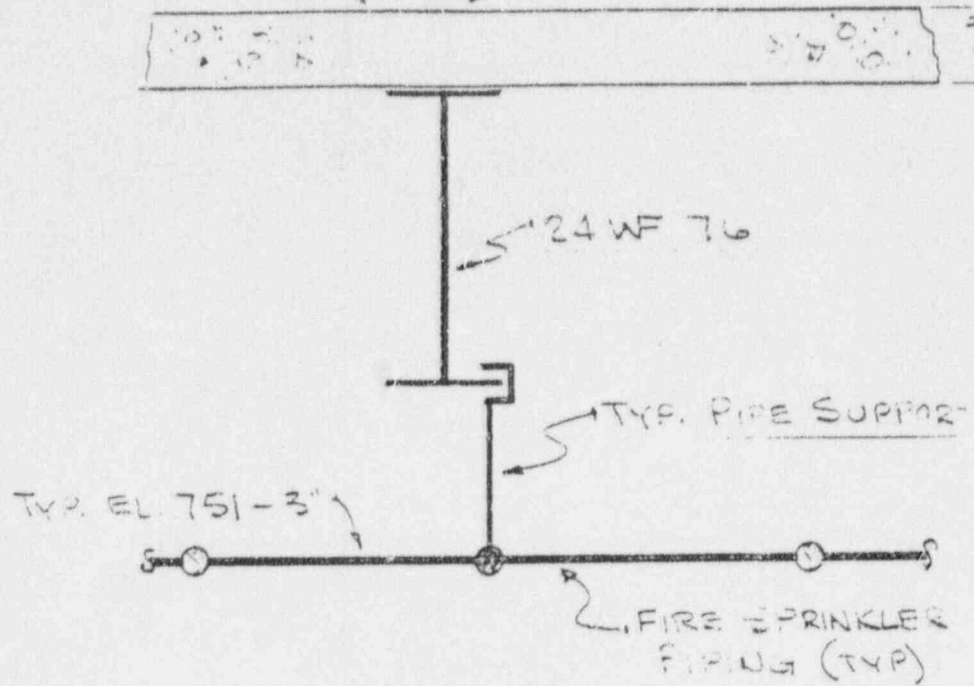
8'-10"

27'-10"

10'-10"

EL. 755'-0"

NEW CONCRETE FLOOR



SEC. "AA"

POOR ORIGINAL

NOTE:

1. THIS DWG. IS FOR REFERENCE ONLY TO SHOW THE OUTLINE OF THE NEW FLOOR AREA THAT SPRINKLER PIPING IS BENEATH.
2. FOR DETAIL OF NEW FLOOR STEEL STRUCTURES REFER TO DWG.

NF-38301-19

**Industrial
Risk
Insurers**

ACCEPTABLE FOR
INSURANCE COVERAGE,
BASED UPON
INFORMATION SHOWN AND
SUBJECT TO COMMENTS

☐ HEREON, ☐ LETTER OF _____

DATE

BY

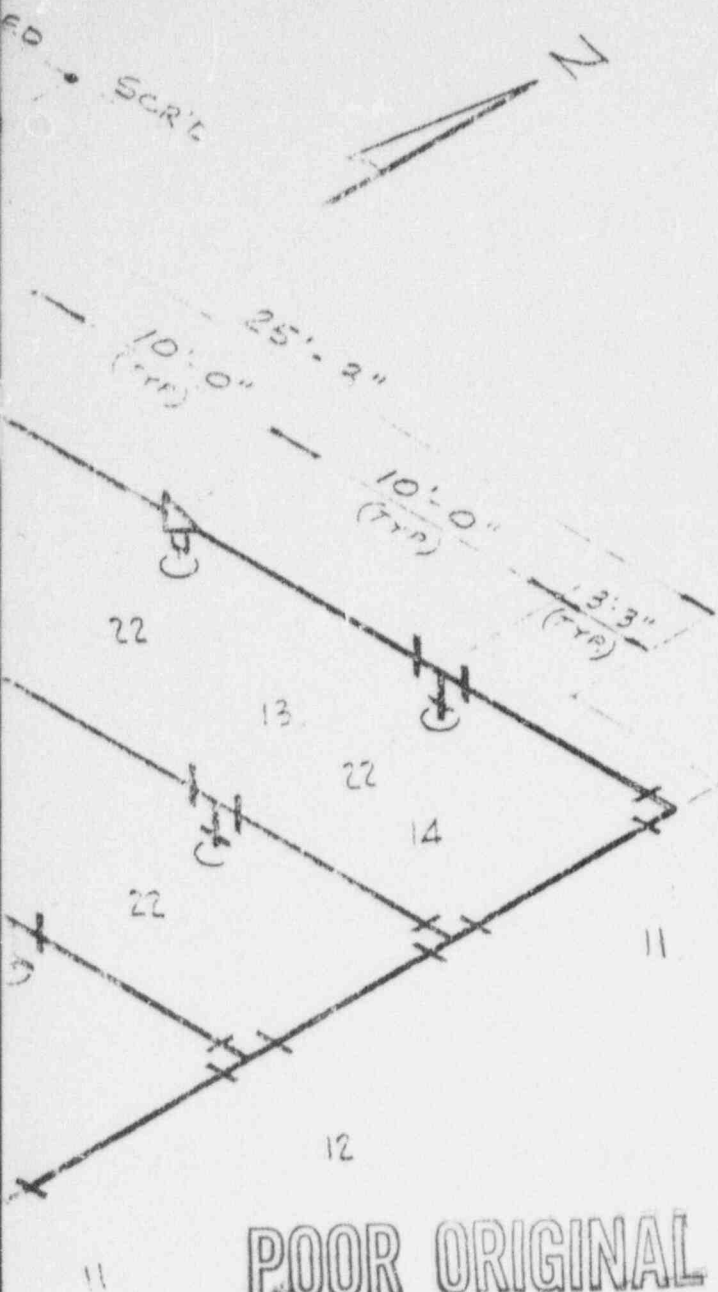
PRAIRIE ISLAND NUCLEAR GEN. STATION

UNIT 2 735'-0" FLOOR STORAGE AREA F.P.

OWN CREATOL

DC-73Y-066

90000043



1	4	4" TEE B.W. SCH. 40	c/s
2	3	4" 90° ELL. SCH. 40 B.W.	c/s
3	1	4" BALL VALVE FLG'D.	c/s
4	2	4" FLG. 150# F.F.	c/s
5	1	4" FLOW ALARM	
6	40	4" PIPE SCH. 40	c/s
7	4	4" x 1 1/2" RED. B.W. SCH. 40	c/s
8	48	1 1/2" PIPE SCH. 80	c/s
9	4	1 1/2" x 1 1/2" x 3/4" RED. TEE SCR'D.	c/s
10	4	1 1/2" x 1" x 3/4" RED. TEE SCR'D.	c/s
11	2	1" 90° ELL. SCR'D.	c/s
12	2	1" TEE SCR'D.	c/s
13	4	1" x 1" x 3/4" RED. TEE SCR'D.	c/s
14	90	1" PIPE SCH. 80	c/s
15	1	1 1/4" CPLG. SCR'D.	c/s
16	1	1 1/4" GLOBE VA. BRONZE SCR'D.	
17	1	1 1/4" NIPPLE x 6" LG. T.B.E.	c/s
18	1	1" CPLG. SCR'D.	c/s
19	1	1" GLOBE VA. BRONZE SCR'D.	
20	1	1" NIPPLE x 6" LG. T.B.E.	c/s
21	1	1/2" NIPPLE x 3" LG. T.B.E.	c/s
22	12	3/4" SPRINKLER HEADS 165°	

POOR ORIGINAL

Industrial Risk

ACCEPTABLE FOR
INSURANCE COVERAGE,
BASED UPON
INFORMATION SHOWN AND
SUBJECT TO COMMENTS

☒ HEREON,

☒ LETTER OF 8-2-78

DATE 8-2-78

BY JW

NOTE:

WELDED PIPE SPEC M-362

WELD PROCEDURE 1A11-0 (5.2107)

SCR'D FITTINGS; STOCKHAM OR EQUIV.

PIPING PER, N.F.P.A. SEC. 13, VOL. 1 & 2

REF. DWG. NF-39300-5

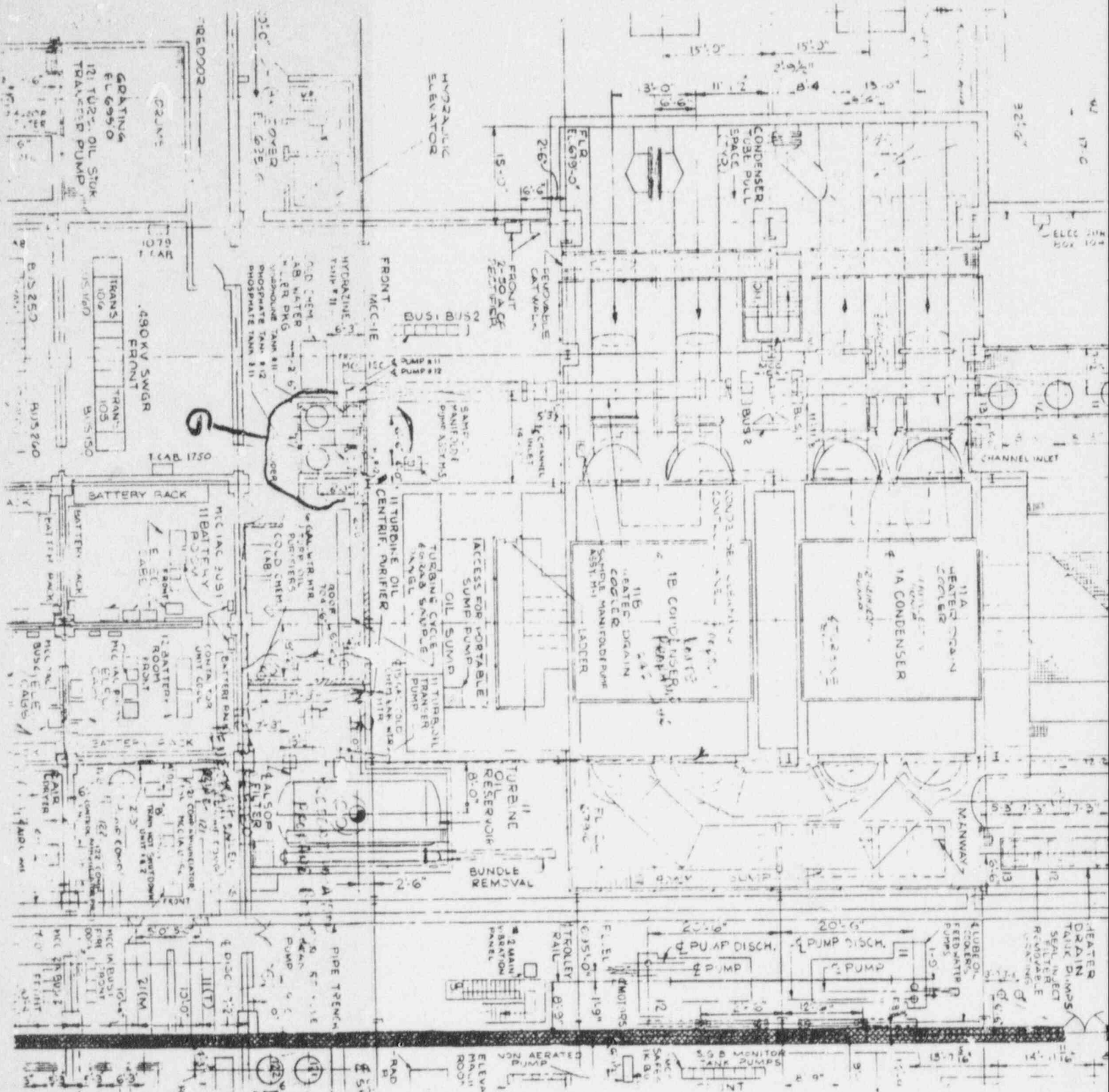
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PRAIRIE ISLAND NUCLEAR GEN. STATION

UNIT 2 755'-0" FLOOR STORAGE AREA FIRE PROTECTION

D. C. BALLOS

DC-78Y-C66-2



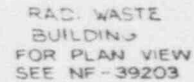
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POOR ORIGINAL

FIGURE 8

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90000048



FIRE AREA 25 LOCATION 695 level #1 Diesel Rm. EMERG LIGHT Yes

TYPE OF FIRE
& FIRE LOAD

Cables Fuel Oil & Lube Oil
2384 lbs 700 gals.
81,910 BTU/sq ft

PERSONNEL HAZARDS

Acrid smoke from cables
Heavy black smoke from oil

COMMUNICATIONS

Gaitronics page - Sound powered phone jackbox.

FIRE EQUIPMENT

Pre-action wet pipe system
1-3 hr fire door
1-1 1/2 hr fire door
CO₂ mounted in room
Dry chemical (DC) & hose station outside area

EQUIPMENT CONTROL

Emerg Gen Pre-lube pump - MCC1T-Bus 1
Emerg Gen Lube oil pump - MCC1T-Bus 1
D-1 Emerg Gen air compressor - MCC1T-Bus 1
121 D-1 Emerg Gen Diesel fuel storage pump
Panel 134 - Brk 1
122 D-1 Emerg Gen Diesel fuel storage pump
Panel 134 - Brk 2
MCC1T-Bus 1 Bus 110 Brk 113
Secure ventilation to area
Loss of diesel room ventilation if MCC is
de-energized. Smoke removal by portable fans
necessary if MCC1T-1 is damaged.

SPECIAL INSTRUCTIONS

Use portable fans for smoke removal
Refer to MCC & cell listing for loss of
safeguards MCC's
Deluge & sprinkler isolation same as #2
diesel room (see Det Zone 6).
Ensure 121 & 122 diesel fuel storage pumps
are de-energized.

SUMMARY

The diesel room is provided with flame and
ionization detectors and heat actuating
devices. A fire would be immediately detected,
followed by the pre-action wet pipe system being
activated (Det. Zone 7). CO₂ and hose station
are fire fighting. Smoke is the most hazardous
element to the fire brigade.

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FIRE Detection Zone 82

WHP



Hose Station



Extinguisher



Sound powered/GaT page

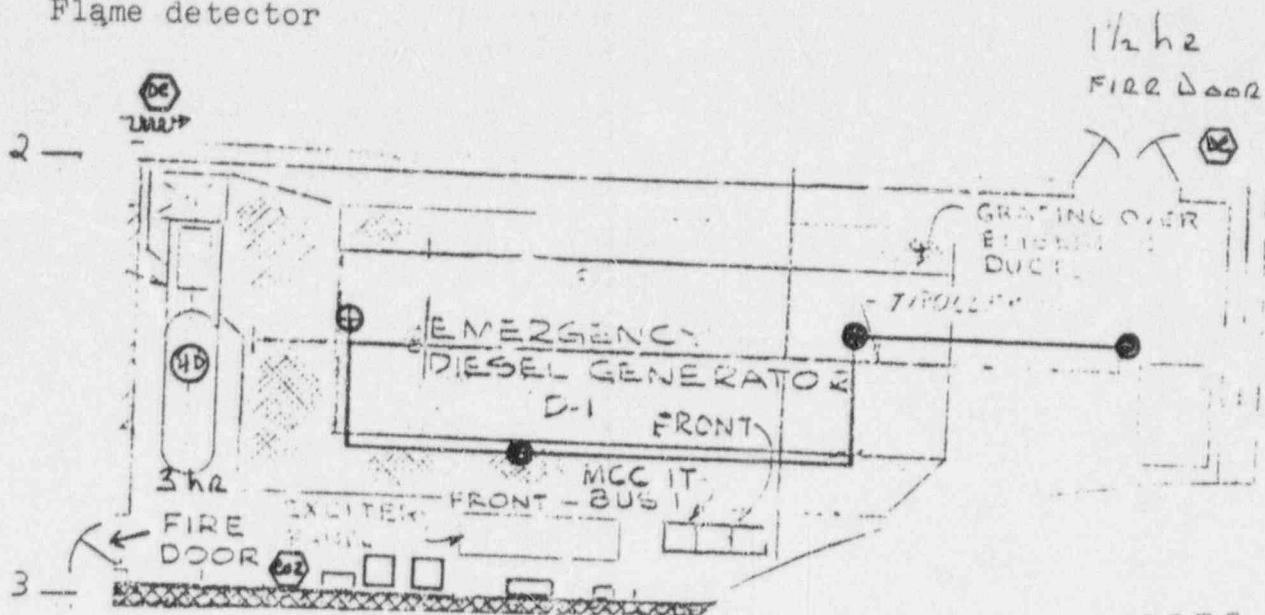


Heat activated device



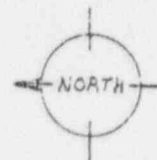
Ionization detector

Flame detector



POOR ORIGINAL

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






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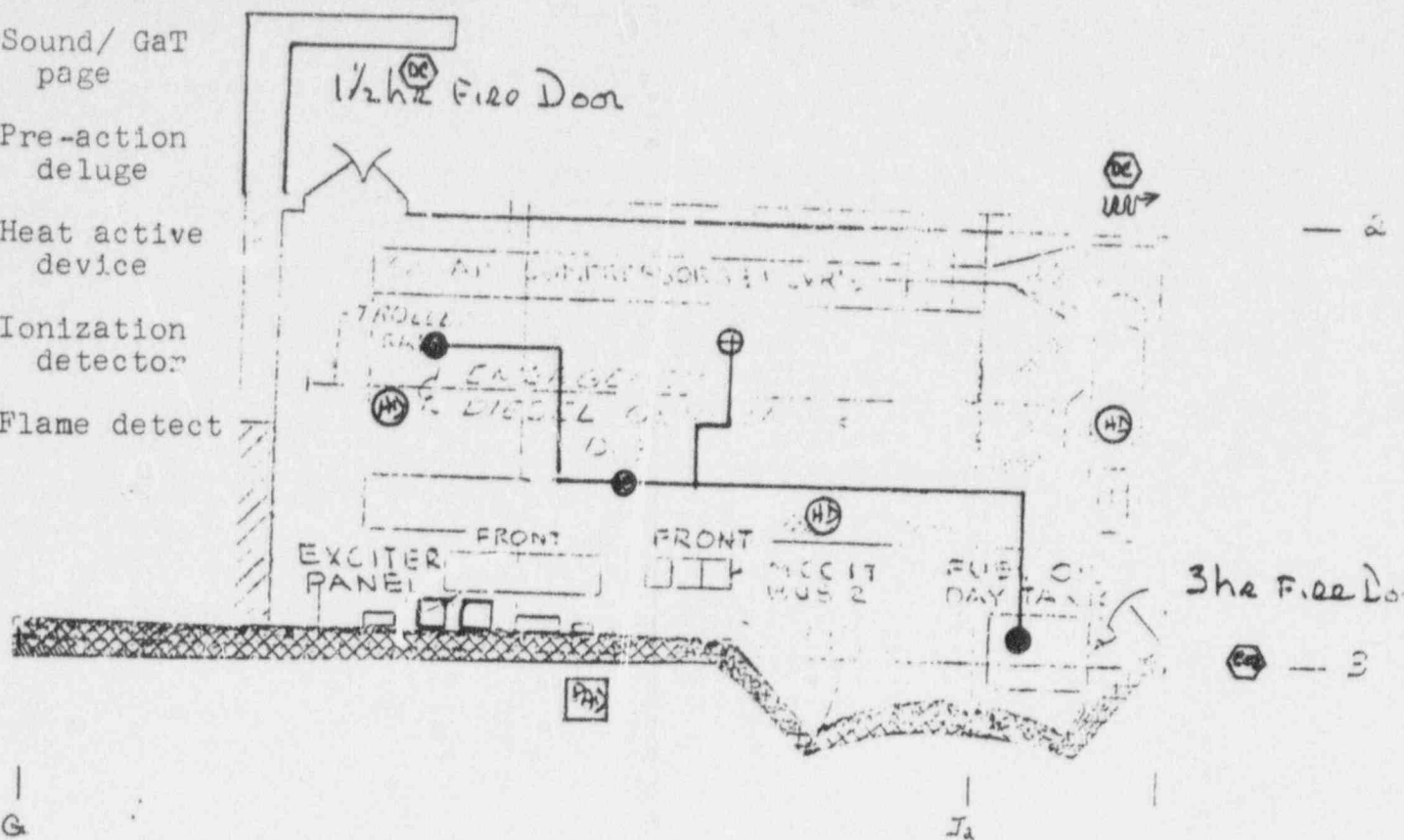
FIRE AREA 26 LOCATION 695 level #2 Diesel Room EMERG LIGHT Yes

TYPE OF FIRE & FIRE LOAD	<u>Cables</u> 244 lbs 75,366 BTU/Sq ft	<u>Fuel Oil & Lube Oil</u> 700 gals
PERSONNEL HAZARDS	Acrid smoke from cables Heavy black smoke from oil	
COMMUNICATIONS	Gaitronics page - Sound powered phone jackbox	
FIRE EQUIPMENT	Pre-action wet pipe system 1-3 hr fire door 1-1 1/2 hr fire door CO2, dry chemical(DC) & hose station outside area	
EQUIPMENT CONTROL	Emerg Gen Pre-lube pump - MCC1T-Bus 2 Emerg Gen Lube oil pump - MCC1T-Bus 2 D-2 Emerg Gen air compressor - MCC1T-Bus 2 123 D-2 Emerg Gen Diesel fuel storage pump Panel 135-Brk 1 124 D-2 Emerg Gen Diesel fuel storage pump Panel 135-Brk 2 MCC1T-Bus 2 Bus 120 Brk 123 Secure ventillation to area Loss of diesel room ventilation if MCC is de-energized. Smoke removal by portable fans necessary if MCC1T-2 is damaged.	
SPECIAL INSTRUCTIONS	Use portable fans for smoke removal. Refer to MCC & cell listing for loss of safeguard's MCC's. Ensure 121 & 122 diesel fuel storage pumps are de-energized.	
SUMMARY	The diesel room is provided with flame and ionization detectors and heat actuating devices. A fire would be immediately detected followed by the pre-action wet pipe system being activated (Det. Zone 7). CO ₂ and hose station are provided out side the room to assist in fire fighting. Smoke is the most hazardous element to the fire brigade.	

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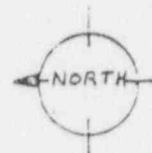
Fire Det alarm Zone 6

-  Hose Station
-  Extinguisher
-  Sound/ GaT page
-  Pre-action deluge
-  Heat active device
-  Ionization detector
-  Flame detect



COMMENTS:

POOR ORIGINAL



90000052