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SCHWENCER,A. Licensing Branch 2

SUBJECT: Responds to 820219 request for addl info re remote shutdown requirements.Table w/locations not controlled from remote shutdown panel encl.

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MAR 10 1982

Mr. A. Schwencer, Chief
Licensing Branch #2
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
REMOTE SHUTDOWN REQUIREMENTS
ER 100450 FILE 841-2, 265
PLA-1029

DOCKET NOS. 50-387
50-388

Dear Mr. Schwencer:

The attachment to this letter represents a complete response to your Request for Additional Information dated February 19, 1982.

Very truly yours,

N. W. Curtis
Vice President-Engineering and Construction-Nuclear

RRS/mjm

cc: P. Collins - NRC
J. Mauch - NRC
R. Perch - NRC
W. Hodges - NRC

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(1) The staff is questioning the use of the ADS valve controls located in the upper and lower relay rooms since they share a common HVAC system with the control structure. We request additional information concerning procedures for access to these areas during a control room evacuation. These procedures should include a method of isolating either of these relay rooms from the control structure HVAC system or of isolating the control room from the HVAC system and a discussion of the smoke detectors in the relay rooms.

Response

The HVAC system for the control room, the upper relay rooms, and the lower relay rooms is not a common system. Control room HVAC requirements are provided by the control room air handling units (Fan nos. OV117A&B), upper relay room HVAC requirements are provided by the control structure air handling units (Fan nos. OV103A&B), and lower relay room HVAC requirements are provided by the computer room air handling units (Fan nos. OV115A&B). These are three different HVAC systems with independent supply and return ducting. Further detail is provided in FSAR subsection 9.4.1.

Each of the relay rooms is equipped with early warning ionization detectors in the rooms themselves, in safety-related cabinets, and under the false floors. In the event of a control room evacuation, we believe that access would be available to both relay rooms for the following reasons: first, the HVAC systems are independent as described above; secondly, the control room, upper relay room, and lower relay room are located on three different floor elevations within the control structure. This second point effectively minimizes any intersystem leakage. In addition to these design features, an adequate number of self-contained breathing apparatus are available for use in gaining access to the relay rooms.

(2) The applicant's response to our position was incomplete regarding instrument indicators needed for hot and cold shutdown. We require that a single failure analysis be provided for these indicators along with the locations for the alternate indications.

Response

A description of the instrument indicators needed for hot and cold shutdown and their locations is provided below.

a. Reactor Vessel Pressure - PI-14262 on the Remote Shutdown Panel. Numerous backup pressure indicators are available on panels 1C004 (Area 29) and 1C005 (Area 27) on elevation 749'-1".

b. Reactor Vessel Level - LI-14262 on the Remote Shutdown Panel. Numerous backup level indicators are available on panels 1C004 (Area 29) and 1C005 (Area 27) on elevation 749'-1".

c. Suppression Pool Level - LI-15776B2 on the Remote Shutdown Panel. A local level indicator, LI-15776A2, is being added in Area 27, elevation 645'-0".

d. Suppression Pool Temperature - TI-15751 (Division I) and TI-15751 (Division II) are being added to the Remote Shutdown Panel.

e. RCIC Turbine Speed/Flow - SI-15001B (RCIC Turbine Speed), FI-14903 (RCIC Flow), and FIC-14903 (RCIC Flow Indicator/Controller) all on the Remote Shutdown Panel. These indicators act as backups to each other.

f. RHR System Flow - FI-15105 on the Remote Shutdown Panel. A local flow indicator, FI-15105A, is being added in Area 27, elevation 683'-0".

g. RHR Service Water Flow - FI-11207B on the Remote Shutdown Panel. Required flow in the alternate loop may be inferred from local observation of valve HV-11210A in Area 29, elevation 645'-0".

If an indicator that is used to determine a primary parameter (a,b,c & d above) fails, its backup is used. If an indicator that is used to determine system operation (e,f & g above) fails, and the necessary information cannot be inferred from other available information, then the system is considered failed and the backup system is used.

(3) The Redundant Path shown in Attachment A tabulates the systems or functions required to achieve a redundant or diverse method of shutdown where the controls and indicators are not necessarily on the Remote Shutdown Panel. However, we require that locations be shown for the redundant systems or functions and these locations must be reasonably accessible from the Remote Shutdown Panel.

Response

Table 1 provides the locations including elevations for hot and cold shutdown mechanisms in the redundant path which are not controlled from the Remote Shutdown Panel. The accompanying figures are provided to depict the tabulated information.

With respect to the question on accessibility, it is important to note the availability of various forms of communication from the Remote Shutdown Panel area to the various areas requiring local control, including:

a. an intraplant public address, 5-channel, page/talk handset intercom system,

b. an intraplant maintenance/test jack telephone system, and

c. portable communication systems (walkie talkies).

These systems will support the control of any of the aforementioned redundant mechanisms.

(4) Provide an analysis for using the Reactor Core Isolation Cooling (RCIC) System to reduce the reactor pressure. This analysis should be performed with the use of the RCIC system as a path for reducing reactor pressure during remote shutdown assuming SRVs and the ADS to be unavailable, and should include verification that the RCIC turbine steam flow is sufficient to reduce reactor pressure to achieve cold shutdown. The time to reach cold shutdown should also be provided.

Response

In response to NRC requests, we requested General Electric to calculate the time required to reach cold shutdown by using reactor steam to drive the RCIC turbine. The calculated time was 100-300 hours. PP&L considers this time excessive thus relegating cooldown in this mode to be merely a supplementary cooldown mechanism rather than the main or redundant cooldown path.

(5) In the applicants response, the "primary path" tabulates those systems/functions that are controllable from the Remote Shutdown Panel (RSP). The "primary path" system used to reduce the reactor pressure to go from hot to cold shutdown consists of three Safety/Relief Valves (SRV) which can be controlled from the RSP. If a single failure prevents these valves from functioning, then the applicant takes credit for a "redundant path" consisting of manual control of the Automatic Depressurization Valves (ADS) to reduce the Reactor Pressure.

During our review of the applicant's response, it became apparent that the Safety/Relief Valves on the RSP utilize non-safety grade air without accumulators as a backup and are, therefore, non-safety grade. The staff has concluded that this design does not meet the RSP position that was transmitted to the applicant on August 17, 1981. This position states, in part, that the design should provide redundant safety grade capabilities for attaining subsequent cold shutdown through the use of suitable procedures. The staff requires that the applicant submit information as to how the staff position is met with the use of the SRVs.

Response

The placement of the three safety relief valves in the primary path was intended to denote the preferred method of operation. While this method does have a limited safety grade capability through the use of accumulators, ADS is the actual design provision for redundant safety grade

capability for depressurization. Within ADS there are six valves, each of which has redundant divisionalized control from the relay rooms. If a valve was to fail (i.e. stick closed for any reason), any of the other valves could be used. If there was a control failure, up to and including the loss of a complete division, control could be achieved through the other division from the panel in the other relay room. For these reasons, ADS provides the required redundant safety grade capability for the purposes of remote shutdown.

Table 1

REDUNDANT PATH	LOCATION	ELEVATION	REFERENCE PAGE	ROOM
RHR Suppression Pool Cooling Loop - A	RHR Room	645'	5	X-14
	RHR Auxiliary Switchgear	683'	3	X-202
		749'	1	X-510
RHR Service Water Loop A	RHR Room	645'	5	X-14
	Switchgear	719'	2	X-407
	Valve Pit	Ground Elevation	N/A	Near Spray Pond
ESW Loop A	Switchgear	749'/719'	1/2	X-510 X-407
RPV Level	1C004/5	749'	1	X-513
Suppression Pool Temperature Division II	1C201	670'	4	X-109
MSIV Outboard	Valve Access Area	749'	1	X-515
Alternate S/D Cooling	Upper/Lower Relay Room	754'/689'	N/A	Control Structure
	Core Spray Room	645'	5	X-10/X-17
	Valve Room	749'	1	X-515
	Switchgear	719'/749'	1/2	X-510 X-407
ADS	Upper/Lower Relay Room	754'/698'	N/A	Control Structure
Remote Shutdown Panel	1C201	670'	4	X-109