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U7-C-NINA-NRC-140006

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
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South Texas Project
Units 3 and 4
Docket Nos. 52-012 and 52-013
Response to Request for Additional Information

Attached is the Nuclear Innovation North America, LLC (NINA) response to the NRC staff question in Request for Additional Information (RAI) letter number 444 related to SRP Section 1.05. The attachment to this letter contains the response to the following RAI questions:

01.05-30

01.05-31

There are no COLA changes in this submittal.

There are no commitments in this submittal.

If you have any questions, please contact me at (979) 316-3011 or Bill Mookhoek at (979) 316-3014.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on 3/19/14

Scott Head
Manager, Regulatory Affairs
NINA STP Units 3&4

Attachments:

1. RAI 01.05-30
2. RAI 01.05-31

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NRO

cc: w/o attachment except*
(paper copy)

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RAI 01.05-30

QUESTION

In the response to RAI 01.05-22, NINA identified five RCIC valves (F004, F037, F001, F006, F011) for Phase 1 core cooling in the mitigation strategies. The power source for these valves is from Division 1 dc batteries. However, in Calculation Report No. U7-DCE-E-CALC-DESN-6001, only three RCIC valves (FV-004, FV-011, and FV-0052 with different valve numbers) were assumed to draw power from dc batteries. There appears to be an inconsistency between these two documents relating to the dc power source being used for RCIC valves during Phase 1. The applicant is requested to clarify the inconsistency and revise the document(s), as necessary, including different valve numbering in these two documents and assumptions being used in the calculation.

RESPONSE

The response to RAI 01.05-22 identified five RCIC valves that would be operated during Phase 1 of the mitigation strategies. These valves are:

- F004 (RPV injection valve from RCIC pump)
- F037 (steam admission valve)
- F001 (Supply from CST)
- F006 (Supply from suppression pool)
- F011 (RCIC bypass valve)

Calculation U7-DCE-E-CALC-DESN-6001 considered only three valves drawing power from the batteries during Phase 1. These valves are:

- FV-0004 (RPV injection valve from RCIC pump)
- FV-0011 (RCIC bypass valve)
- FV-0052 (Steam admission valve)

Calculation U7-DCE-E-CALC-DESN-6001 utilized Toshiba design drawings in identifying valves to be operated whereas the RAI response utilized STP 3 & 4 P&ID numbers, which explains the difference in nomenclature. In addition, the Toshiba design drawings identified the steam admission valve as FV-0052 whereas the STP 3 & 4 P&ID identified the same valve as F037. All other valve numbers are the same with the exception of the FV designation used in the design drawings.

Condition Report CR-14-2498 has been initiated to require the valve nomenclature and numbering to be consistent with STP 3 & 4 P&ID numbers and nomenclature during the next revision of the calculation.

RAI 01.05-30

The two valves listed in the RAI response but not in the calculation are:

- F001 (Supply from CST)
- F006 (Supply from suppression pool)

These valves were not included in the calculation as they would be operated manually one time during Phase 1, and will have no impact on the analysis. It was originally anticipated in the FLEX Plan that these valves would be operated twice during Phase 1, but a subsequent MAAP analysis of the event demonstrated that the initial shift of RCIC pump suction from the CST to the suppression pool would take place automatically before the load shed. Therefore, the only time they would be operated during Phase 1 would be in shifting RCIC suction back to the CST (manually by handwheel) when suppression pool temperature approaches 250 degrees F.

The response to RAI 01.05-22 will be revised to indicate that the initial automatic shift of RCIC suction to the suppression pool would take place automatically before load shed and that the subsequent shift back to the CST will be done manually by handwheel.

RAI 01.05-31

QUESTION

In RAI 01.05-22, the NRC staff requested additional information about the power sources including manual operations for all the valves and pumps that will be required for mitigation strategies throughout three phases of extended loss of all ac power. NINA responded on October 16, 2013 (ML13294A121). The staff requests NINA to place the portion of the response into the report of STP 3&4 ABWR FLEX Integrated Plan to demonstrate the adequacy of design capabilities of the power sources including operations for all the valves and pumps being used for mitigation strategies.

RESPONSE

The information shown below in shaded will be added to the STP 3 & 4 ABWR FLEX Integrated Plan as an attachment during the next revision of the plan.

Attachment 3**Valves and pumps required for Phase 1 and Phase 3****RCIC**

- Pump (C002) – Steam driven (FSAR Figure 5.4-8, Sh. 1)
- F004: (RPV Injection valve from RCIC pump)–Division 1 DC MOV (FSAR Figure 5.4-8, Sh. 1)
- F037: (Steam admission valve) – Division 1 DC MOV (FSAR Figure 5.4-9, Sh. 1)
- F001: (Supply from CST) – Division 1 DC MOV (FSAR Figure 5.4-8, Sh. 1)
- F006: (Supply from Suppression Pool) – Division 1 DC MOV (FSAR Figure 5.4-8, Sh. 1)
- F011: (RCIC bypass isolation) - Division 1 DC MOV (FSAR Figure 5.4-8, Sh. 1)

ACIWA

- F101 (Manual Isolation between RHR and FPS) (FSAR Figure 5.4-10, Sh. 7)

RAI 01.05-31

- F102 (Manual Isolation between RHR and FPS) (FSAR Figure 5.4-10, Sh. 7)
- F005C (RHR RPV Isolation) AC MOV (FSAR Figure 5.4-10, Sh. 7)
- SRV solenoid valves Division 1 DC
- Fire Pump - Diesel driven

COPS

- COPS is a passive system and requires no operator actions or valve manipulations. It vents containment when its rupture disc actuates.

Manual operations of valves and pumps during Phase 1

- Operator will be dispatched to operate RCIC manually by throttling the RCIC injection valve (F004) after DC load stripping. [handswitch at or near valve]
- RCIC suction will shift automatically from CST to suppression pool upon receipt of suppression pool high level alarm (Before Load Shed)
- Shift RCIC suction back to CST when Suppression pool temperature approaches 250 degrees F by manually opening F001 and closing F006. [handwheel]
- Align ACIWA to RPV by manually opening F005C, F101, and F102. [handwheel]
- When CST level approaches the end of usable volume, an SRV will be opened from the Remote shutdown panel to initiate RPV depressurization to ACIWA injection pressure
- When ACIWA begins to inject to the RPV, RCIC will be secured by manually closing F001, F004, F006, F011, and F037. [handswitch at or near valves]

Phase 3

After 36 hours, Phase 3 begins with core cooling being provided by ACIWA. As Phase 3 proceeds, operator action would be necessary to shift ACIWA suction to the volume of water in the approximately 16 million gallon UHS basin. Operators would also need to transfer diesel fuel from one of the three Emergency Diesel Generator fuel oil storage tanks to the ACIWA fuel storage tank using a staged portable pump and small portable diesel generator. Two FLEX 480V 1500 KW diesel generators from offsite would be connected and started to provide AC power for battery charger operation, limited ventilation system operation, and other limited uses. Command and control is expected to be shifted back to the Main Control Room early in Phase 3.

SFP

- F14C, F15C (Loop C double Isolation between RHR Loop C and fuel pool cooling) – AC MOVs (FSAR Figure 5.4-10, Sh. 7)

ACIWA

- Valves (yet unnamed) to transfer ACIWA suction to UHS
- Portable pump and small portable diesel generator to transfer fuel to ACIWA fuel storage tank.

RAI 01.05-31

Manual operations of pumps and valves during Phase 3

- Make up to SFP as necessary by manually opening F14C and F15C. [handwheel]
- Add fuel to ACIWA fuel storage tank as necessary
- Transfer ACIWA suction to UHS
- Install and operate FLEX air compressors
- Install and operate temporary ventilation systems
- Install and operate FLEX 480 VAC diesel generators