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Docket Number 50-346

License Number NPF-3

Serial Number 2493

November 18, 1997

United States Nuclear Regulatory Commission  
Document Control Desk  
Washington, D. C. 20555-0001

Subject: Request for Exemption from 10 CFR 50, Appendix R, Section III.O, Oil Collection  
System for Reactor Coolant Pumps

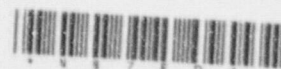
Ladies and Gentlemen:

This letter transmits Toledo Edison's request for an exemption from 10 CFR Part 50, Appendix R, Section III.O requirements regarding the oil collection system for reactor coolant pumps (RCPs). This exemption request pertains to the remote oil fill lines installed for the Davis-Besse Nuclear Power Station (DBNPS) RCPs.

Information supporting this request is contained in the attachment. Toledo Edison has concluded that for the reasons specified in the attachment, special circumstances as defined in 10 CFR 50.12 exist and that the granting of the requested exemption will not present an undue risk to the health and safety of the public and is consistent with the common defense and security.

The DBNPS eleventh refueling outage (11RFO) is scheduled to commence on April 11, 1998. Approval of this exemption request would preclude the need to perform plant modifications to the four RCP remote oil fill lines during 11RFO. It is estimated that approximately 3.2 man-rem would be incurred by personnel implementing the plant modifications. Absent either approval of this exemption request or implementation of the plant modifications, any future additions of oil to the RCP motor lower bearing reservoir during power operations would require a power reduction of sufficient magnitude to allow personnel local access to the oil reservoir. In order to support planning for the 11RFO, Toledo Edison requests NRC approval of this exemption request by March 11, 1998.

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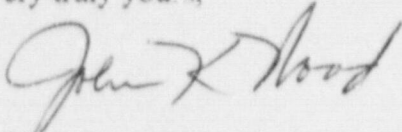
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Should you have any questions or require additional information, please contact Mr. James L. Freels, Manager - Regulatory Affairs, at (419) 321-8466.

Very truly yours,

A handwritten signature in dark ink, appearing to read "John K. Hood". The signature is fluid and cursive, with the first name "John" and last name "Hood" clearly distinguishable.

MKL/laj

Attachment

cc: A. B. Beach, Regional Administrator, NRC Region III  
S. J. Campbell, DB-1 NRC Senior Resident Inspector  
A. G. Hansen, DB-1 NRC/NRR Project Manager  
Utility Radiological Safety Board

REQUEST FOR EXEMPTION  
FROM  
10 CFR 50, APPENDIX R, SECTION III.O  
OIL COLLECTION SYSTEM FOR REACTOR COOLANT PUMPS

In accordance with 10 CFR 50.12, Toledo Edison (TE) requests an exemption for the Davis-Besse Nuclear Power Station (DBNPS) from the requirements specified in 10 CFR Part 50, Appendix R, Section III.O regarding the oil collection system for reactor coolant pumps (RCPs). This exemption request pertains to the remote oil fill lines installed for the DBNPS RCPs.

Background

10 CFR 50.48, "Fire Protection," requires nuclear power plants licensed prior to January 1, 1979 to implement Section III.O of 10 CFR 50, Appendix R. Section III.O requires, in part, that the licensee have a seismically designed collection system capable of collecting lube oil from all potential pressurized and unpressurized leakage sites, including lift pump and piping, overflow lines, lube oil cooler, oil fill and drain lines and plugs, flanged connections on oil lines, and lube oil reservoirs.

At the DBNPS, remote oil fill lines were added in 1990 to each of the four RCP motors so that oil could be added to the lower oil reservoir of a RCP motor, if necessary, from a low-dose area during power operation. Use of the remote oil fill lines, in lieu of having personnel transport oil to the oil fill connection at the RCP motor and add it locally, also reduces the chance of spilling oil in the immediate area of the RCP during oil addition. In addition to reducing personnel dose, use of the remote oil fill lines also is advantageous from a personnel industrial safety (e.g., heat stress) standpoint.

The attached Figure 1 shows a schematic of the remote oil fill system, including the size and type of its components. The remote oil fill system is a non-pressurized, gravity-feed design. Each remote oil fill line consists of a fill pot located outside the secondary shield wall (or 'D-Ring') and stainless steel tubing and flexible hose from the fill pot to the RCP motor lower oil reservoir. The flexible stainless steel hose minimizes the effect of any translated vibration and thermal movement. The quantity of oil to be added is transported to the fill pot location in approved containers.

The remote oil fill line installations are designed to be leaktight and are sloped so as to not trap any oil as it gravity drains from the fill pot to the reservoir. Therefore, except during use, the fill pots and lines will contain no significant quantity of oil. The remote oil fill lines terminate inside of the existing oil collection enclosure for the lower oil reservoir, above the normal oil level of the lower oil reservoir, so that there is no potential for oil leakage from these lines during normal plant operation.



At the time of their design, the remote oil fill lines were considered a means to facilitate maintenance and were not viewed as part of the RCP oil system. Therefore, they were not designed to meet the requirement that any potential oil leakage would be collected as specified by 10 CFR 50, Appendix R, Section III.O. In early 1997, the DBNPS became aware that another licensee had submitted an exemption request regarding the lack of an enclosure on remote oil fill lines. On February 19, 1997, a Potential Condition Adverse to Quality Report (PCAQR) was initiated by the DBNPS staff to track resolution of this issue. This condition was later reported to the NRC as a condition outside the design basis of the plant (Licensee Event Report 97-004-00 dated March 3, 1997). The remote oil fill lines have since been disabled to prevent their use.

A plant modification is being designed to encapsulate the existing remote oil fill line with seismically supported stainless steel welded joint rigid pipe and stainless steel flexible hose. The existing fill pots mounted outside the 'D-rings' would also be enclosed. The estimated cost to implement this plant modification is in excess of \$30,000. In addition to the dollar cost, it is estimated that approximately 3.2 man-rem will be incurred by personnel implementing the plant modification.

The lower oil reservoir for each RCP motor has an oil level switch to monitor oil level for high and low level computer alarms. The remote oil fill lines are only used when the low level computer alarm is received. Additions of oil to the RCP motor lower bearing reservoir are only required infrequently. A review of system performance records shows that since installation of the remote oil fill lines in 1990, they have only been used three times, most recently in August 1994, and not more than three pints of oil was added on each occasion.

While an oil addition can be made during power operations without the use of the existing remote oil fill lines, this evolution requires a power reduction to approximately 20 to 30% of rated thermal power, in order to reduce dose levels low enough to allow personnel local access to the oil reservoir.

Approval of this exemption request will allow future use of the remote oil fill lines, without incurring the dollar and man-rem expenditures to implement the planned plant modification.

#### Basis for Exemption Request

10 CFR 50.12, "Specific Exemptions," permits the Nuclear Regulatory Commission to grant exemptions which are authorized by law, will not present an undue risk to the health and safety of the public, and are consistent with the common defense and security, provided that special circumstances are present. Special circumstances are present when application of the regulation in the particular circumstances is not required to achieve the underlying purpose of the rule (50.12(a)(2)(ii)). Toledo Edison believes, for the reasons described below, that the installation of an oil collection enclosure around the remote oil fill lines is not required to achieve the underlying

purpose of Appendix R, Section III.O, which is to ensure that leaking oil will not lead to a fire which could damage safe shutdown systems during normal or design basis conditions.

The type of oil used in the lower reservoir has a minimum flash point of approximately 400 degrees Fahrenheit. Any oil leakage would fall onto the top of the RCP insulation, onto the Reactor Coolant System (RCS) cold leg insulation, or onto the containment floor. The RCP and RCS cold leg insulation is metal reflective type insulation with a typical surface temperature below approximately 212 degrees Fahrenheit and, therefore, would not serve as an ignition source. The construction of the insulation is such that the oil would tend to be diverted away from hot surfaces, and would not be retained as in the case of fibrous insulation. There are no other credible ignition sources present during normal operation.

Based on prior experience, the remote oil fill lines are likely to be required to be used on a very infrequent basis. In addition, under the compensatory measures described below, the maximum amount of oil that could be available for leakage is only four pints. However, assuming that significant quantities of oil leaked from the remote oil fill lines, and assuming that an ignition source was present, the effects of the resulting fire would be localized to within one 'D-Ring'. The grading of the containment floor is such that any oil released (other than small drips) would be funneled to the floor drains below each RCP. Consequently, an oil fire in one 'D-Ring' would not spread to the other 'D-Ring'. The Appendix R safe shutdown analysis assumed an all consuming fire within one 'D-Ring' and determined that adequate separation exists between redundant circuits to achieve safe shutdown. Any significant fire would be detected by the two heat detectors over each RCP motor that individually alarm in the control room. If an indication of a fire is received, the operators would take appropriate actions in accordance with the existing pre-fire plans for each of the RCPs.

#### Fire Protection Features

Two RCPs are located within each of the two Steam Generator compartment areas (rooms 216 and 218) within containment which comprise the secondary shield 'D-Rings'. As mentioned above, fire detection is provided by two heat detectors over each RCP motor. These eight detectors individually alarm in the control room.

Fire suppression inside the containment relies on manual fire fighting action. Various fire suppressor equipment in the form of portable fire extinguishers and wheeled fire extinguishers equipped with fire hose is available to the station fire brigade, as shown on the attached Figures 2 through 5.

In addition, a 2-1/2 inch hose connection is available on the Service Water System in containment that could be used for fire fighting. Three separate connections are provided on the 603' elevation near the personnel hatch.



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#### Compensatory Measures

In order to minimize the potential for an oil fire due to a leak from the portions of the remote oil fill line that are not enclosed by an oil collection system, the following actions will be taken each time oil is added through this system:

- Oil may be added only when a low oil level computer alarm is received on an RCP motor.
- Only a predetermined amount of oil necessary to clear the alarm (approximately three pints based on prior experience) will be initially added to the reservoir via the remote oil fill line. A maximum total volume of four pints of oil may be added in an attempt to clear the alarm.
- The oil fill pot will be verified empty prior to exiting the immediate area. Any spillage resulting from adding oil to the remote oil fill pot will be cleaned up.
- Personnel responsible for the oil addition evolution will be instructed to report to the control room any evidence of smoke during the oil addition process. If smoke is visually detected, the fire brigade will be immediately dispatched to the area.
- A visual inspection will be conducted following refueling outages to confirm the integrity of the remote oil fill line system.

#### Conclusions:

The remote oil fill lines are of a leak-tight design, and are only used infrequently. A hypothetical worst case oil spill and ignition will not impact post-fire safe shutdown capability. Administrative controls will be established to minimize the potential for an oil fire due to a leak from the portions of the remote oil fill line that are not enclosed by an oil collection system.

Based on the above, the underlying purpose of Appendix R, Section III.O, which is to ensure that leaking oil will not lead to a fire which could damage safe shutdown systems during normal or design basis conditions, is accomplished without the installation of an oil collection enclosure around the remote oil fill lines.

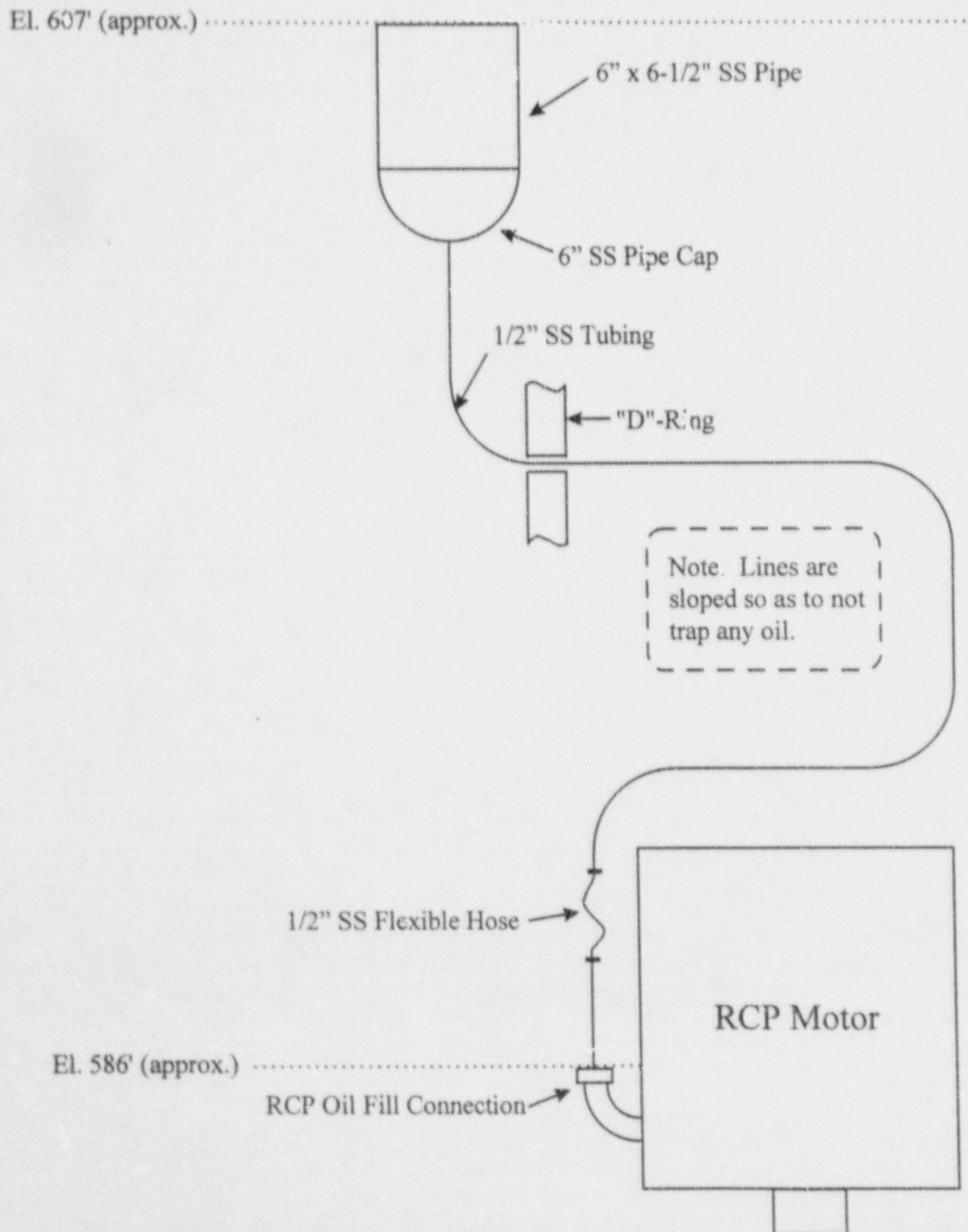
The granting of this exemption request would have no impact on plant radiological or non-radiological effluents and involves no significant radiation exposure.

Because the underlying purpose of Appendix R is preserved, Toledo Edison concludes that the proposed exemption does not present an undue risk to the health and safety of the public and is consistent with the common defense and security.

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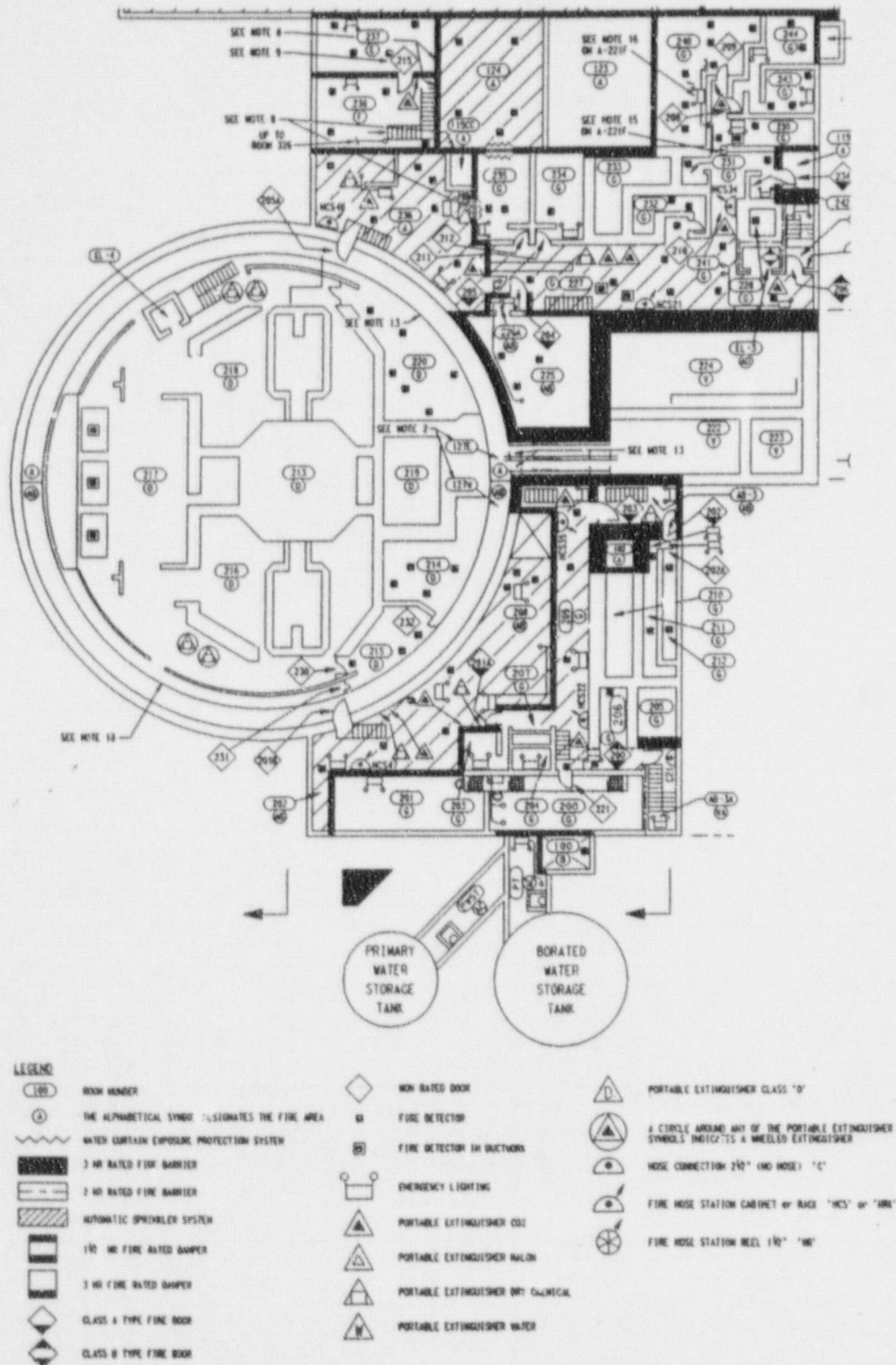
**Figure 1**  
Remote Oil Fill System Schematic

Typical of 4



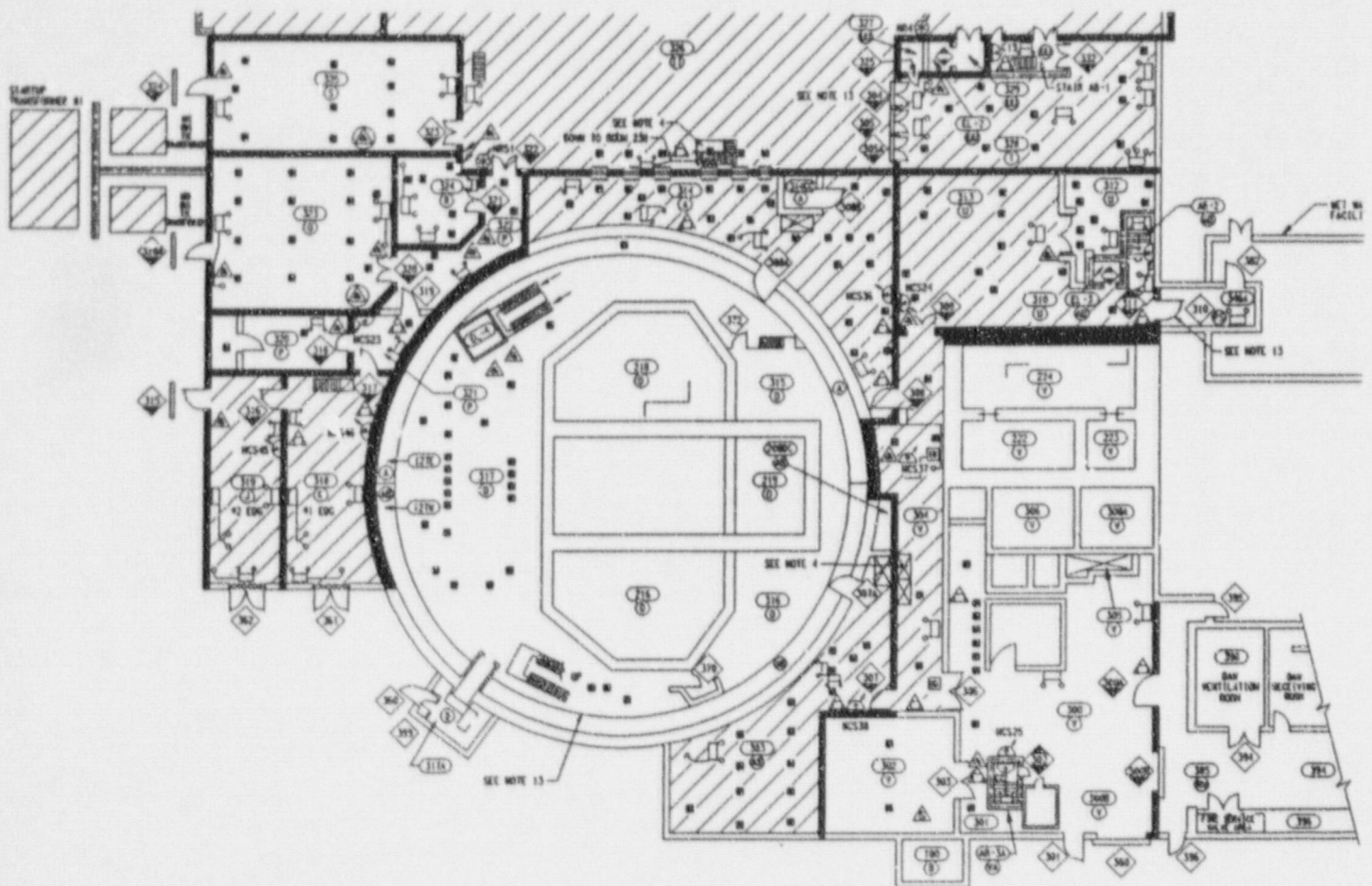


**Figure 2**  
**Fire Protection - General Floor Plan El. 565' -0"**





**Figure 3**  
Fire Protection - General Floor Plan El. 585' -0"



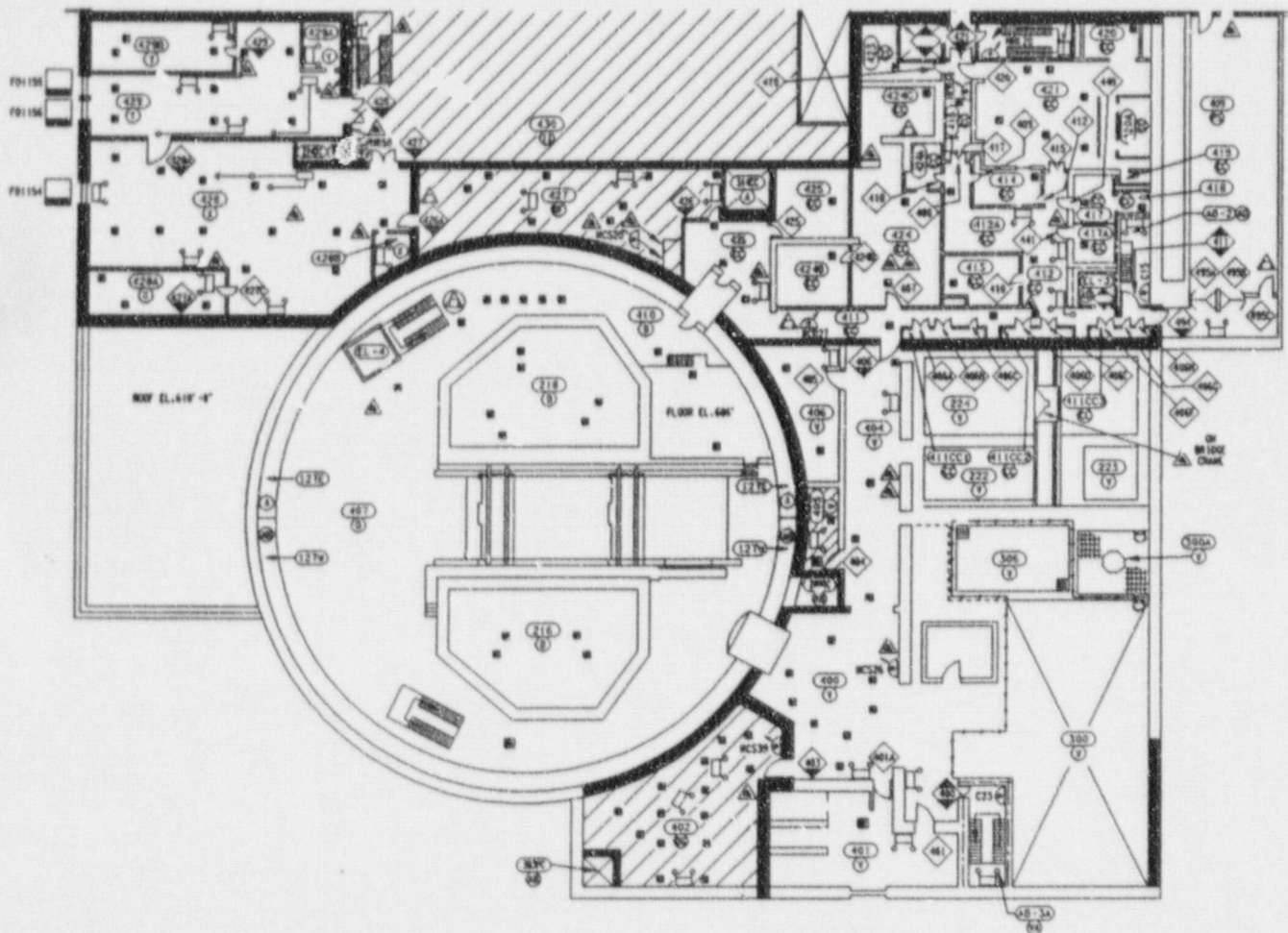
**LEGEND**

- (100) ROOM NUMBER
- (A) THE ALPHABETICAL SYMBOL DESIGNATES THE FIRE AREA
- WATER CURTAIN EXPOSURE PROTECTION SYSTEM
- 3 HR RATED FIRE BARRIER
- 2 HR RATED FIRE BARRIER
- AUTOMATIC SPRINKLER SYSTEM
- 1 1/2 HR FIRE RATED DAMPER
- 1 HR FIRE RATED DAMPER
- 3 HR FIRE RATED DAMPER
- CLASS A TYPE FIRE DOOR
- CLASS B TYPE FIRE DOOR

- NON RATED DOOR
- FIRE DETECTOR
- FIRE DETECTOR ON GUYPHON
- EMERGENCY LIGHTING
- PORTABLE EXTINGUISHER CO2
- PORTABLE EXTINGUISHER HALON
- PORTABLE EXTINGUISHER DRY CHEMICAL
- PORTABLE EXTINGUISHER WATER

- PORTABLE EXTINGUISHER CLASS 'D'
- A CIRCLE AROUND ANY OF THE PORTABLE EXTINGUISHER SYMBOLS INDICATES A WHEELED EXTINGUISHER
- HOSE CONNECTION 2 1/2" (NO HOSE) 'C'
- FIRE HOSE STATION CABINET OR RACK 'MCS' OR 'MRS'
- FIRE HOSE STATION REEL 1 1/2" 'MR'

**Figure 4**  
Fire Protection - General Floor Plan El. 603' -0"

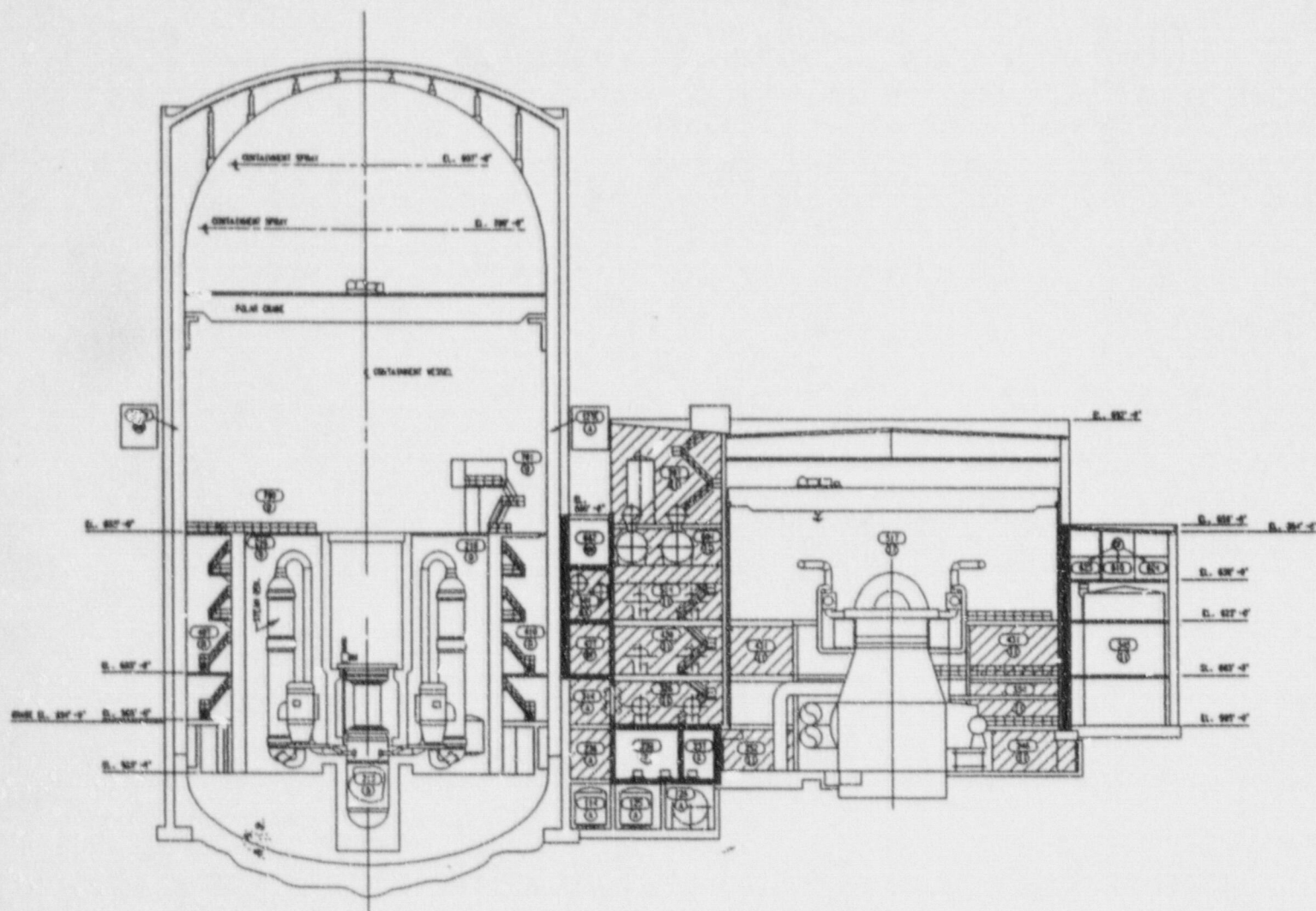


**LEGEND**

- |                                                  |                                    |                                                                                            |
|--------------------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------|
| ROOM NUMBER                                      | NON RATED DOOR                     | PORTABLE EXTINGUISHER CLASS 'B'                                                            |
| THE ALPHABETICAL SYMBOL DESIGNATES THE FIRE AREA | FIRE DETECTOR                      | A CIRCLE AROUND ANY OF THE PORTABLE EXTINGUISHER SYMBOLS INDICATES A WHEELLED EXTINGUISHER |
| WATER CURTAIN EXPOSURE PROTECTION SYSTEM         | FIRE DETECTOR IN DUCTWORK          | NOSE CONNECTION 2 1/2" (NO HOSE) 1"                                                        |
| 3 HR RATED FIRE BARRIER                          | EMERGENCY LIGHTING                 | FIRE HOSE STATION CABINET or RACK "RCS" or "RRS"                                           |
| 2 HR RATED FIRE BARRIER                          | PORTABLE EXTINGUISHER CO2          | FIRE HOSE STATION REEL 1 1/2" 1"                                                           |
| AUTOMATIC SPRINKLER SYSTEM                       | PORTABLE EXTINGUISHER HALON        |                                                                                            |
| 1 1/2 HR FIRE RATED DAMPER                       | PORTABLE EXTINGUISHER DRY CHEMICAL |                                                                                            |
| 3 HR FIRE RATED DAMPER                           | PORTABLE EXTINGUISHER WATER        |                                                                                            |
| CLASS A TYPE FIRE DOOR                           |                                    |                                                                                            |
| CLASS B TYPE FIRE DOOR                           |                                    |                                                                                            |



**Figure 5**  
Fire Protection - Section View



**LEGEND**

- |                                                  |                                    |                                                                                          |
|--------------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------|
| FIRE ALARM                                       | FIRE DETECTOR                      | PORTABLE EXTINGUISHER GLASS "B"                                                          |
| THE ALPHABETICAL SYMBOL DESIGNATES THE FIRE AREA | FIRE DETECTOR IN DUCTWORK          | A CIRCLE AROUND ANY OF THE PORTABLE EXTINGUISHER SYMBOLS INDICATES A WHEELS EXTINGUISHER |
| WATER CURTAIN EXPOSURE PROTECTION SYSTEM         | EMERGENCY LIGHTING                 | HOSE CONNECTION 2 1/2" AND SIZE 1"                                                       |
| 1/2" FIRE RATED BARRIER                          | PORTABLE EXTINGUISHER CO2          | FIRE HOSE STATION CABINET OR RACK "HCS" OR "HR"                                          |
| 2" FIRE RATED BARRIER                            | PORTABLE EXTINGUISHER WATER        | FIRE HOSE STATION REEL 1 1/2" AND 1"                                                     |
| AUTOMATIC SPRINKLER SYSTEM                       | PORTABLE EXTINGUISHER DRY CHEMICAL |                                                                                          |
| 1/4" FIRE RATED BARRIER                          | PORTABLE EXTINGUISHER WATER        |                                                                                          |
| 3" FIRE RATED BARRIER                            |                                    |                                                                                          |
| GLASS & TYPE FIRE DOOR                           |                                    |                                                                                          |
| GLASS & TYPE FIRE DOOR                           |                                    |                                                                                          |