Nebraska Public Power District

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LQA8100207

June 30, 1981

Mr. Darrel G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Eisenhut:

Subject: Control of Heavy Loads

Reference: 1) Letter from D. G. Eisenhut to all licensees dated December 22, 1980, same subject.

This letter is in response to the request for additional information found in enclosure 3 of Reference 1.

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:

NPPD's review of safety-related areas indicated the following overhead handling systems may result in damage to a system required for plant shutdown or decay heat removal:

1) Reactor Building Crane - The crane handles heavy loads in the vicinity of the spent fuel pool and the reactor core.

2) Intake Structure Crane - The crane handles service water pump and motor parts in the vicinity of the service water pump room.

3) Diesel Generator Hoist - The hoist handles diesel generator parts only when the individual diesel generator is shutdown.

4) Control Building Hoist - The hoist handles service water booster pump and motor parts in the vicinity of the basement of the Control Building.

5) Reactor Building Hoists - Miscellaneous hoists in the reactor building are capable of lifting heavy loads in the vicinity of safety-related equipment. The hoists are generally used only when the plant is shutdown.

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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:

There are no exclusions.

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

Response:

The reactor building crane moves heavy loads only over areas as defined by CNS maintenance procedures to their designated laydown areas. The refueling floor outline (Figure 1) shows which areas are considered safe load paths for each individual procedure.

The intake structure crane lifts the service water pump and motor parts out of individual hatches above the service water pump room when maintenance is required. Figures 2 and 3 show the service water pump room and the hatches used to remove the parts. Removal through the hatches is considered a safe load path.

The diesel generator room (Figure 4) shows the monorail system C-4 above diesel generator 1A and 1B. The lifting would occur over only one individual shutdown diesel generator unit at a time so the monorail system is considered a safe load path.

The control building basement (Figure 5) shows the monorail H-7 above the RHR service water booster pumps. Servicing the pump and motor parts occurs around each individual pump so the safe load path is established.

The reactor building hoists are shown in Figures 6 through 9. Monorial H-10 on Figure 6 is considered a safe load path since the loads handled would not be lifted over any safety-related equipment. Monorails H-9A and H-9B on Figure 6 located over the recirculation pumps cannot possibly be used unless the plant is shutdown making them safe load paths.

The two 4 1/2 ton hoists and one 7 1/2 ton hoist installed for the Mark I containment project are located over the northwest hatch above the torus on Figure 6. The hoist is used during shutdown for movement of material into and out of the torus and the path through the hatch is considered a safe load path.

Hoist C-2 on Figure 7 used for valve and equipment removal cannot possibly be used unless the plant is shutdown making the hoist's path a safe load path.

Monorails H-13 and H-14 shown on Figure 8 are located above RHR heat exchangers 1A and 1B. The monorails are used only when working on the heat exchangers while the plant is shutdown and are therefore considered a safe load path.

A jib crane and trolley shown on Figure 8 are used to move control rod drives when maintenance is required during an outage. The jib crane is used to raise and lower the drives between the 903' and 958' elevation, while the trolley is used to move the drives for repair on the 958' elevation. Neither is used to lift loads over safety-related equipment and therefore have safe load paths.

Monorail H-12 which is shown on Figure 9 is used for work on the RWCU filter demineralizers and is isolated from other safety-related plant equipment. It is, therefore, considered to have a safe load path.

Explanation of Figure 1:

1) The area outside of all the cross hatched regions is a safe load path for the shield plugs which are covered under Procedure 7.4.1.

2) The area outside of the single and triple cross hatched regions is a safe load path for the drywell head, RPV insulation, RPV head, and service platform which are covered under Procedures 7.4.2, 7.4.3, 7.4.4, and 7.4.19.

3) The area outside of the triple cross hatched region is a safe load path for the steam separator and dryer units which are covered under Procedures 7.4.5 and 7.4.6.

4) The dashed line is a safe load path for the spent fuel cask which is covered under Procedure 3.7.

No further discussion is required on Figures 2 through 9. The explanation is given in the response to Part 2.1.3a.

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:

Station Procedure 7.6.1, "Operation of Reactor Building Crane and Miscellaneous Reactor Building Hoists", controls the operation of the reactor building crane and the other miscellaneous hoists in the reactor building. This procedure requires that a special procedure be written any time heavy loads not covered by a specific procedure are to be moved over or near the open vessel, fuel pool, or safety equipment. Station Procedures 7.4.1 through 7.4.6, and 7.4.19 have precautions to ensure that load handling operations remain within safe load paths. Station Procedure 3.7 and Special Procedure 77-3 show the horizontal controlled path of the spent fuel cask. Limit switches and the redundant crane installed at CNS ensure the load-handling operation within this safe load path.

The service water pump is covered by Procedure 7.2.15 which states that no pump or motor parts shall be lifted where a load drop could result in damage to the other pumps and motors or associated safety-related equipment.

As mentioned previously, the hoists above the diesel generators are considered safe load paths so no further precautions are necessary.

The RHR service water booster pumps are covered by Procedure 7.2.14 which states that no pump and motor parts shall be lifted where a load drop could result in damage to the other pumps and motors or associated safety-related equipment.

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 procedures specify the equipment required for the heavy loads listed in the following tables. The inspections and acceptance criteria required before movement of the load are specified in the procedures. The proper sequence for handling the loads has been covered in the procedures. The heavy loads listed have revised procedures which have precautions and limitations specifying general areas in which heavy loads may be handled. In view of the above, Section 5.1.1(2) of NUREG 0612 has been fulfilled.

Reactor Building - Identifiable Heavy Loads

Load Identification	Load Weight	Designated Lifting Device	Maintenance Procedure
1. (4) Outside Semi-circular cavity plugs	80 tons each	Reactor Bldg. Crane	7.4.1
2. (2) Center cavity plugs	92 tons each	Reactor Bldg. Crane	7.4.1
3. (3) Bottom dryer plugs	44 tons each	Reactor Bldg. Crane	7.4.1
4. (1) Upper dryer plug	56 tons	Reactor Bldg. Crane	7.4.1
5. (4) Bottom Fuel Pool plugs	5 tons each	Reactor Bldg. Crane	7.4.1
6. (1) Upper Fuel Pool plug	9 tons	Reactor Bldg. Crane	7.4.1

Load Identification	Load Weight	Designated Lifting Device	Maintenance Procedure
7. Drywell Head	43 tons	Reactor Bldg. Crane	7.4.2
8. RPV Head Insulation	4 tons	Reactor Bldg. Crane	7.4.3
9. RPV Head	80 tons	Reactor Bldg. Crane	7.4.4
10. Steam Dryer	32.5 tons	Reactor Bldg. Crane	7.4.5
11. Steam Separator	42 tons	Reactor Bldg. Crane	7.4.6
12. Vessel Service Platform	5 tons	Reactor Bldg. Crane	7.4.19
13. Waste and Debris Shipping Casks	35 ton max.	Reactor Bldg. Crane	7.3 SP77-3, Rev. 5
14. Head Strongback	5 tons	Reactor Bldg. Crane	7.4.2 7.4.4
15. Stud Tensioner Spreader	6 tons	Reactor Bldg. Crane	7.4.4
16. Crane Load Block	6 1/4 tons	Reactor Bldg. Crane	Used in all the above

NOTE: The Reactor Building Crane is governed by Maintenance Procedure 7.6.1.

Intake Structure and Control Building - Identifiable Heavy Loads

Load Identification	Load Weight	Designated Lifting Device	Maintenance Procedure
1. Service Water Pump	6 tons	Intake Structure Crane	7.2.15
2. Service Water Pump Motor	1 3/4 tons	Intake Structure Crane	7.2.15
3. RHR Service Water Booster Pump	1 1/2 tons	Control Bldg. Hoist H-7	7.2.14
4. RHR Service Water Booster Pump	3 1/4 tons	Control Bldg. Hoist H-7	7.2.14

NOTE: The Intake Structure Crane is governed by Maintenance Procedure 7.6.3.

2.1.3.d: Verification that lifting devices identified 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 reactor building crane meets the requirements of ANSI N14.6-1978 for special lifting devices for shipping containers weighing 10,000 pounds or more for nuclear materials. This crane, the intake structure crane, and all of the other lifting devices at CNS meet ANSI B30.9-1971 requirements.

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:

ANSI B30.2-1976 has been invoked under CNS Maintenance Procedure 7.2.32, "Crane, Hoist, Sling, and Cable Inspection." The individual procedures for the Intake Structure and Reactor Building Cranes call for further inspection before the cranes are used.

2.1.3.f: 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 compliance with these standards is not provided.

Response:

The guidelines of CMAA Specification 70 and Chapter 2-1 of ANSI B30.2-1976 are concerned with the design of the overhead and gantry cranes. The cranes at CNS comply with these guidelines.

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

Response:

A qualification checklist for trainee crane operator has been used at CNS in the past. A new procedure has been written to ensure that ANSI B30.2-1976 with respect to operator training, qualification, and conduct has been met.

The interim actions described in Enclosure 2 to Reference 1 were implemented prior to March 15, 1981. The response to Sections 2.2 and 2.3 of Enclosure 3 to Reference 1 will be submitted approximately September 22, 1981.

If additional clarification is required on any of these items, please contact me.

Sincerely,

Jay M. Pilant

Jay M. Pilant
Director of Licensing &
Quality Assurance

JMP/kcw/teh:bn30/5
Enclosure

Figure #1

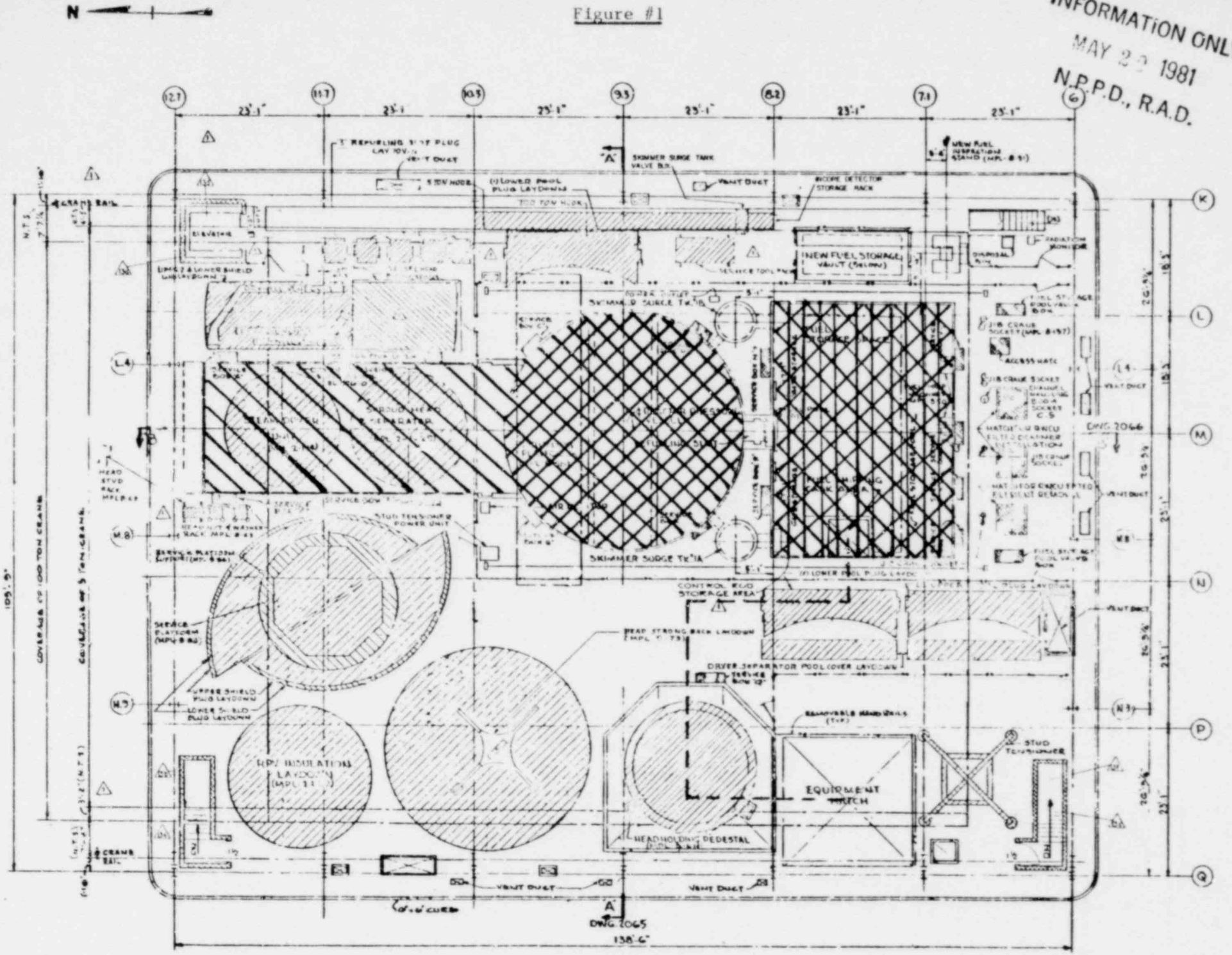
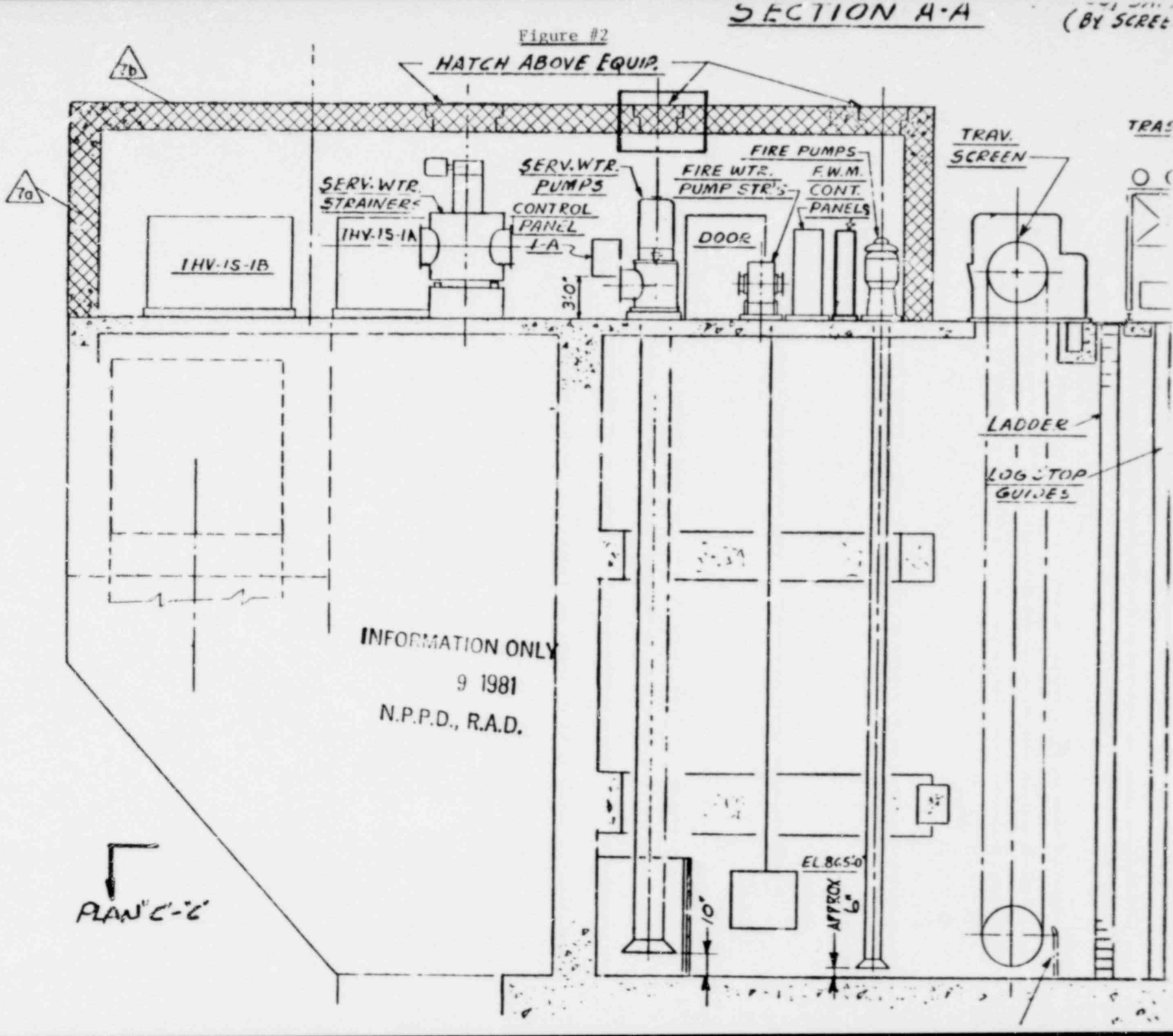


Figure #2


SECTION A-A
(BY SCREE
HATCH ABOVE EQUIP.
7b
7a
TRAV. SCREEN
TRAS
FIRE PUMPS
SERV. WTR. PUMPS
FIRE WTR. PUMP STR'S
F.W.M. CONT. PANELS
SERV. WTR. STRAINERS
CONTROL PANEL 1-A
1HV-15-1A
1HV-15-1B
DOOR
3'0"
LADDER
LOG STOP GUIDES
INFORMATION ONLY
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N.P.P.D., R.A.D.
EL. 865'-0"
10"
APPROX 6"
PLAN C-C

Figure #3

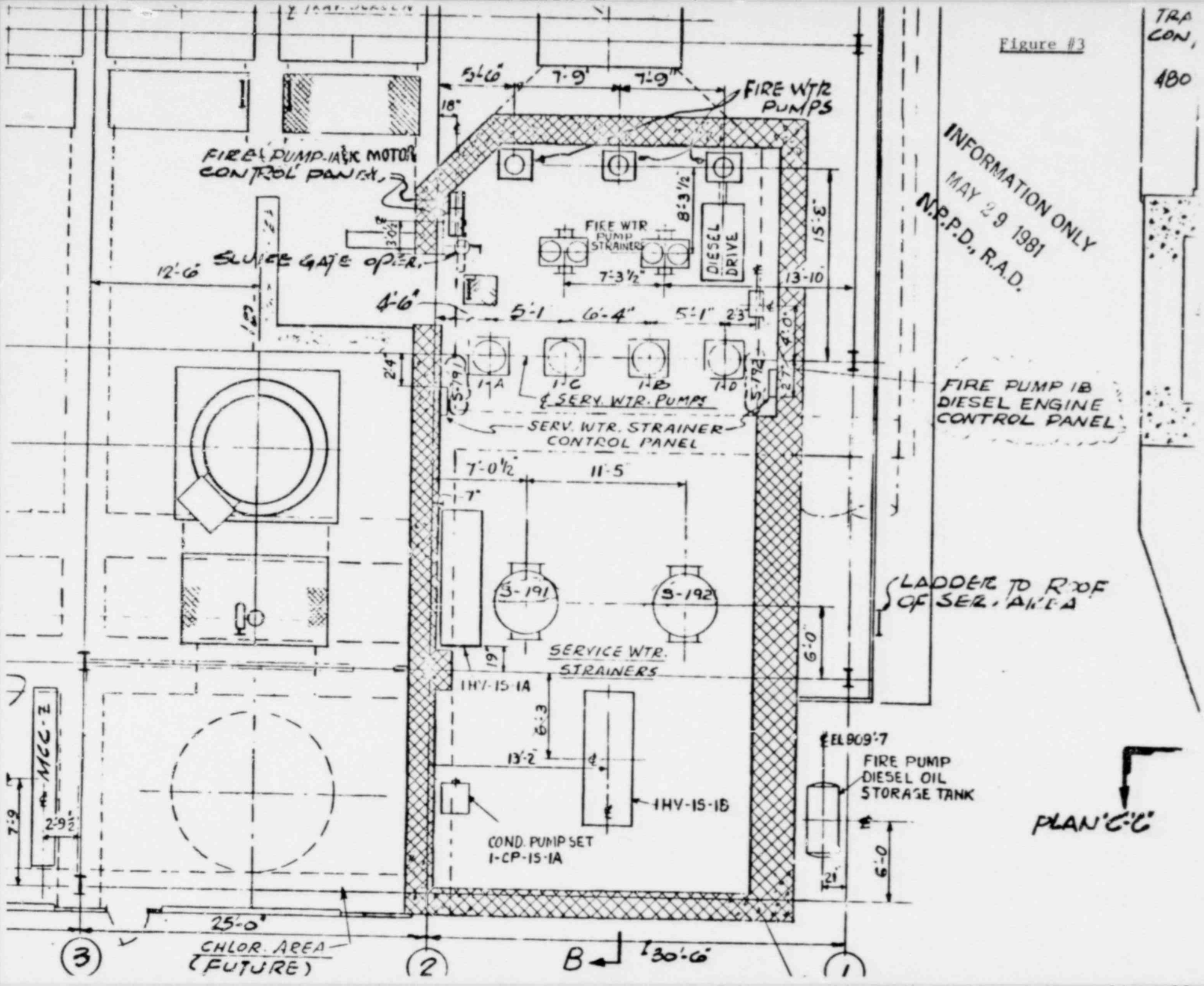
FIRE WTR PUMPS
FIRE PUMP MOTOR CONTROL PANEL
FIRE WTR PUMP STRAINERS
DIESEL DRIVE
SLUICE GATE OPER.
SERV. WTR. PUMPS
SERV. WTR. STRAINER CONTROL PANEL
FIRE PUMP 1B DIESEL ENGINE CONTROL PANEL
LADDER TO ROOF OF SER. WTR. AREA
SERVICE WTR. STRAINERS
1HV-15-1A
1HV-15-1B
COND. PUMP SET 1-CP-15-1A
FIRE PUMP DIESEL OIL STORAGE TANK
EL 809'-7
PLAN C-C
CHLOR. AREA (FUTURE)
INFORMATION ONLY
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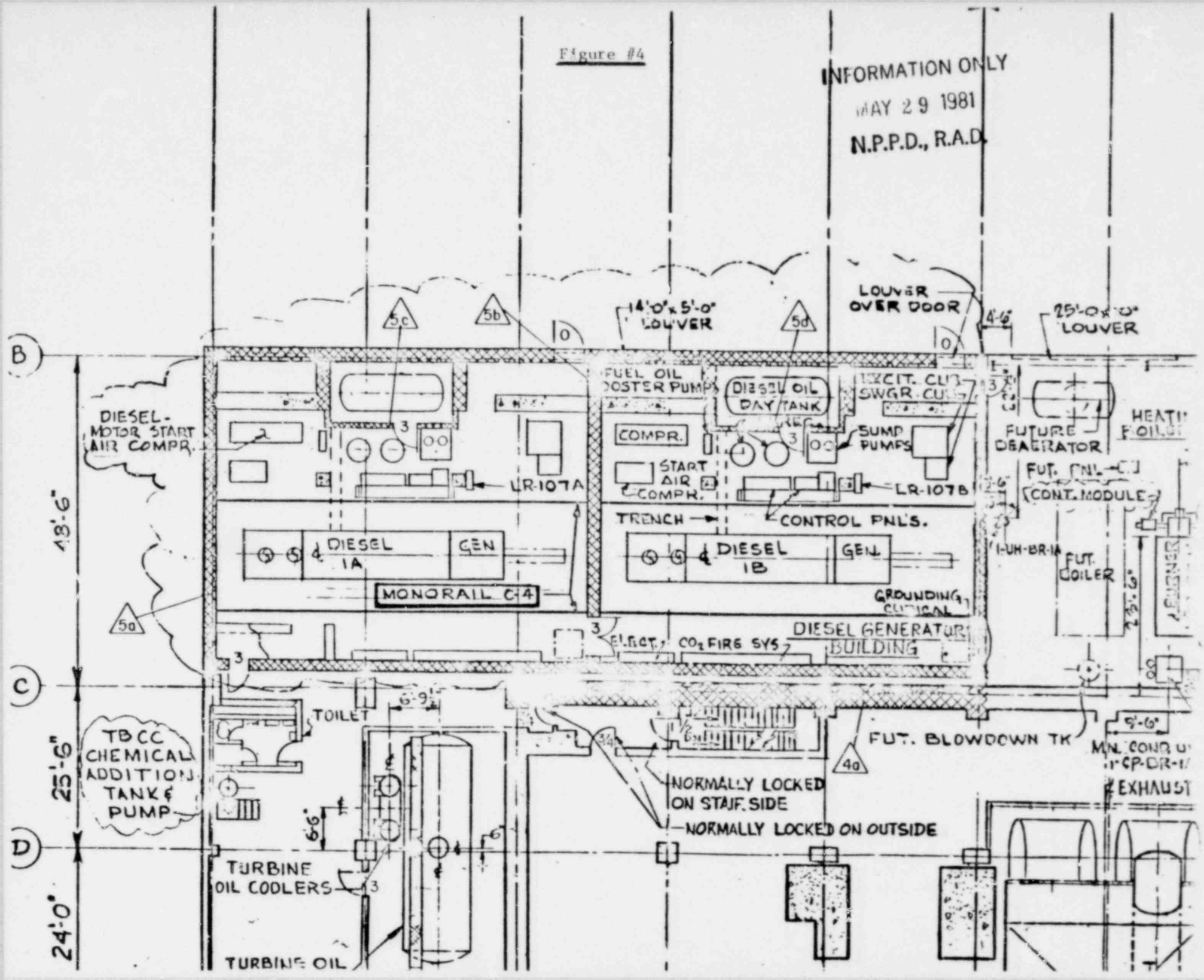
Figure #4



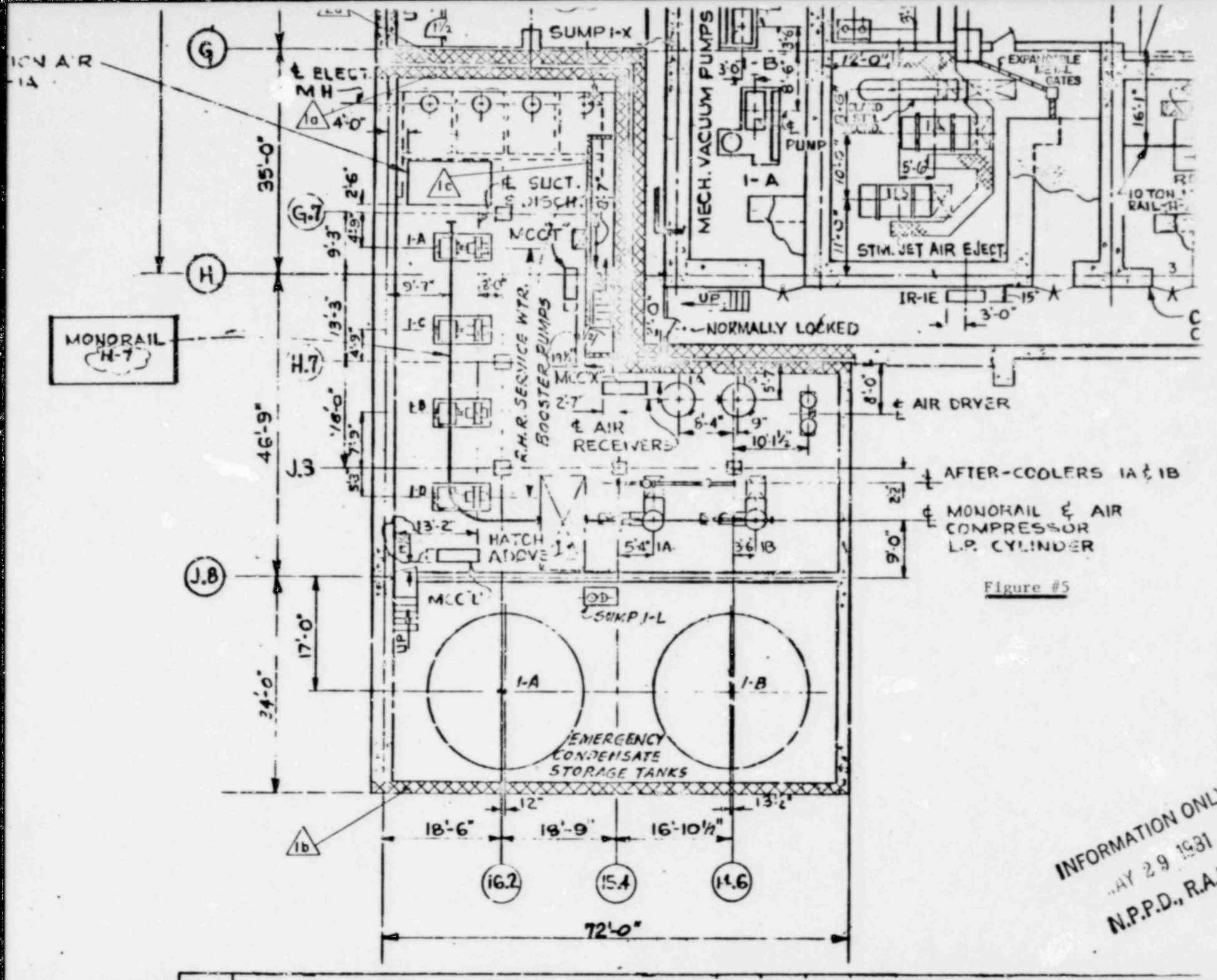


Figure #5

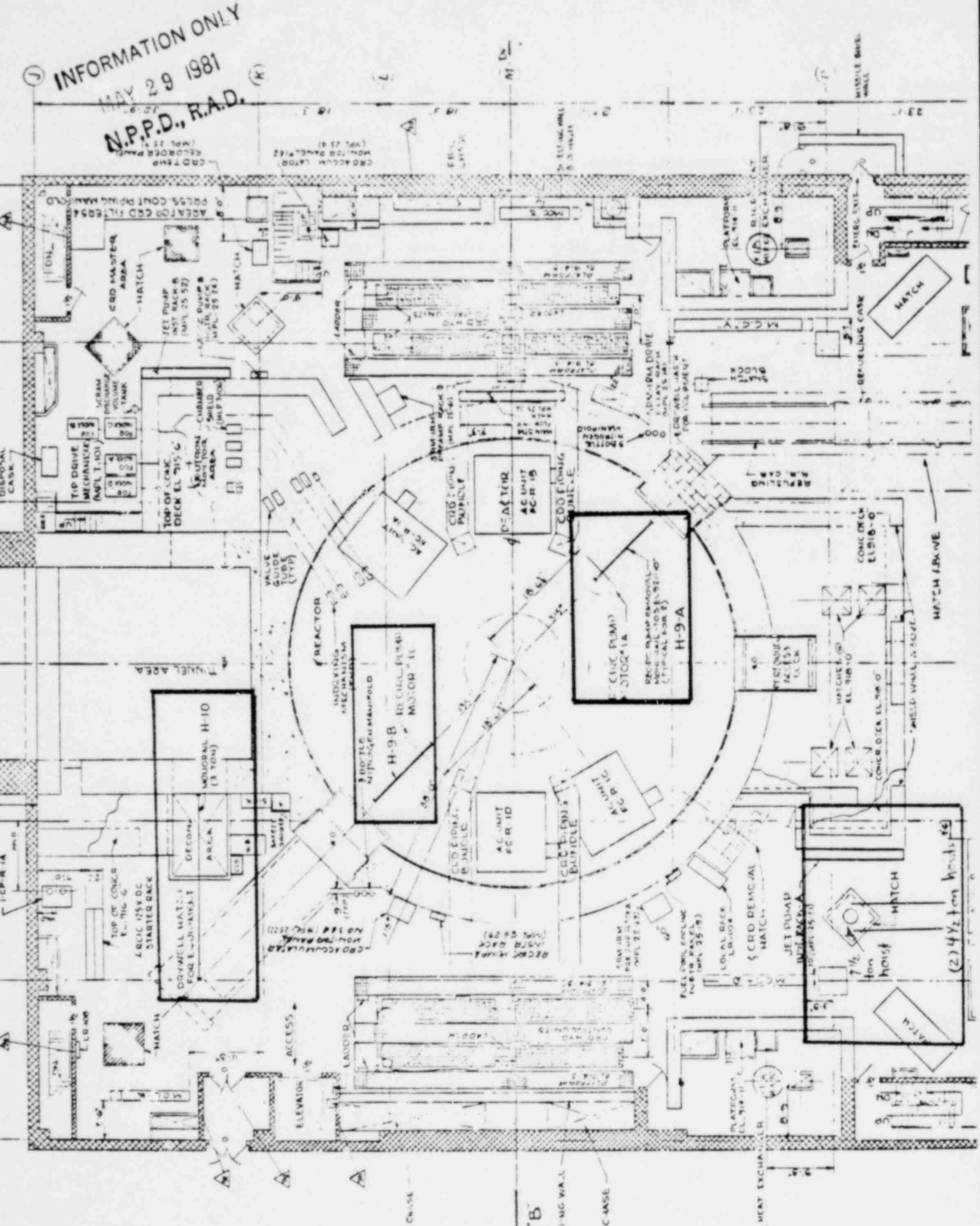


Figure #6

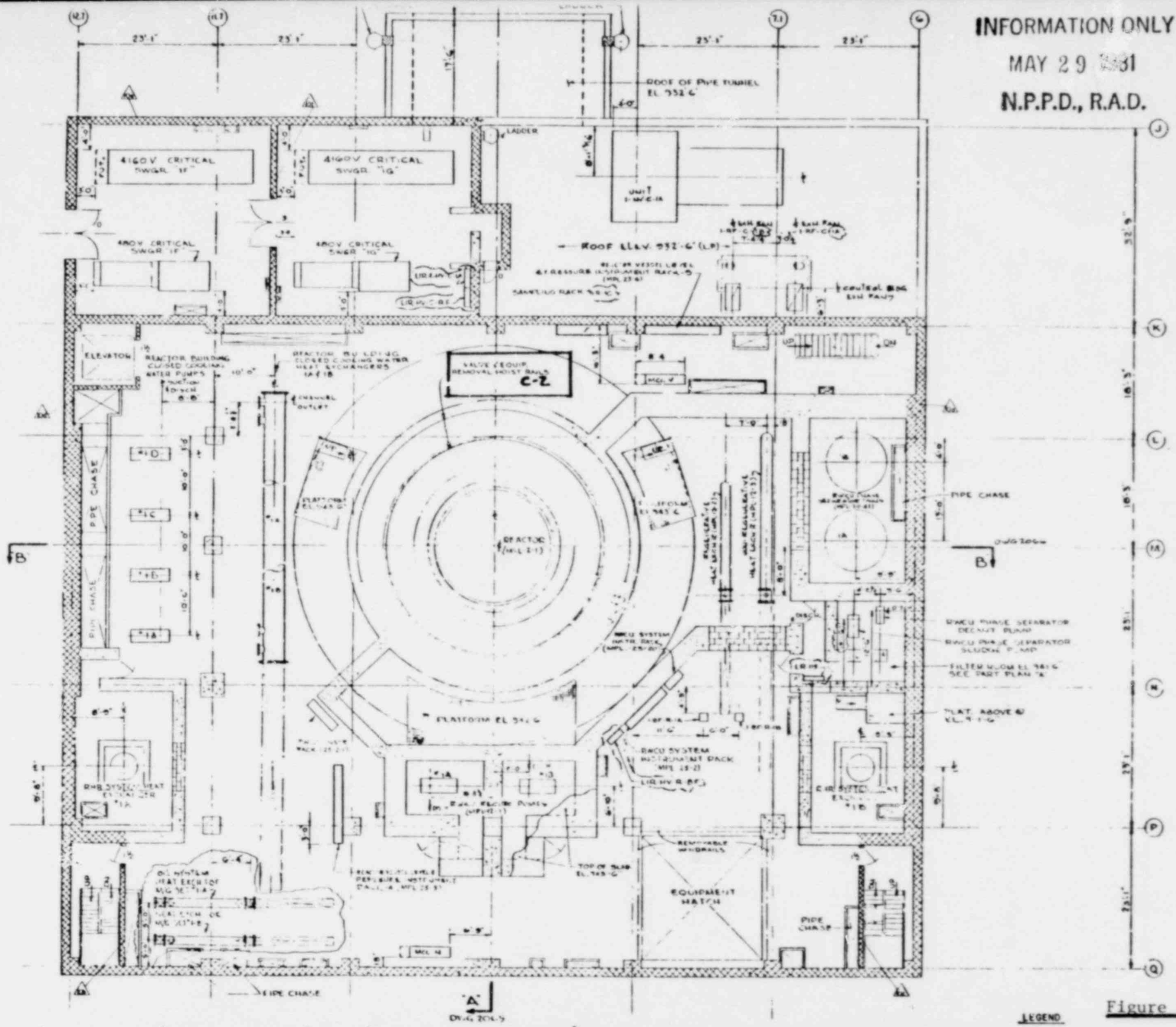


Figure #7

Figure #8

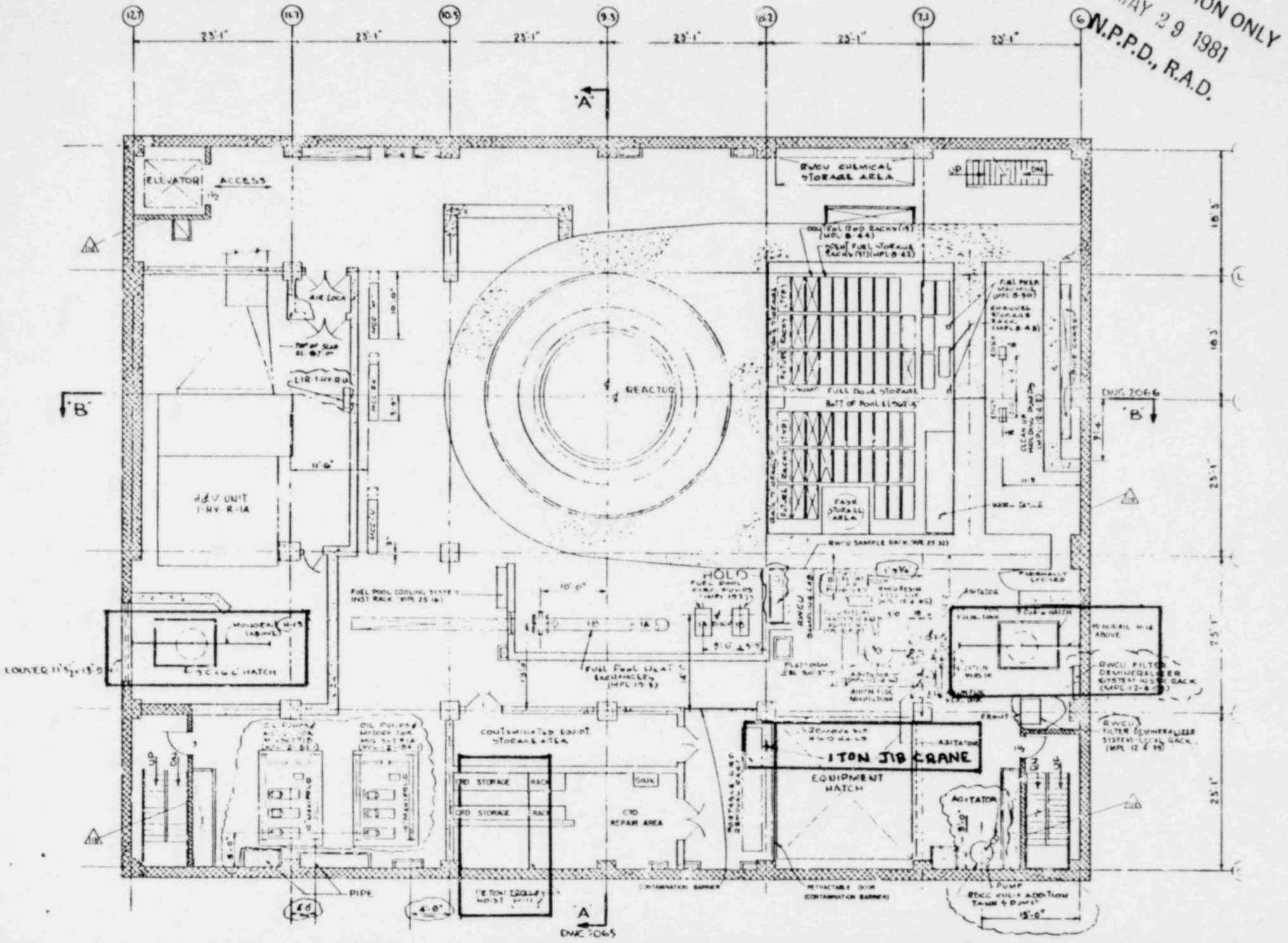
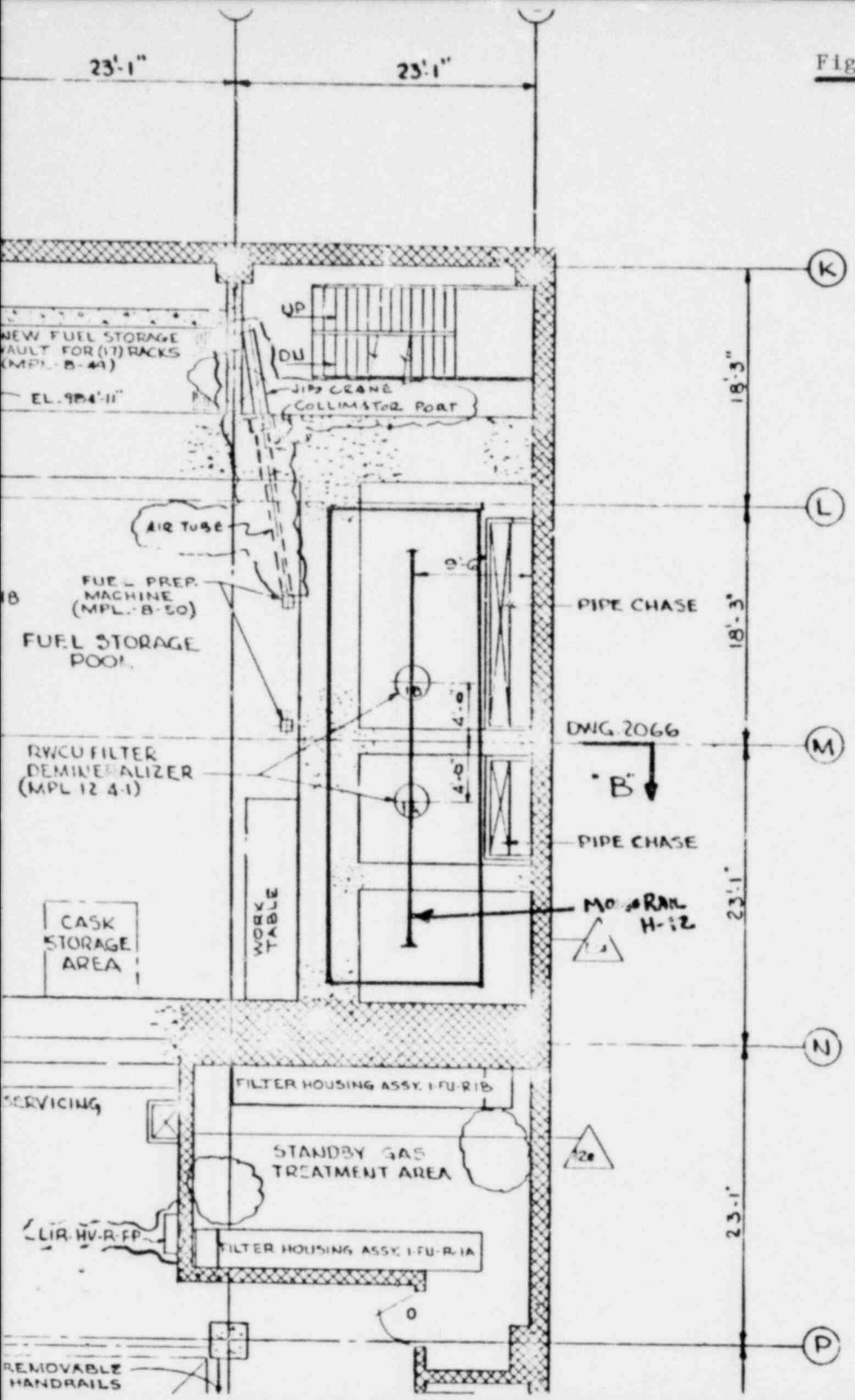
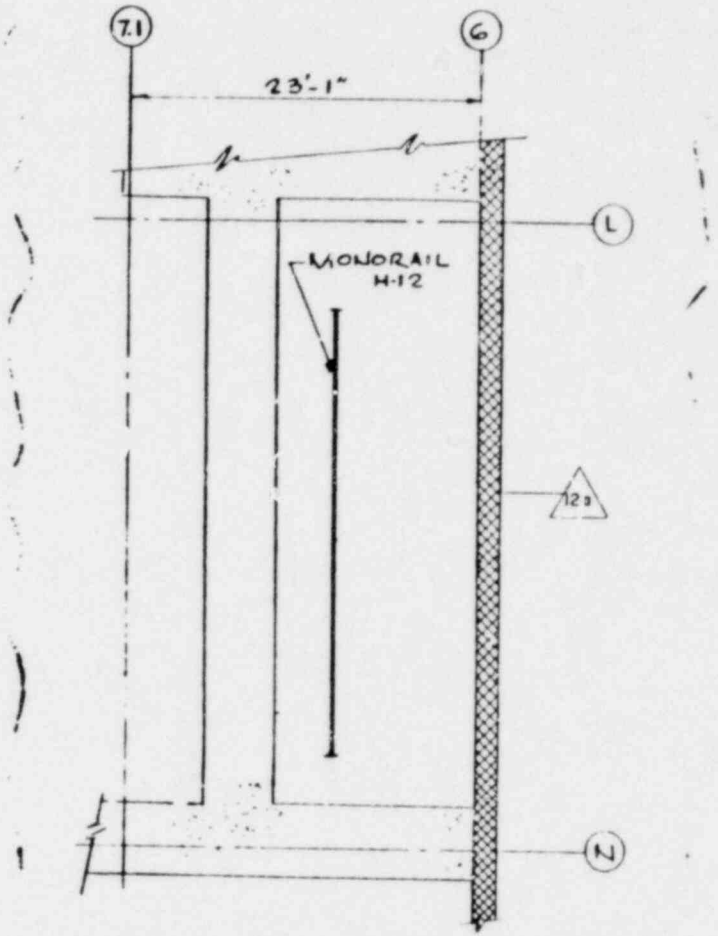


Figure #9





PART PLAN - EL 990-0"