CENTERIOR ENERGY

5501 N. State Route 2
Oak Harbor, OH 43449

419-249-2300
FAX: 419-321-8337

John K. Wood
Vice President - Nuclear
Davis-Besse

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Subject: Comments On NRC's Report Concerning "Resolution Of Spent Fuel Storage Pool Safety Issues: Issuance Of Final Staff Report And Notification Of Staff Plans To Perform Plant-Specific, Safety Enhancement Backfit Analyses, Davis-Besse Nuclear Power Station", (TAC No. M88094)

Ladies and Gentlemen:

This letter provides comments in response to spent fuel storage pool safety issues for the Davis-Besse Nuclear Power Station (DBNPS) as identified in the subject report issued by letter from the NRC Staff dated September 12, 1996 (Log Number 4913). This letter provided the opportunity to those licensees whose plants are identified in the report as potentially subject to plant-specific regulatory backfit analysis to verify the applicability of the Staff's findings and conclusions. Based on its review of these issues, as summarized below, Toledo Edison does not believe that modifications to the DBNPS spent fuel pool cooling system will substantially increase the overall protection of public health and safety.

NRC Issue 3.1.1: Spent Fuel Pool Siphoning via Interfacing Systems

The Spent Fuel Pool (SFP) lacks passive anti-siphon devices for piping systems that could, through improper operation of the system, reduce coolant inventory to a level that provides insufficient shielding and eventually exposes stored fuel. Because this piping is connected to the SFP cooling and cleanup system through a normally locked closed valve and lacks passive anti-siphon protection, mispositioning of the normally locked-closed valve coincident with a pipe break or refueling water transfer operation could reduce the SFP coolant inventory by siphon flow to a level below the top of the stored fuel.

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Toledo Edison Response

The specific concern is that the SFP drain line containing valve SF-4 is not protected by an anti-siphon device and, in the event of misoperation of valve SF-4, the SFP could be drained to the extent that spent fuel would be exposed to air. Attached DBNPS Updated Safety Analysis Report (USAR) Figure 9.1-5 a depiction of the SFP and SFP Cooling System.

This 4-inch diameter line and normally closed manual valve SF-4 are seismically qualified. The valve SF-4 drain line extends to the lowest portion of the SFP (approximately elevation 563'). Valve SF-4 is located at elevation 590' which is greater than 9 feet above the spent fuel assemblies (approximately elevation 577' 5"). As this line is seismically-qualified, a break is not considered credible and it is assumed to remain intact during a seismic event and is, therefore, not protected by an anti-siphon device.

This 4-inch diameter drain line shares a common suction line to the SFP cooling pumps with the 10-inch diameter SFP suction line as depicted on USAR Figure 9.1-5. This suction line to the SFP cooling pumps contains normally open manual valve SF-3. The normal cooling path for SFP cooling is through normally open valve SF-3, through the SFP cooling pump(s), SFP heat exchanger(s), valve SF-47 and discharge to the SFP. The valve SF-3 line suction point on the SFP is at elevation 597' which is greater than 9 feet above the spent fuel assemblies.

The SF-4 drain line is not used to manage the water level in the SFP. There are no normal or abnormal system operating procedures that require operation of valve SF-4. Protection against draining of the SFP by misoperation of manual valve SF-4 is provided by the SFP cooling pumps' suction line containing normally open manual valve SF-3. Since this line is in continuous operation, should the SFP water level drop below the valve SF-3 suction point (elevation 597'), the SFP cooling pumps will lose suction and greater than 9 feet of water will be maintained over the spent fuel. Additionally, changes in SFP water level would be detected by a low water level annunciator alarm and/or SFP area radiation monitors alarming in the Control Room.

It is unlikely that misoperation of normally closed valve SF-4 and normally open valve SF-3 will occur simultaneously. However, to further protect against this misoperation, Toledo Edison plans to lock closed or remove the handwheel from valve SF-4, whichever is determined to be more effective in preventing a potential misoperation.

Toledo Edison believes the safety improvement from these actions are comparable to cutting and capping the valve SF-4 line. Misoperation of valve SF-4 would require obtaining permission to open valve SF-4 or require permission to install the handwheel. Should valve SF-4 be opened, draining of the SFP to a level where spent fuel would be exposed would also require valve SF-3 to be closed, and failure of the low level alarm and radiation monitor alarms to alarm in the Control Room.

Capping of this valve is estimated to cost approximately $20,000. However, more critical than cost, this modification would require the complete interruption of SFP cooling for a minimum of 24 hours. As depicted on USAR Figure 9.1-5, SFP cooling by either the SFP Cooling System or the Decay Heat Removal System is through the valve SF-3 suction line which cannot be isolated from SF-4.

NRC Issue3.2.5: Cooling System Reliability And Capability

The Davis-Besse Nuclear Power Station appears to be reliant on infrequently operated backup SFP cooling systems to address long-term loss of off-site power (LOOP) events and mechanical failures.

Toledo Edison Response

The Spent Fuel Pool (SFP) Cooling System provides adequate capacity and component redundancy to ensure the reliable cooling of spent fuel stored in the spent fuel pool.

The SFP Cooling System removes the decay heat generated by spent fuel stored in the pool as a result of normal refueling conditions. With the maximum normal heat load and both pumps (non-essential powered) and heat exchangers operating, the spent fuel pool cooling system is capable of maintaining the spent fuel pool at 125 degrees F or less. With one pump and two heat exchangers operable, the pool can be maintained at 140 degrees F or less; and with one pump and one heat exchanger operable, the pool can be maintained at 155 degrees F or less.

Failure of a single component in the spent fuel pool cooling system will not cause a complete loss of cooling of the stored spent fuel under normal operating conditions since the system is designed with two 50 percent capacity components.

Ample time is available to ensure that cooling can be restored even in the unlikely event of multiple component failures or complete cooling loss.

The Decay Heat Removal (DHR) System, which has a higher heat removal capacity, serves as a backup system to the SFP Cooling System. Attached USAR Figure 6.3-2a is a depiction of the DHR System and the cross connection to the SFP Cooling System. The DHR System provides Seismic Class I and Class 1E powered safety grade cooling for the SFP. The DHR System is the system that is relied upon following a loss of off-site power (LOOP) to provide cooling to the SFP. The DHR pumps are electrically supplied by the Class 1E Emergency Diesel Generators following a LOOP. The DHR System is also available to remove the decay heat from the SFP when the entire core is off-loaded into the SFP.

The two systems are connected with a permanently installed 10-inch diameter line. Two normally closed gate valves (SF-115, DH-69) are used to provide isolation between the DHR System and the SFP Cooling System. The normal

cooling path for the DHR System cooling the SFP is through normally closed valve SF-115, through normally locked closed valve DH-30 (or -31) through the DHR pump, through the DHR heat exchanger, through normally locked closed valve DH-65 (or -66) and through normally closed valve DH-69 discharging to the SFP. This operation is controlled by procedure DB-OP-06012, "Decay Heat and Low Pressure Injection System Operating Procedure".

A complete loss of cooling is not considered credible since the DHR System serves as a readily available backup to the SFP Cooling System, should one be required.

The DBNPS's current operating philosophy with respect to core offloads is based on the Shutdown Risk Program described in procedure NG-DB-00116, "Outage Nuclear Safety Control". Procedure NG-DB-00116 was established using NUMARC (NEI) Report 91-06, "Guidelines for Industry Actions to Assess Shutdown Management". NG-DB-00116 utilizes a "defense in depth" strategy to manage risk for providing systems, structures and components to ensure backup of key safety functions using redundant, diverse or alternate methods to provide for, among other things, decay heat removal from the SFP. The following is a summary of the procedural requirements for the SFP decay heat removal during outage conditions:

With the Core Not Fully Offloaded:

One SFP cooling train functional if a DHR train is available for the SFP
-OR-
Two SFP cooling trains functional if DHR is not available for the SFP.

With the Core Fully Offloaded:

Two SFP cooling trains functional on the SFP
-AND-
One DHR train shall be functional for SFP cooling. The DHR train may be temporarily removed from functional status to support draining/ refueling activities of the Refueling Canal provided the DHR loop remains available to support SFP cooling. In addition, the cross connect valves must be exercised prior to the offload activity and system lineups must be readily available to support DHR cooling of the SFP in the event SFP cooling is lost while the activity is in progress.

Procedure NG-DB-00116 also delineates a similar conservative operating philosophy for off-site and on-site normal and emergency electrical power supply availability. This provides for the availability of diverse electrical power supplies to the SFP Cooling and DHR trains.

As outlined above, under typical SFP cooling loads the SFP Cooling System is capable of removing the decay heat load even with only one train of SFP cooling. Should the DHR System be required to provide SFP cooling in the event of loss of off-site power (LOOP) or mechanical failure, the two

systems are permanently connected and only four valves are required to be operated to provide cooling via the Seismic Class I, essentially powered DHR System. Additionally, the complete loss of SFP cooling during outages is unlikely to occur due to the conservative operating philosophy established in NG-DB-00116.

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,

John K Wood

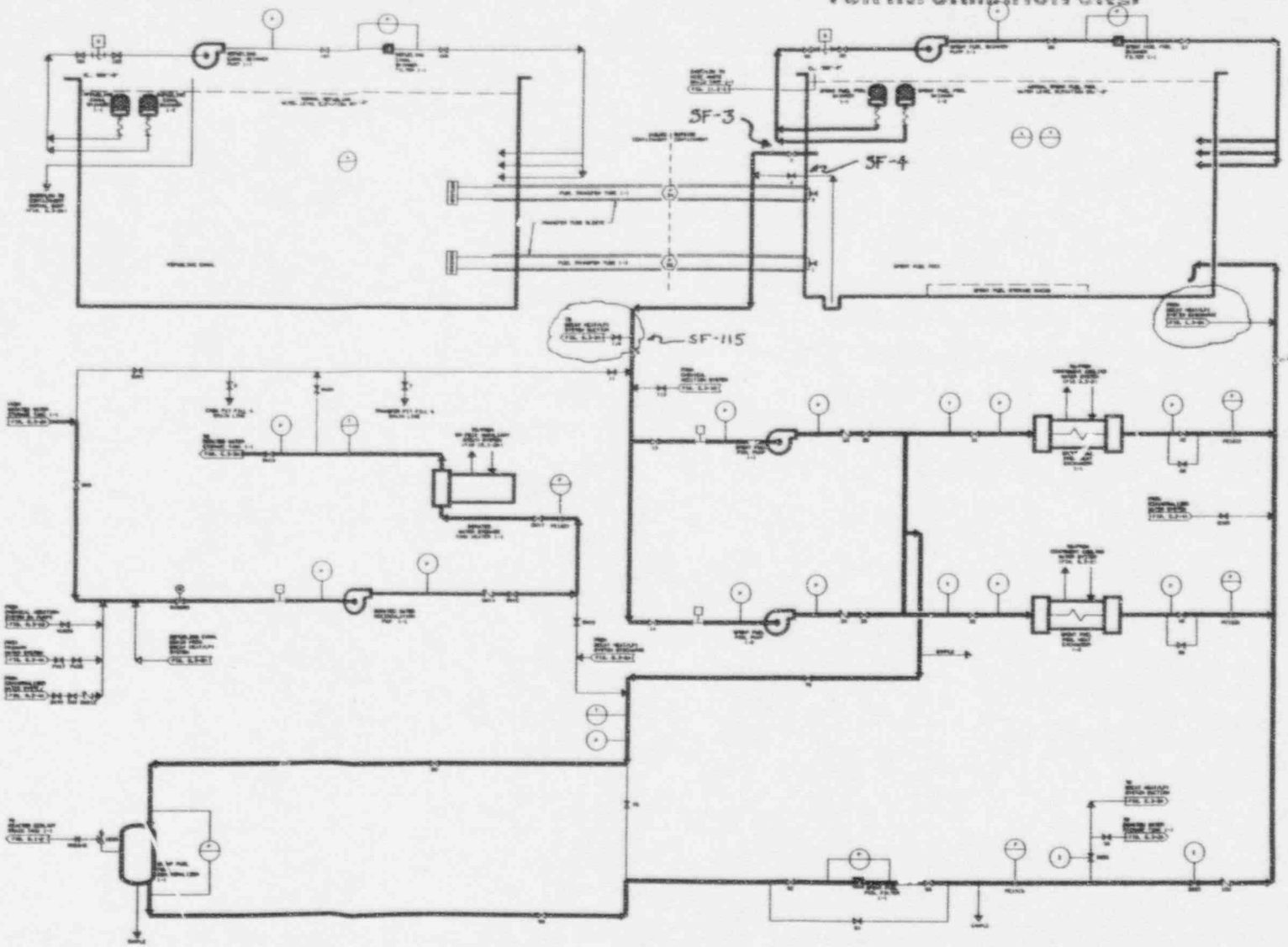
JCS/laj

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

NOTES

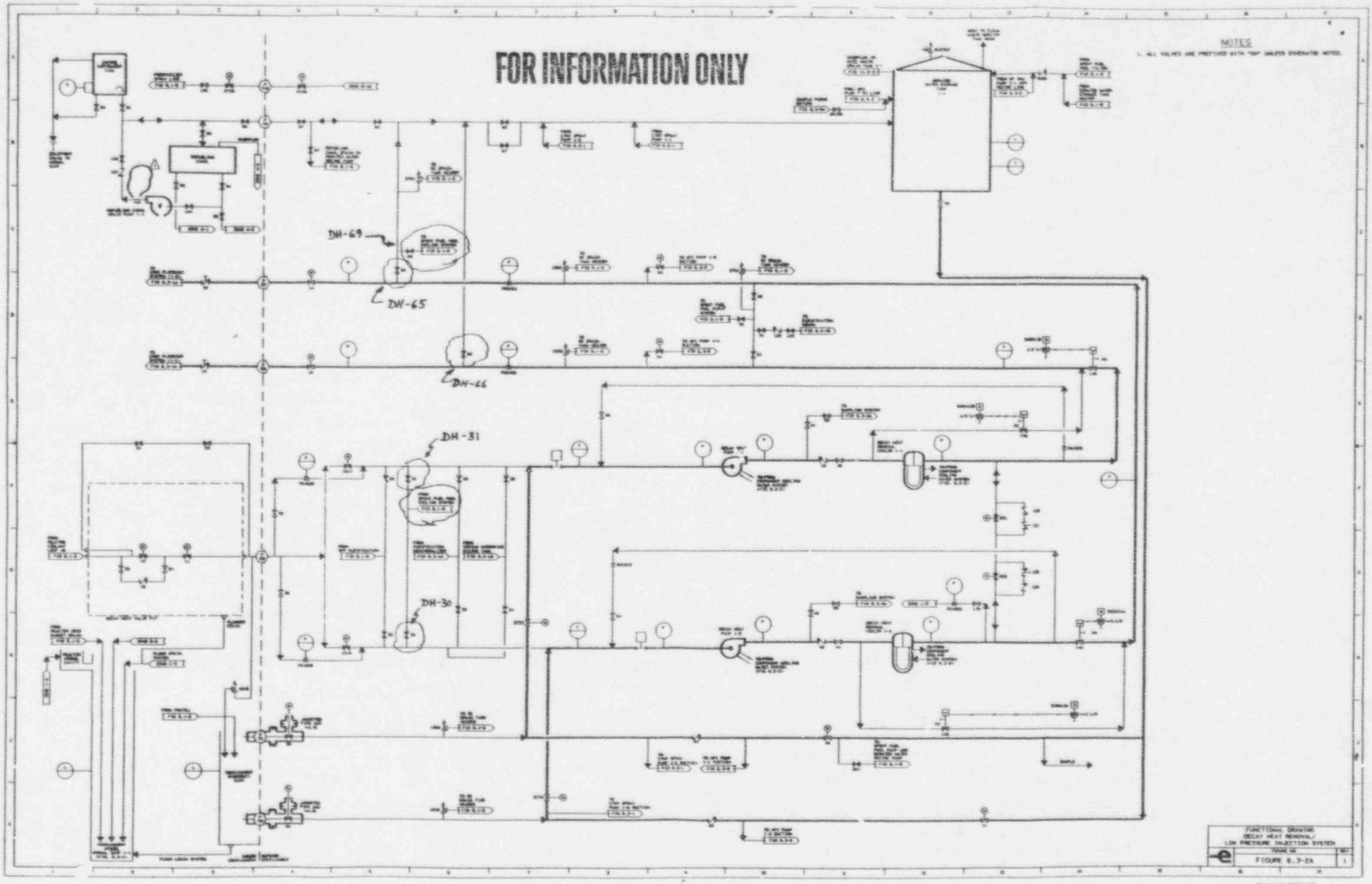
1. ALL VALVES ARE PREFIXED WITH "SF" UNLESS OTHERWISE NOTED.

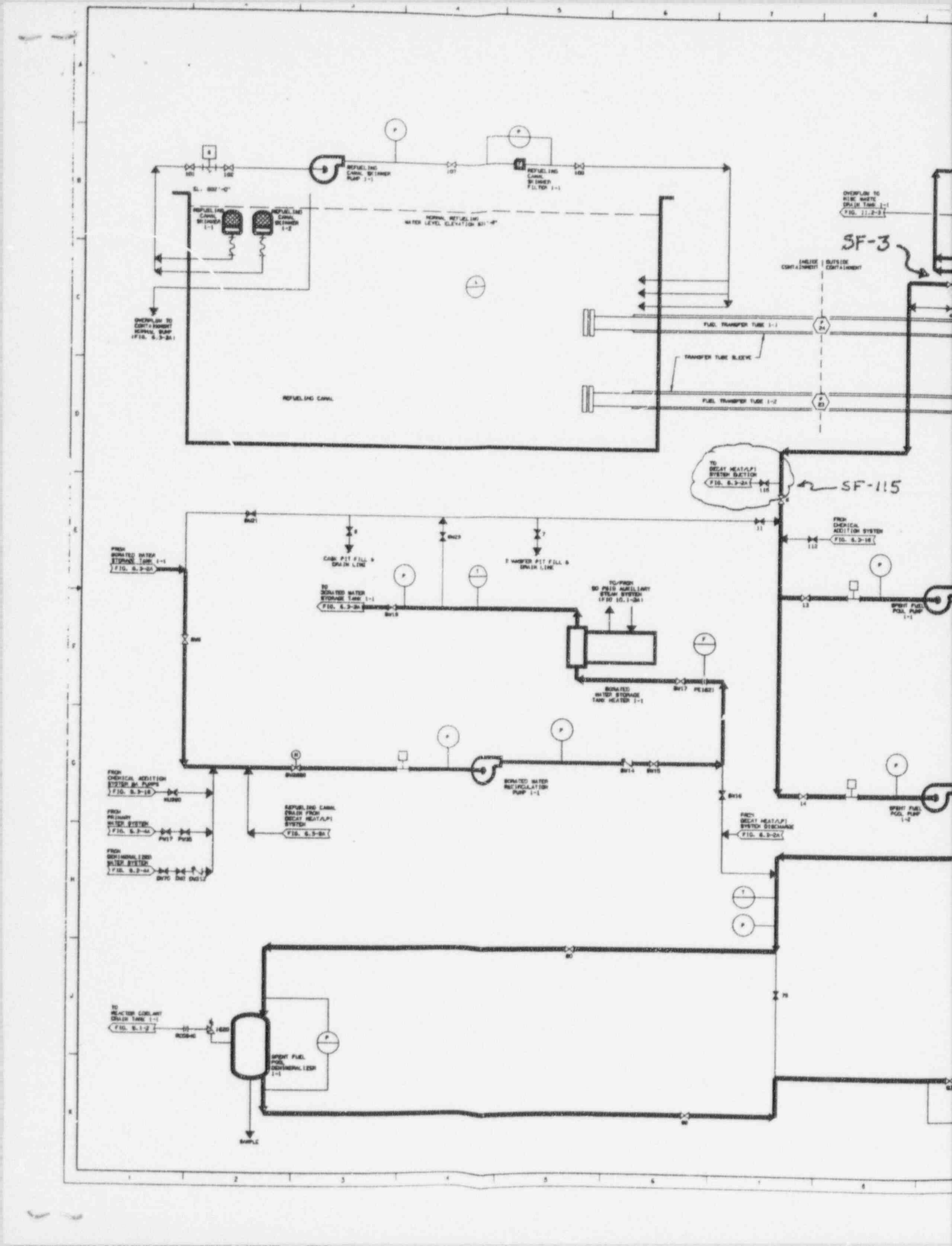
FOR INFORMATION ONLY



FUNCTIONAL DRAWING
SPENT FUEL POOL COOLING SYSTEM

FIGURE 9.1-5

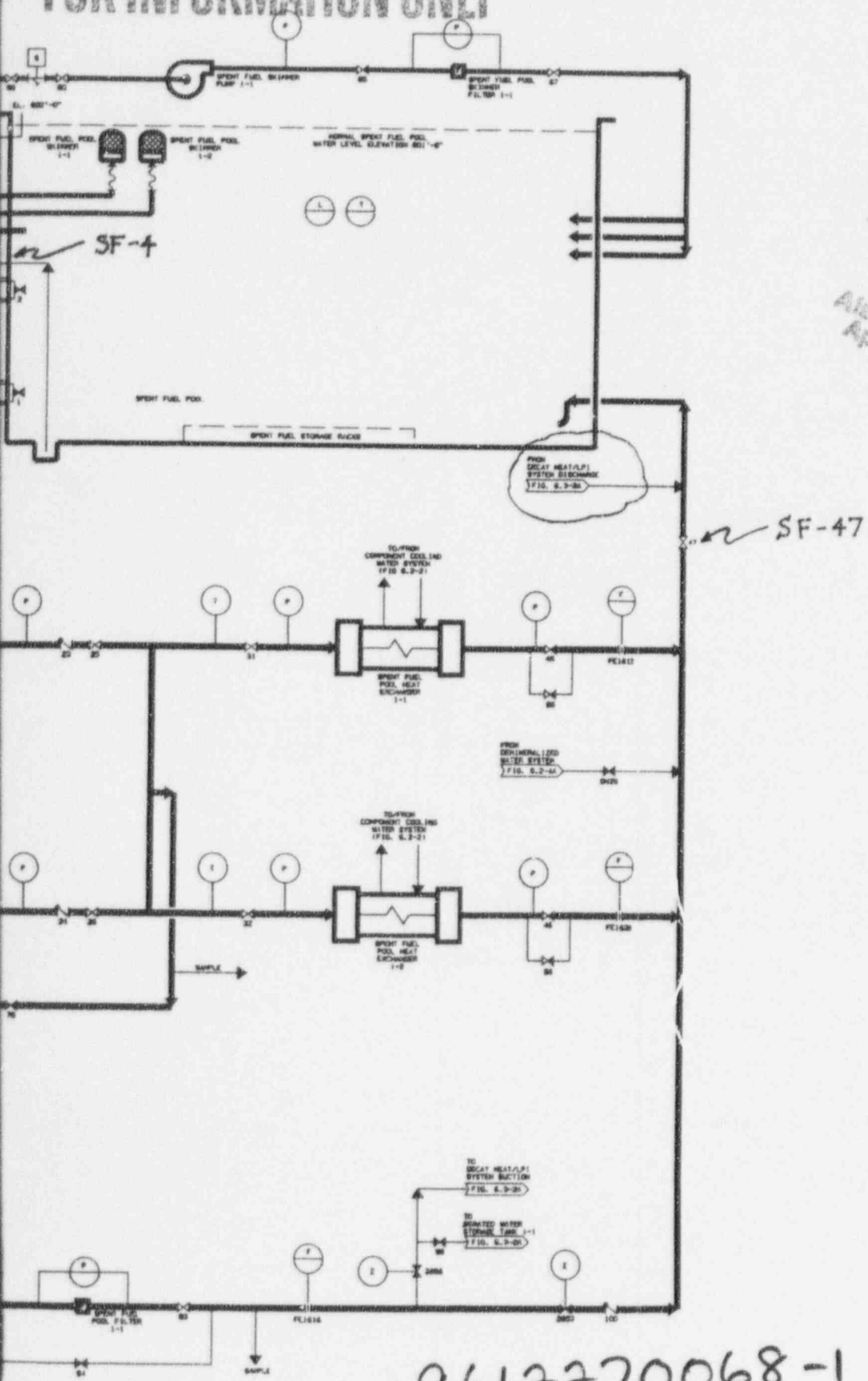

FOR INFORMATION ONLY
NOTES
1. ALL VALVES ARE PREFIXED WITH "DH" UNLESS OTHERWISE NOTED.
DH-69
DH-65
DH-66
DH-31
DH-30
FUNCTIONAL DRAWING
DECAY HEAT REMOVAL/
LOW PRESSURE INJECTION SYSTEM
FIGURE 6.3-2A


SF-3
SF-115
REFUELING CANAL
FUEL TRANSFER TUBE 1-1
FUEL TRANSFER TUBE 1-2
TRANSFER TUBE SLEEVE
REFUELING CANAL STRAINER 1-1
REFUELING CANAL STRAINER 1-2
REFUELING CANAL STRAINER PUMP 1-1
REFUELING CANAL STRAINER FILTER 1-1
NORMAL REFUELING WATER LEVEL ELEVATION 801'-0"
OVERFLOW TO CONTAINMENT NORMAL SUMP (FIG. 6.3-2A)
OVERFLOW TO RCDT (FIG. 11.2-3)
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
TO BORATED WATER STORAGE TANK 1-1 (FIG. 6.3-2A)
FROM BORATED WATER STORAGE TANK 1-1 (FIG. 6.3-2A)
CASK PIT FILL & DRAIN LINE
TRANSFER PIT FILL & DRAIN LINE
TO/FROM SD AUXILIARY STEAM SYSTEM (FSD 10.1-2A)
BORATED WATER STORAGE TANK HEATER 1-1
BORATED WATER RECIRCULATION PUMP 1-1
FROM CHEMICAL ADDITION SYSTEM (FIG. 9.3-4)
FROM CHEMICAL ADDITION SYSTEM (FIG. 9.3-16)
SPENT FUEL POOL PUMP 1-1
SPENT FUEL POOL PUMP 1-2
REFUELING CANAL DRAIN FROM DECAY HEAT/LPI SYSTEM (FIG. 6.3-2A)
FROM DECAY HEAT/LPI SYSTEM DISCHARGE (FIG. 6.3-2A)
TO DECAY HEAT/LPI SYSTEM SUCTION (FIG. 6.3-2A)
FROM PRIMARY WATER SYSTEM (FIG. 9.3-4A)
FROM DEMINERALIZED WATER SYSTEM (FIG. 9.3-4A)
TO REACTOR COOLANT DRAIN TANK 1-1 (FIG. 9.3-2)
SPENT FUEL POOL DEMINERALIZER 1-1
SAMPLE

FOR INFORMATION ONLY

NOTES

1. ALL VALVES ARE PREFIXED WITH "SF" UNLESS OTHERWISE NOTED.



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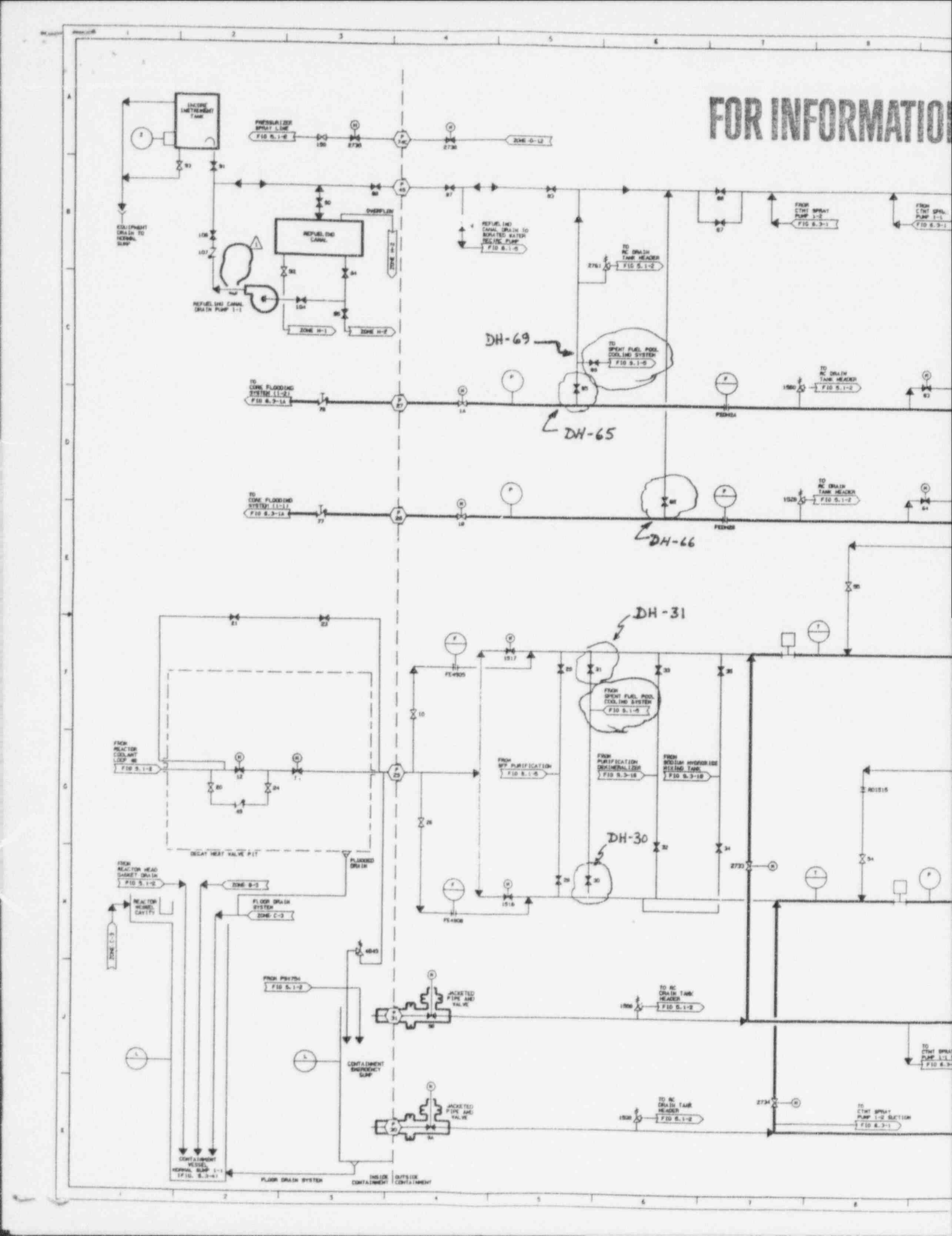
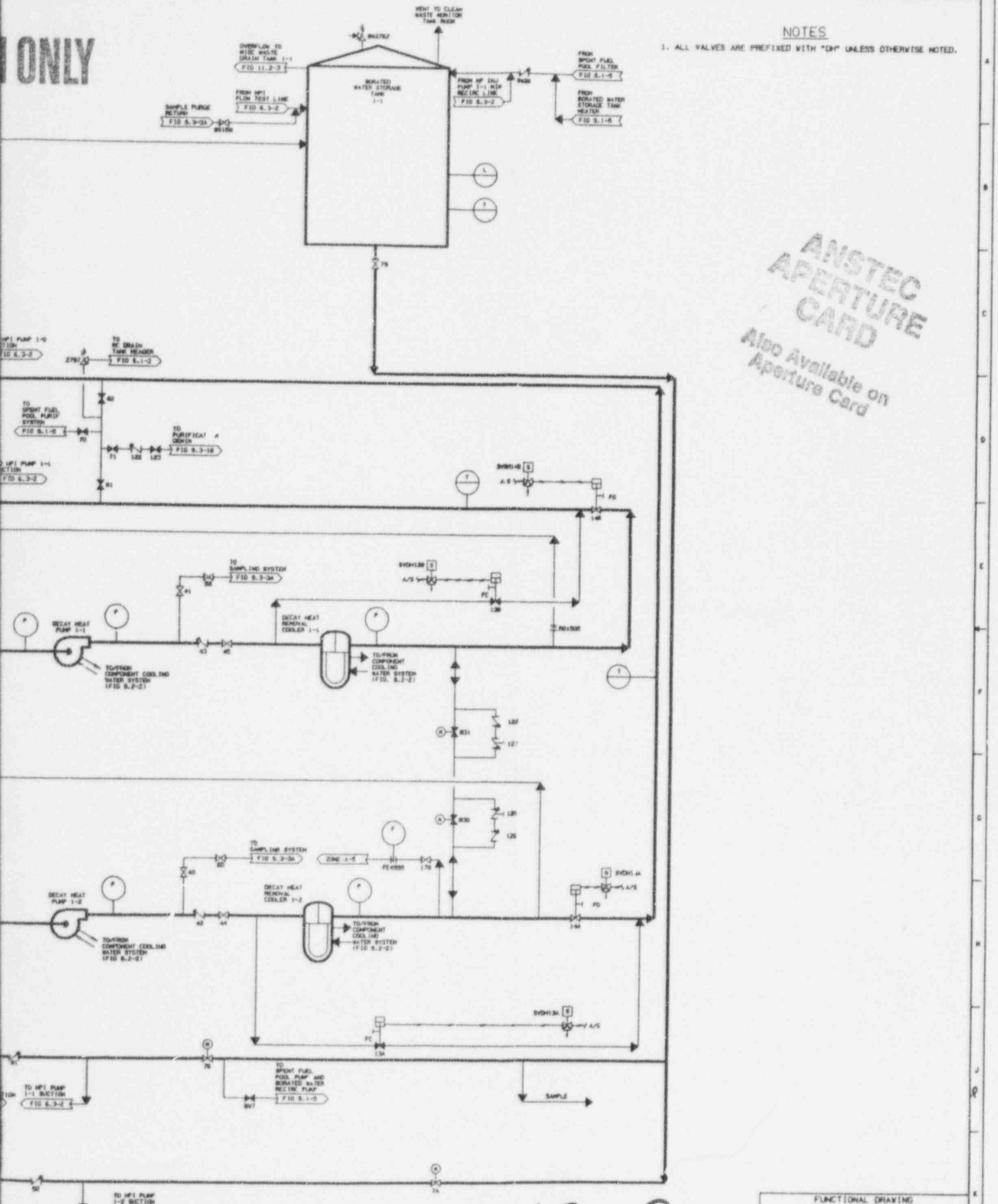
FUNCTIONAL DRAWING
SPENT FUEL POOL COOLING SYSTEM

FIGURE NO	REV
FIGURE 9.1-5	0


FOR INFORMATIO
DH-69
DH-65
DH-66
DH-31
DH-30
REFUELING CANAL
OVERFLOW
REFUELING CANAL DRAIN PUMP 1-1
EQUIPMENT DRAIN TO NORMAL SUMP
TO CORE FLOODING SYSTEM (1-2)
FIG 6.3-1A
TO SPENT FUEL POOL COOLING SYSTEM
FIG 5.1-5
TO RC DRAIN TANK HEADER
FIG 5.1-2
FROM CTMT SPRAY PUMP 1-2
FIG 6.3-1
FROM CTMT SPRAY PUMP 1-1
FIG 6.3-1
REFUELING CANAL DRAIN TO BORATED WATER RECYCLE PUMP
FIG 5.1-5
FROM REACTOR COOLANT LOOP 60
FIG 5.1-2
FROM MP PURIFICATION
FIG 5.1-5
FROM PURIFICATION DEMINERALIZER
FIG 5.3-18
FROM SODIUM HYDROXIDE MIXING TANK
FIG 5.3-18
FROM REACTOR HEAD GASKET DRAIN
FIG 5.1-2
DECAY HEAT VALVE PIT
FLOODED DRAIN
REACTOR HEADREL CAVITY
FLOOR DRAIN SYSTEM
ZONE C-3
ZONE B-3
CONTAINMENT EMERGENCY SUMP
JACKETED PIPE AND VALVE
CONTAINMENT VESSEL NORMAL SUMP 1-1
FIG. 6.3-4
FLOOR DRAIN SYSTEM
INSIDE CONTAINMENT
OUTSIDE CONTAINMENT
TO CTMT SPRAY PUMP 1-2 SUCTION
FIG 6.3-1
FE-4905
FE-4906



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FUNCTIONAL DRAWING
DECAY HEAT REMOVAL/
LOW PRESSURE INJECTION SYSTEM

FIGURE NO	REV
FIGURE 6.3-2A	1