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August 30, 1982

Paul O'Connor
Project Manager
Operating Reactors Branch No. 5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D.C 20555

Subject: Dresden 2
SEP Topic: VI-10.B, Shared Engineered Safety Features On-Site Emergency Power, and Service Systems for Multiple Unit Facilities

NRC Docket No. 50-237

Reference: (a) P.W. O'Connor letter to L. DelGeorge dated April 22, 1982

Dear Mr. O'Connor:

As a result of the NRC meeting of July 21 and 22, 1982 held in Washington, several items were identified and discussed per reference (a). The following responses addresses the diesel generator, fuel oil storage, and AC and DC Systems.

Item 1

Single failures could result in the inability to provide power to the required safe shutdown loads upon a loss of offsite power coincident with an accident in Unit 3.

Response

This scenario was identified as a long-term cooling concern in the January 30, 1981 contractors evaluation. The single failures of concern are a loss of Diesel Generator 2 or a loss of the Unit 2 125 VDC Reserve Bus which supplies Division II control power. Under these conditions, Diesel Generator 2/3 will swing to the accident unit and Unit 2 shutdown will commence with the isolation condenser and HPCI System.

The swing diesel generator is required by Unit 3 only until the core has been reflooded. At that point, only one LPCI pump is required to maintain level, and two containment cooling service water pumps will remove the heat from the containment (see FSAR Section 6.2.4). This combination of pumps is well within the rating of a single diesel generator. For a limiting case when ADS must operate to reach LPCI injection pressure, thus delaying reflood, the core is reflooded within 10 minutes as shown in FSAR figure 6.2.7:15. Reflood occurs more quickly for cases in which HPCI is available to depressurize a small break, or the break is large enough to depressurize unaided. Once reflood has occurred in Unit 3, the operator can manually swing Diesel Generator 2/3 to Unit 2 to support long-term cooling.

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This scenario is covered by Procedure DGA 12, "Partial or Complete Loss of AC Power", which instructs the operator upon loss of AC to cool down using the isolation condenser and/or HPCI, and also to restore power via Diesel Generator 2/3 using the normal bypass switches under emergency conditions.

Item 2

There are no physical or electrical interlocks or LCO preventing parallel operation of the shared 125V and 250 VDC battery systems. Such operation, combined with a single failure would result in a loss of capability to supply accident or safe shutdown loads following a loss of offsite power.

Response

Procedures controlling short-term parallel operation of the batteries during ground detection were provided for NRC review at the site meeting.

Item 3

There are no LCO requirements or interlocks preventing the normal/bypass switches for the DG 2/3 from being in "bypass" during operation of either unit. Such operation, combined with a single failure could render the required accident and safe shutdown loads inoperable following a loss of offsite power.

Response

The January 28, 1981 letter from Robert F. Janecek to Paul O'Connor documents procedure changes which require the normal-bypass switches to remain in normal-normal during operation.

Item 4

Complete information of the status of the shared DC batteries, chargers and buses is not available to operators of each unit.

Response

This item will be addressed under SEP Topic VIII-3.B.

Item 5

The 125V and 250VDC Systems are shared, which is not in compliance with current licensing requirements.

Response

The NRC Staff SER concludes that the design satisfies the single failure criterion and is, therefore, acceptable.

Item 6

Stored energy for DG operation does not meet the seven-day minimum (or time to replenish, whichever is longer) required by current licensing criteria.

Response

The underground diesel fuel storage tanks each have a capacity of greater than 15,000 gallons. By administrative controls, level indication is recorded for all 3 underground tanks once per shift on the "A" Operator Rounds, and is reviewed by the Shift Supervisor. Minimum permissible level by this procedure without initiating refill is 66% of tank diameter, or 11,899 gallons (see attached conversion table and capacity chart). Also, minimum day tank level before automatic refill is 500 gallons (2/3 capacity). Fuel consumption has been calculated as 173 gallons per hour for the first two hours post accident, and 147 gallons per hour thereafter. Therefore, minimum available storage capacity for any diesel is 84 hours or 3.5 days under expected load conditions. In addition, a low-level alarm in the control room will annunciate at a storage tank level of 6950 gallons, approximately a 2 day supply. The level indication and alarm on the storage tanks are calibrated annually per DIS 5200-1.

Item 7

The 250 VDC battery chargers are not capable of restoring the battery to its fully charged condition from minimum charge conditions during normal and post-accident steady state loads.

Response

Information was provided at the site meeting regarding modification M12-2-78-16, which replaced the 250 VDC battery chargers.

Item 8

In addition to work done by EG & G, a second contractor (Franklin Research Laboratories) has informed us that at least one shared engineered safety feature (ESF) is powered from diesel generator 2/3.

From Franklin's review of the ventilation systems, it was determined that part of one Standby Gas Treatment System (SGTS) is powered from bus 28-2 (Unit 2) and diesel 2/3. The other SGTS is powered from diesel 2 in Unit 3. If there is a LOCA in Unit 3 and offsite power is lost and diesel generator 3 fails, both SGTS will fail (because diesel 2/3 will swing to Unit 3). The staff is concerned tht similar problems may exist with the shared cooling systems. The staff does not have sufficient, current drawings of Units 2 and 3 shared systems to resolve this concern.

Response

In the event of the LOCA in Unit 3, loss of offsite power, and failure of DG3, the operator can manually restore power to the SGTS by use of the bus tie between 480V Bus 28 and 29. This transfer is a manual operation as shown on Dresden schematic 12E-2349 (transmitted previously). Such a transfer will have minimal effect on Diesel Generator 2, because many loads are shed from Bus 28 on undervoltage (as shown on the schematic), and safe shutdown loads for Unit 2 total only 1340 KW (see FSAR Table 8.2.3:2) far below the diesel output capacity. Use of the bus tie breakers is governed by procedure DOP 6700-2.

A review of loads fed by DG 2/3 indicates that other shared ESF Systems powered by this diesel are the diesel auxiliaries (cooling water pump, fuel transfer pump, room vent fan), 250 VDC battery charger 2/3. The diesel auxiliaries all have redundant power feeds from Unit 3 as shown on schematic 12E-2351B, which automatically close in upon loss of the Unit 2 feeds. Backup 250 VDC battery charger 2/3 can be manually connected to the Unit 2 battery upon loss of charger 2. The 125 VDC battery charger 2/3 is normally not connected to either battery; however this charger has an alternate feed from Unit 3. Use of the battery chargers is discussed in procedures DOP 6900-1 and -2.

Please address any questions you may have concerning this matter to this office.

One (1) signed original and forty (40) copies of this transmittal have been provided for your use.

Very truly yours,

Thomas J Rausch

Thomas J. Rausch
Nuclear Licensing Administrator
Boilling Water Reactors

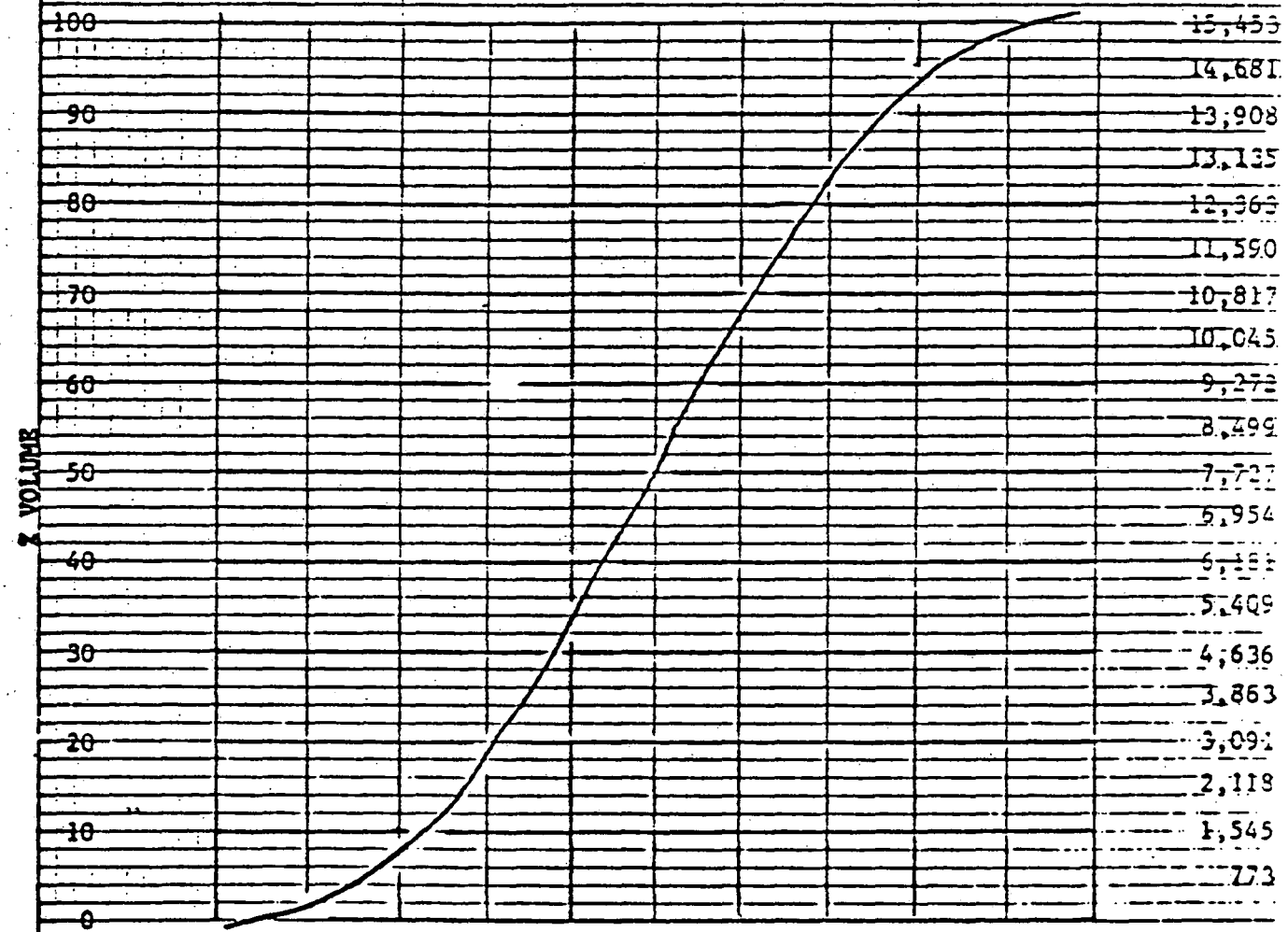
SPP/ji
2245D
Attachments
cc: RIII Resident Inspector, Dresden
Gregg Cwalina, SEP Integrated Assessment Project Manager (w/attach.)

DRESDEN STATION

UNIT 2, 2/3, 3

DIESEL OIL STORAGE TANK

CAPACITY CHART



NOTE: Local gauge reads in % diameter

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46 0700

K·E 10 X 10 TO THE INCH • 5 X 10 INCHES
KEUFFEL & ESSER CO. MADE IN U.S.A.

GALLONS OF DIESEL FUEL PER % OF TANK DIAMETER

OF 2, 2/3, 3 STORAGE TANKS

%	GALLONS	%	GALLONS	%	GALLONS	%	GALLONS
60	10,400	70	12,795	80	14,449	90	15,330
60½	10,532	70½	12,904	80½	14,511	90½	15,356
61	10,663	71	13,012	81	14,573	91	15,376
61½	10,802	71½	13,112	81½	14,627	91½	15,402
62	10,941	72	13,213	82	14,681	92	15,423
62½	11,065	72½	13,313	82½	14,719	92½	15,432
63	11,188	73	13,414	83	14,758	93	15,438
63½	11,312	73½	13,491	83½	14,820	93½	15,447
64	11,436	74	13,568	84	14,882	94	15,453
64½	11,544	74½	13,661	84½	14,920	&	
65	11,652	75	13,754	85	14,959	UP	
65½	11,776	75½	13,823	85½	15,013		
66	11,899	76	13,893	86	15,067		
66½	12,038	76½	13,970	86½	15,106		
67	12,177	77	14,047	87	15,144		
67½	12,270	77½	14,117	87½	15,168		
68	12,363	78	14,186	88	15,191		
68½	12,479	78½	14,264	88½	15,229		
69	12,599	79	14,341	89	15,268		
69½	12,695	79½	14,395	89½	15,299		

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