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MIDDLE SOUTH UTILITIES SYSTEM

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W3P81-1639
Q-3-A29
Q-3-A14.04.02
Option 270

Mr. R. L. Tedesco
Assistant Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: Waterford SES Unit No. 3
Docket No. 50-382
Reactor Systems Branch (RSB)
SER Open Item No. 61

REFERENCE: L. V. Maurin to R. L. Tedesco letter dated June 12, 1981 (W3P81-1467)

ATTACHMENT: Revised Response to FSAR Question 211.94(5)

Dear Mr. Tedesco:

In FSAR Question 211.94 part (5), the RSB has required us to demonstrate our capability of initiating shutdown cooling completely from the control room. Our initial response submitted in Amendment 17 (4/81), documented our commitment to provide motor operators on various valves to achieve this end. However, we also indicated that the operator would still normally be required to first locally unlock and close the breakers (located at El +21 below the control room at El +46) for the Safety Injection Tank (SIT) discharge valves in order to be able to close these valves from the control room prior to shutdown cooling initiation.

During subsequent discussions with the RSB reviewers, we were informed that the NRC staff felt that this arrangement did not comply with RSB BTF 5-1. In the referenced letter we expanded upon our response to indicate the SIT discharge valve MCC area and access routes were continuously habitable post-LOCA, and that the power lock-out arrangement on the SIT discharge valves stemmed from ICSB 4 and 18 criteria.

The referenced letter generated another round of discussions among RSB, ICSB, LPL and Ebasco. As a result we hereby submit the attached proposed revision to FSAR Question 211.94(5). In this response, we commit to maintaining the power lock-out provision on the SIT discharge valves but removing it from the SIT vent valves. We demonstrate that although the normal procedure would be to close the SIT discharge valves, this proposed arrangement would allow the plant to be brought safely to and maintained in a cold shutdown condition, if for some reason the operator were unable to reach the SIT discharge valve breakers.

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We plan to formally incorporate the attached revised response in FSAR Amendment 20 on 7/17/81.

Very truly yours,

L. V. Maurin
Assistant Vice President
Nuclear Operations

LVM/RWP/sm

Attachment

cc: E. L. Blake, W. M. Stevenson

Question No. 211.94 (5)

Discussion with the applicant has indicated that a number of valves in the shutdown cooling system are being modified to include motor operators. Provide details of these modifications. Demonstrate that with these modifications, all actions necessary to initiate shutdown cooling can be taken from the control room, utilizing only safety grade systems, and assuming only onsite power is available. Also, indicate whether there are any systems or components needed for shutdown cooling which are de-energized or have power locked out during plant operation. If so, indicate what actions have to be taken to restore operability to the components or systems.

Response

In order to comply, we are equipping the following Shutdown Cooling System (SDCS) valves with motor operators, operable from the control room. These valves are:

VALVE NO.	FUNCTION
SI-452	SDCS Heat Exchanger Isolation
SI-453	SDCS Heat Exchanger Isolation
SI-400	Warm-up Bypass
SI-450	Warm-up Bypass
SI-456	SDCS Heat Exchanger Return Line Isolation
SI-457	SDCS Heat Exchanger Return Line Isolation
SI-432	SDCS Cooling Isolation
SI-444	SDCS Cooling Isolation

Attached Table 211.94-1 shows all valves in the ECCS with lockout provisions and operated from the control room. The list is divided into two categories:

a) Valves that have power locked-out from the motor control center during normal operation. From this category, only Safety Injection Tank discharge valves are required for normal shutdown.

   The SIT discharge valves are locked open during normal operation. This is accomplished by locking open the breakers in the Motor Control Center after the motor operated valves have been placed in their open position. These breakers are locked open in order to ensure that no single failure such as an electrical fault will cause these valves to be closed when safety injection is required. Placing a padlock on the breaker also diminishes the probability of the valves being closed due to operator or maintenance error. Locking open this breaker is in fact required by ICSB BTP's 4 and 18 in order to meet single failure criteria.

During cooldown, an interlock will prevent these valves from being closed while primary pressure is above 400 psig. At 650 psig primary pressure, the operator vents the SIT's to 377 psig. At 400 psig, the operator normally closes the SIT discharge valves. However, an SIAS will override and reopen the valves. This ensures SIT availability during shutdown cooling without the danger of overpressurizing the SDCS.

In order to close the valves, an operator must go to El +21 (two flights of stairs directly below the control room at El +46) remove the padlock and locally close the breaker at the MCC. The valves in the control room may then be closed from a key-lock control switch. Although an operator must move a short distance from the control room, the areas he must pass through have been documented in the shielding study (FSAR Appendix 12.3A) as being continuously habitable post-LOCA.

As discussed above, there is no reason why, considering the proximity and habitability of the MCC area and its accessibility from the control room that the operator should be unable to close these valves. However, if we assume that for some non-mechanistic reason, the operator was unable to close these valves, the plant could still be brought to and maintained in a cold shutdown condition as demonstrated below.

THE RCS pressure does not have to be reduced below 377 psig in order to cool down the plant to cold shutdown conditions (MODE 5). Procedurally, the SIT discharge valves are normally closed at this time to avoid a reduction in tank inventory and the consequent need for adding water prior to returning the plant to operation, but there is no safety requirement for closing these valves. By the same token, the N_2 cover gas pressure in the tanks can be reduced below 377 psig should it be desired.

The overriding concern which dictates that power be removed from the SIT discharge valves during operation is the potential for an undefined or non-mechanistic fault which might develop a false "CLOSE" signal to the valve operator at the time of a large break LOCA. Such an event would invalidate the safety analysis. There is no equivalent basis for removing the power from the nitrogen vent valves on the SIT's during operation. In that case, the generation of a non-mechanistic fault which caused a vent valve to open at the time of a large break LOCA would have no significant impact on system performance or on the safety analyses. For this reason, and in order to meet the Reactor Systems Branch and ICSB criteria, the SIT vent valves (2SI-E632, 633, 634, 635, 636, 637, 638 and 639) will not have power locked out at the MCC. They will, therefore, be operable from the key-lock control room switch.

In summary, therefore, by maintaining the MCC power lock-out provision on the SIT discharge valves but removing this provision from the SIT vent valves, the plant can be brought to a cold shutdown condition from the control room and still meet ESB 3-1, ICSB ETP4 and 18 criteria.

TABLE 211.94-1

LIST OF LOCKED-OUT REMOTELY OPERATED ECCS VALVES

1. Locked-out in the control room and in the motor control center.

TAG NO.	DESCRIPTION	REQ'D FOR NORMAL SHUTDOWN
2SI-V1557	Hot leg injection	No
-V1558	Hot leg injection	No
1SI-V1505	SI Tank Discharge	Yes
-V1506	SI Tank Discharge	Yes
-V1507	SI Tank Discharge	Yes
-V1508	SI Tank Discharge	Yes

2. Locked-out only in the control room.

1SI-V1501B	Shutdown Isolation	Yes
-V1502B	Shutdown Isolation	Yes
-V1503A	Shutdown Isolation	Yes
-V1504A	Shutdown Isolation	Yes
2SI-FM317A	Shutdown Temp. Control	Yes
-FM318A	Shutdown Temp. Control	Yes
-FM348B	Shutdown Temp. Control	Yes
-FM349B	Shutdown Temp. Control	Yes
-V326B	Shutdown Containment Isolation	Yes
-V327A	Shutdown Containment Isolation	Yes
-V811B	Cold leg injection	No
-V1534	Cold leg injection	No
-V1556	Hot leg injection	No
-V1559	Hot leg injection	No
-E632	SI Tank Vent	No
-E633	SI Tank Vent	No
-E634	SI Tank Vent	No
-E635	SI Tank Vent	No
-E636	SI Tank Vent	No
-E637	SI Tank Vent	No
-E638	SI Tank Vent	No
-E639	SI Tank Vent	No