FPL

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L-2004-255

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: Turkey Point Units 3 and 4
Docket Nos. 50-250 and 50-251
Response to Request for Additional Information Regarding
Bulletin 2003-01 "Potential Impact of Debris Blockage on Emergency Sump
Recirculation at Pressurized-Water Reactors" TAC Nos. MB9623 and MB9624

By letter dated September 17, 2004, the NRC issued a request for additional information regarding Bulletin 2003-01 Responses for Turkey Point Units 3 and 4 previously provided in an FPL letter dated August 8, 2003.

The requested information is provided in the attachment to this letter. Please contact Walter Parker at (305) 246-6632 if there are any questions.

Very truly yours,

Terry Jones

Terry O. Jones
Vice President
Turkey Point Nuclear Plant

RLE

Attachment

cc: Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

A103

FPL Turkey Point Units 3 and 4
NRC Bulletin 2003-01
Response to Request for Additional Information

REQUESTED INFORMATION

This response addresses the NRC Bulletin 2003-01 Request for Additional Information (RAI) covering the interim compensatory and plant specific measures that have been implemented. This includes the applicable Westinghouse Owners Group (WOG) recommendations and plant-specific compensatory measures taken to reduce sump-clogging risks. Note that a description of Turkey Point Units 3 and 4 Emergency Core Cooling System (ECCS) and Containment Spray System (CSS) is provided in Sections 6.2 and 6.4 of the Updated Final Safety Analysis Report (UFSAR). Each NRC Question (of which there are three) is followed immediately by the Turkey Point response.

1. ***Page 1 and 2 of Attachment 2 of the NRC Bulletin 2003-01 response, indicated that operator transition to procedure ECA-1.1, "Loss of Emergency Coolant Recirculation," was to be conducted in the presence of recirculation pump distress indications. The submittal stated that Procedure ECA-1.1 provides contingency actions to mitigate the inability to establish recirculation cooling and prolong reactor water storage tank (RWST) injection, to provide continued decay heat removal. However, the response does not completely discuss the operator actions to be taken under this procedure. Provide a detailed discussion of the response actions the operators are instructed to take within ECA-1.1 in the event of sump clogging and loss of emergency core cooling system recirculation capability.***

The Turkey Point Units 3 and 4 Emergency Operating Procedures (EOPs) are based on the generic WOG Emergency Response Guidelines (ERGs). In the event of a loss of coolant accident (LOCA), operators would enter the EOP network at E-0, "Reactor Trip or Safety Injection" in response to reactor trip and safety injection (SI) actuation associated with the Reactor Coolant System (RCS) leakage. After completing immediate and prompt actions, operators would diagnose the event and transition to E-1, "Loss of Reactor or Secondary Coolant".

Large Break LOCA

While performing E-1, the operators would verify proper operation of the ECCS and CSS as these systems inject the contents of the refueling water storage tank (RWST) into the RCS and containment building. Each ECCS train consists of a residual heat removal (RHR) pump providing low head injection and a high-head safety injection (HHSI) pump. Each CSS train consists of a single pump and spray header. All of the ECCS and CSS pumps operate in parallel during this RWST injection phase. If both trains of ECCS and CSS are operating, the inventory in the RWST will decrease from 320,000 gallons to 155,000 gallons in approximately sixteen minutes, triggering a transition to ES-1.3, "Transfer to Cold Leg Recirculation." Performance of ES-1.3 results in realignment of the ECCS and CSS to the recirculation-cooling mode.

During the initial steps of ES-1.3, the injection flow rate is decreased in response to the decreasing level in the RWST to maintain adequate suction head for the operating ECCS pumps. When the RWST level reaches 155,000 gallons, both RHR pumps are stopped and one train of CSS is stopped (if both were initially operating). This action maintains at least one HHSI pump and one CSS pump providing RWST injection while initial steps to setup cold leg recirculation are performed. This alignment continues until the RWST level decreases to 60,000 gallons. This sequenced injection process extends the injection phase an additional 31 minutes for a total duration of 47 minutes presuming both trains of ECCS and CSS are operating.

During the latter stages of injection, the previously secured RHR pumps are aligned for cold leg recirculation from the containment sump. One RHR pump providing cold leg injection is placed in service (with the operating HHSI & CSS) until the RWST is drained to 60,000 gallons. If containment conditions do not require continued operation of the CSS, cold leg recirculation via the single RHR pump is maintained. If continued operation of the CSS is required, the system is reconfigured such that one RHR pump draws suction from the containment recirculation sumps and provides suction boost for one HHSI pump and one CSS pump (known as 'piggyback' alignment). In either case, if there is no indication of sump blockage, operators progress through ES-1.3 and maintain the required recirculation-cooling mode.

If any pump(s) indicate signs of distress (low flow & amperage), the operator transitions to procedure ECA-1.1. This procedure provides various mitigating strategies depending on the particular recirculation cooling mode that has been established for the plant condition.

<u>Direct RHR Cold Leg Recirculation</u>

As stated above, this mode is entered during the latter stage of the injection phase, prior to assessing containment conditions for long term cooling. If the RHR pump indicates signs of distress such as low flow and low running amperage, the operator is instructed to transition to procedure ECA-1.1. Procedure ECA-1.1 instructs the operator to stop the distressed RHR pump and perform a series of steps that will prolong the latter stage of RWST injection. These actions include:

1. Add makeup to the RWST to extend its time as a suction source. The CVCS blended makeup flow can refill the RWST at about 100 gpm.

2. Maximize reliance on emergency containment coolers and minimize reliance on CSS pumps using a table in ECA-1.1 for various containment pressures and RWST levels.

3. When the RWST is depleted, establish HHSI pump flow from the opposite (non-accident) unit's RWST if available.

4. Throttle HHSI pump discharge valves to provide minimum flow based on decay heat. Operators must locally throttle the running HHSI pump discharge valve locally according to the minimum SI flow rate curve for that time in the accident.

5. If HHSI pump flow from the opposite unit's RWST can not be established, align at least one charging pump to the accident unit's RWST and continue the injection phase until the RWST is depleted to 20,000 gallons.

These recovery strategies address many of the countermeasures outlined in the bulletin to reduce the risk of sump clogging.

Aligning the opposite unit's RWST and HHSI pump to inject on the accident unit is a simple task. The cross-connect alignment is performed by the operator opening two motor-operated valves from the control room and instructing the opposite unit's reactor operator to start a HHSI pump. Once HHSI flow is re-established, the operator is instructed to throttle flow from the opposite unit's RWST to match decay heat requirements according to the minimum SI flow versus time curve, further prolonging the injection phase.

If the opposite unit's RWST is not available, (e.g. the other unit is in a refueling outage) ECA-1.1 directs the operator to align charging pumps to inject from the accident unit's RWST. Since the charging pumps are positive displacement pumps, and therefore have minimal NPSH requirements, the charging pumps can draw suction from the RWST when it would not provide adequate NPSH for the centrifugal ECCS and CSS pumps. By aligning the charging pumps to the accident unit's RWST, an additional 40,000 gallons of injection capacity is available for core cooling.

Depending on the water level at which alternate injection paths are started (either opposite unit's RWST or accident unit's charging pumps) approximately 3 hours of additional injection time can be achieved.

Piggyback Cold Leg Recirculation

Following the piggyback cold leg recirculation alignment in accordance with procedure ES-1.3, the operators transition back to E-1. The foldout page in E-1 will transition the operator to ECA-1.1 if any of the operating ECCS or CSS pumps indicate signs of distress due to containment sump blockage. The entry point into ECA-1.1 is at the point in which the operator attempts to establish HHSI flow from the opposite units RWST. The specified actions are similar to those described above for the direct RHR cold leg recirculation mode:

1. Add makeup to the RWST to extend its time as a charging pump suction source.

2. Throttle HHSI pump discharge valves to provide minimum flow based on decay heat.

3. Establish HHSI pump flow from the opposite (non-accident) unit's RWST if available.

4. If HHSI pump flow from the opposite unit's RWST can not be established, align at least one charging pump to the accident unit's RWST and continue the injection phase.

These actions could similarly provide an additional 3 hours of injection flow to the RCS for decay heat removal.

The alternate injection schemes described above do not permit continued use of CSS. There is currently no other proceduralized alternate water sources for containment spray. However, procedure ECA-1.1 currently recognizes that the available inventory for RCS injection and CSS operation must be conserved and takes credit for the redundant heat removal capability of the emergency containment coolers to provide the necessary containment pressure control function. Operation of two of the three installed emergency containment coolers is permitted, in lieu of the CSS, if containment pressure is between 55 psig (the design pressure) and 14 psig.

The operators are instructed to consult with the Technical Support Center staff as the final step in ECA-1.1.

<u>Small Break LOCA</u>

For recovery from a small-break or medium-break LOCA, the operator will transition from E-0 to E-1 as described above for a large-break LOCA based on indications of a breach in the RCS pressure boundary. The operator will transition from E-1 to ES-1.2 "Post LOCA Cooldown and Depressurization," if RCS pressure remains above the RHR pump shutoff pressure, or continue in E-1 if RCS pressure is below the RHR pump shutoff pressure (larger breaches). If the breach in RCS pressure boundary is small enough, it is possible to cool down and depressurize the RCS to cold shutdown conditions using ES-1.2 without draining the RWST to the switchover level. Under such conditions, cold leg recirculation would not be required to be established, and containment sump blockage would not be a concern.

2. ***On pages 3, 4 and 5 of Attachment 3 [2] of the Bulletin 2003-01 response, it is stated that FPL will follow Westinghouse Owner's Group (WOG) efforts in the area of sump clogging and evaluate any WOG recommendations. The WOG has developed operational guidance in response to Bulletin 2003-01 for Westinghouse and CE type pressurized water reactors. Provide a discussion of FPL's plans to consider implementing this new WOG guidance. Include a discussion of the WOG recommended compensatory measures that have been or will be implemented at Turkey Point, and the evaluations or analyses performed to determine which of the WOG recommended changes are acceptable at Turkey Point. Provide technical justification for those WOG recommended compensatory measures not being implemented. Also, include a detailed discussion of the procedures being modified, the operator training being implemented, and the schedule for implementing these compensatory measures.***

As indicated in the bulletin response, Turkey Point has committed to follow the industry and WOG recommendations for implementation. Turkey Point responded to the NRC's concerns prior to Westinghouse issuing their final recommendations to Bulletin 2003-01 in WCAP-16204. In response to the bulletin, Turkey Point implemented the following interim compensatory measures consistent with Westinghouse's initial response template:

- Operator and staff training was conducted to inform personnel of the recirculation sump clogging issue.

- Procedural actions were developed to provide additional injection sources by aligning the opposite units RWST and HHSI pumps to the accident unit, or aligning the accident unit's charging pumps to drain the remaining inventory from the RWST.

- Containment cleanliness procedures were revised to incorporate the latest industry guidance from NEI 02-01, Revision 1 to minimize debris sources inside containment.

- Enhancements were made to the recirculation sump inspection procedure to include inspection of the sump screen frame bolting and any screen patches.

- Walkdowns of the containment recirculation flow paths were performed/scheduled for each units' Cycle 21 refueling outage.

- Control room indicators of recirculation sump blockage and applicable recovery actions were incorporated into operator requalification training.

- Procedure ES-1.3 was revised to include a verification that the ECCS and CSS pumps are operating properly when aligned to the recirculation sumps. Actions were also included to stop any ECCS and CSS pumps showing signs of distress and transition to ECA-1.1.

The WOG formally issued eleven candidate operator actions in WCAP-16204 for consideration to address the NRC bulletin. These candidate operator actions are summarized below.

1. Secure one or both containment spray pumps if containment conditions permit.
2. Manually establish one train of containment sump recirculation prior to automatic actuation.
3. Terminate one train of safety injection after recirculation alignment.
4. Terminate one train of LPSI/RHR early, prior to recirculation alignment.
5. Inject more than one RWST volume from a refilled RWST or bypassing the RWST.
6. Refill the RWST during injection.
7. Provide a more aggressive cooldown and depressurization following a small break LOCA.
8. Provide guidance on symptoms and identification of containment sump blockage.
9. Develop contingency actions in response to containment sump blockage, loss of suction, and cavitation.
10. Terminate one train of HPSI/High-head injection prior to recirculation alignment.
11. Prevent or delay containment spray for small break LOCA.

Of these, six have already been implemented at Turkey Point. Four are not applicable to Turkey Point and one is not being implemented. A detailed response to each of the eleven candidate operator actions is provided below:

A1a-W – Candidate Operator Action 1A – Secure one spray pump

The following describes the steps that would be necessary to accomplish this action as stated in WCAP-16204.

1. It should be verified that both containment spray pumps are operating. If this can not be confirmed no action should be taken to stop a containment spray pump.

2. Prior to stopping a containment spray pump, it should be confirmed that the spray pumps have completed their safety function by confirming the following:

   a. Containment pressure is less than [Containment Design Pressure] and NOT increasing.

   b. Containment temperature is less than [EQ requirement] °F and NOT increasing.

3. Prior to stopping a containment spray pump, adequate heat removal should exist to allow the operator time to start the idle spray pump if the running pump fails. Verify that two or more containment fan coolers are operating.

4. Plants that credit containment spray in their dose analysis need to confirm that no core damage has occurred by confirming safety injection has actuated properly. This can be done by verifying safety injection (SI) actuated and SI flow has remained within the values bounded by the delivery curves.

5. Having met the above criteria, stop one containment spray pump.

6. Confirm one spray pump is adequate by verifying containment pressure and temperature are not increasing.

Turkey Point Response:

The operators at Turkey Point are instructed to stop one CSS pump during the RWST injection phase of ECCS and CSS operation. As illustrated in the response to RAI question 1, one CSS pump is stopped when the RWST inventory decreases from 320,000 gallons to 155,000 gallons. If all ECCS and CSS trains are initially operating in response to the accident condition, the 155,000-gallon mark is reached in approximately 16 minutes following accident initiation. Moving this action to sometime earlier in the injection phase would only extend the duration of the injection phase by a couple of minutes. When weighed against the inherent drawbacks of an additional operator action early in the accident response sequence, there is no clear decrease in risk associated with a brief extension of the injection phase. Thus, Turkey Point has implemented Candidate Operator Action 1A, after transition to ES-1.3.

A1b – Candidate Operator Action 1B – Operator action to secure both spray pumps

This requires the same steps as 1A and these additional steps.

7. If a second pump is running and containment pressure and temperature are not increasing, stop the second containment spray pump.

8. Confirm that containment pressure and temperature are not increasing.

Turkey Point Response:

The Turkey Point containment response analysis for a large break LOCA assumes that at least one train of the CSS operates in conjunction with two of the three installed emergency containment coolers (ECCs) for post-accident containment heat removal. In this analysis, it is assumed that one ECC starts initially and a second ECC starts by manual operator action at 24 hours after accident initiation to limit heatup of the component cooling water system. The resulting containment pressure and temperature responses were used to qualify safety-related equipment inside containment for post-accident operation. Stopping both trains of CSS early in the injection phase of a large break LOCA has not been analyzed for Turkey Point. Implementation of this would require additional accident analysis to verify that containment pressure and temperature would remain below the peak containment design values with only ECC operating for the duration of the event. Any changes in the containment pressure and temperature response would also have to be reviewed to access impact on the environmental qualification of equipment inside containment. Thus, Candidate Operator Action 1B is not being implemented.

A2 – Candidate Operator Action 2 – Manually establish one train of containment sump recirculation prior to automatic actuation

The proposed operator action involves manually transferring suction from one safety injection train to the containment sump prior to automatic actuation. One train of safety injection and containment spray remains lined up to the RWST. If meeting NPSH requirements necessitates using the full volume of the RWST, an alternative would be to allow normal containment sump recirculation to initiate. Transfer the suction of one injection train back to the RWST when adequate water inventory has been restored to the RWST.

The intention is to start containment recirculation while useable inventory remains available in the RWST. This step is intended to provide a backup injection path independent of the containment sump. The injection pump and spray pump on the suction line connected to the RWST are secured and are available as a backup if the operating pumps experiences excessive sump clogging. A NPSH calculation will provide the earliest RWST level that will support operating in the containment recirculation mode.

Turkey Point response:

This action keeps one train of ECCS and CSS aligned to the containment sump and one train of ECCS and CSS lined up to the RWST to eliminate the common cause failure of both trains due to sump screen clogging. This recommendation is not advantageous for Turkey Point due to the configuration of the RHR pump suction piping and the suction piping sectionalizing valves. To perform the recommended system alignment, it would require manual operator action in the field to split the RHR suction piping into two independent trains. The RHR suction piping is normally cross connected at the suction of the pumps such that one RHR pump operating in the cold leg recirculation mode draws equally from both containment sump screens. In the split suction header arrangement, the operating RHR pump would draw suction from only one containment sump screen rather than two. This would increase the approach velocity to the operating containment sump screen increasing the potential for sump screen blockage. Additionally, 90% of the full RWST inventory (prior to tank vortexing) is required to ensure that there is adequate NPSH margin for RHR pump operation in the recirculation-cooling mode. Hence, the reserve inventory would be limited to approximately 20,000 gallons. This reserve inventory would only support operation of one train of ECCS and CSS for eight minutes. Since there are no clear risk benefits associated with this recommendation, Candidate Operator Action 2 is not being implemented.

<u>A3 – Candidate Operator Actions 3 – Westinghouse plants terminate one train of safety injection after recirculation alignment</u>

Currently the ERGs have one standard set of SI termination criteria that may not be satisfied post-recirculation depending on the size break. The SI termination criteria is:

- Reactor coolant system (RCS) subcooling equal to or greater than the minimum required
- Pressurizer level greater than the minimum level for verification of inventory control
- At least one steam generator available for RCS heat removal and steam generator level being maintained or restored
- RCS pressure stable or increasing

During a large break LOCA, all of the above conditions may not be met when recirculation is first initiated. Yet, depending on the containment sump blockage risk, it may still be advantageous to stop/throttle SI pumps to lower containment sump blockage risk.

Turkey Point response:

Turkey Point is a low-pressure Westinghouse design with HHSI and RHR engineered safety features. Turkey Point's ES-1.3, "Transfer to Cold Leg Recirculation," only requires one train of SI to be aligned in the recirculation-cooling mode. One train of SI provides adequate core cooling. Furthermore, when the RWST decreases to 155,000 gallons, both trains of RHR and one train of CSS are also stopped. Thus, Candidate Operator Action 3 is implemented.

A4 – Candidate Operator Action 4 – Early termination of one LPSI/RHR pump prior to recirculation alignment

This operator action applies to Combustion Engineering (CE) designed plants only.

Turkey Point response:

Turkey Point is a Westinghouse plant and this action is not applicable.

A5 – Candidate Operator Action 5 – Refill of refueling water storage tank

This candidate operator action addresses the potential to preemptively prepare to refill the RWST or lineup an alternative makeup source, bypassing the RWST in anticipation of possible sump blockage following the initiation of recirculation:

1. Make preparations and line up to refill the RWST.
2. Make preparations and line up to inject to the RCS or containment sump from an alternative source (bypassing RWST).
3. Initiate RWST refill after initiating sump recirculation/recirculation actuation signal (RAS).
4. Initiate RWST refill before completely transferring the design volume to the containment sump.

Turkey Point response:

WCAP-16204 gives a list of possible sources to provide borated makeup water to the RWST: normal makeup from the Chemical Volume Control System (CVCS), reprocess reactor coolant with CVCS and inject opposite unit's RWST. Initiating refill prior to switching over to recirculation interferes with other immediate operator actions. Furthermore, the addition may not allow boron to completely mix in the RWST causing boron dilution in the RCS. However, Turkey Point is different from the reference plant: the units have a common safety injection system. This allows the accident unit to inject from both units' RWSTs. If sumps clog, ECA-1.1 prolongs the injection phase three hours by aligning the opposite unit's RWST to the SI system.

Additionally, the positive displacement charging pumps can pull suction on the RWST. This realignment effectively provides an additional source of borated water from the unused capacity remaining in the RWST. This lineup provides enough inventory to support three hours of continued injection (with three charging pumps in operation). When using the charging pumps as an injection source, the procedure instructs operators to refill the accident unit's RWST to extend its time as a suction source. Based on these additional water sources, Candidate Operator Action 5 is implemented.

A6 – Candidate Operator Action 6 – Inject more than one RWST volume from a refilled RWST or by bypassing the RWST

This candidate operator action evaluates possible operator actions to re-initiate RCS injection, i.e., restore inventory control, if screen blockage causes loss of sump recirculation capability. Proposed actions provide water for re-injection from a refilled RWST or from an alternate source, bypassing the RWST.

Turkey Point response:

Turkey Point has revised ECA-1.1 to align the opposite unit's RWST, should sump screen clogging prevent entering recirculation mode. The procedure only allows additional injection from this source up to the containment flooding limit required to prevent submergence of equipment and instrumentation inside containment that may be required for a post-accident recovery. This procedure has been implemented, training briefs have been issued and operators are prepared to respond as the current emergency operating procedures dictate. Thus, Candidate Operator Action 6 is implemented.

A7 – Candidate Operator Action 7 – Provide more aggressive cool down and depressurization following a small break LOCA

This operator action applies to CE designed plants only. The Westinghouse ERGs already address maximizing the cool down rate up to the Technical Specification limit.

Turkey Point response:

Procedure ECA-1.1 currently instructs the operator to "Maintain cooldown rate in RCS cold legs – LESS THAN 100°F/HR." The basis document states that "maximum cooldown rate of 100°F/hr" will prevent violating thermal shock limits. During simulator training, operators generally achieve near maximum cool down rates for small break LOCA scenarios. Although the procedure does not explicitly suggest maximizing the cool down rate near the specified limit, the current interpretation is consistent with the ERG recommendations. Thus, Candidate Operator Action 7 is implemented.

A8-W – Candidate Operator Action 8 – Westinghouse plants provide guidance on symptoms and identification of containment sump blockage

The WOG ERGs explicitly address inability to establish or maintain recirculation from the containment sump. Procedure ES-1.3, Step 3, contains the only explicit instructions associated with sump blockage: "IF at least one flow path from the sump to the RCS can NOT be established or maintained, THEN go to ECA-1.1, "Loss of Emergency Coolant Recirculation." Since this is not a continuous action step, it is unlikely to provide appropriate diagnosis of sump screen clogging that occurs after establishing the recirculation alignment.

Turkey Point response:

Procedures ES-1.3 and E-1 were revised in response to Bulletin 2003-01 to include steps to monitor sump blockage indications. These procedures monitor RHR pump flow and amperage for erratic or low values. Procedure ES-1.3, Step 17 checks for sump blockage. If detected, the operator is instructed to transition to ECA-1.1, Step 1 (see response to RAI question one for details of this transition). As an additional measure, E-1 gives operators a continuous action step to monitor pump flow and amperage. A transition to ECA-1.1 is required if pump flow or amperage become low or erratic. Since Turkey Point's procedures give proper operator guidance to diagnose sump screen clogging, Candidate Operator Action 8 is implemented.

<u>A9-W – Candidate Operator Action 9 – Westinghouse Plants develop contingency actions in response to: containment sump blockage, loss of suction, and cavitation</u>

This report evaluates the feasibility and appropriateness of the following proposals related to responses to sump clogging, loss of suction and cavitation. Note the last item added in response to possible vortexing induced by partial sump blockage.

1. Stop pumps experiencing loss of suction to prevent permanent pump damage.

2. Reduce recirculation flow to the minimum required to support design basis or critical safety functions.

3. Verify containment cooling unit operation to minimize cooling demand for containment spray flow.

4. Establish alternate water sources to inject into the reactor core and spray into the containment.

5. Optimize use of available sources of flow for injection into the reactor core and spray into the containment.

6. Cool down and depressurize the RCS using the secondary system to reduce required injection flow to the RCS and allow placing the RHR system in service.

7. Back flush the recirculation flow path to remove blocking material from sump screens.

8. Vent pumps that have become air-bound.

Turkey Point response:

By design, the emergency operating procedures protect vital equipment and provide alternatives to mitigate risk. WOG Candidate Operator Action 9, Items 1 – 6 have been incorporated into ECA-1.1 (see response to RAI question one for details). Items 7 – 8 will not be implemented. NUREG/CR-6808, "Knowledge Base for the Effect of Debris on Pressurized Water Reactor

Emergency Core Cooling Sump Performance," Section 8.4.4, evaluated the possibilities of back flushing clogged sump screens. This study discovered that although back flushing did increase NPSH initially for some types of debris, the debris always re-accumulated on the screens. In the case using a mixed source characteristic of an actual debris source (fibrous, reflective metal insulation and particulate), back washing was not effective. In general, back flushing—Item 7—is an ineffective means of coping with sump screen clogging. Venting air-bound pumps, Item 8, that have been aligned to the containment recirculation sumps would require manual operator action in a high radiation dose area. Such actions would have to be directed by the Technical Support Staff. Thus, Candidate Operator Action 9 is implemented at Turkey Point with the exception of Items 7 and 8.

<u>A10 – Candidate Operator Action 10 – Early termination of one train of HPSI/HHSI prior to recirculation alignment (RAS)</u>

This operator action applies to Combustion Engineering (CE) designed plants only.

Turkey Point response:

Turkey Point is a Westinghouse plant and this action is not applicable.

<u>A11 – Candidate Operator Action 11 – Prevent or delay containment spray for small break LOCA (<1.0" diameter) in ice condenser plants</u>

This operator action applies to ice condenser designed plants only.

Turkey Point response:

This action is not applicable: each Turkey Point unit has a large dry containment.

3. ***NRC Bulletin 2003-01 provides possible interim compensatory measures licensees could consider to reduce risks associated with sump clogging. In addition to those compensatory measures listed in Bulletin 2003-01, licensees may also consider implementing unique or plant-specific compensatory measures, as applicable. Discuss any possible unique or plant-specific compensatory measures considered for implementation at Turkey Point. Include a basis for rejecting any of these additional considered measures.***

Turkey Point considered a combination of procedure changes and inspections to minimize the presence of debris that could potentially clog sump screens. The following actions/changes were described in the response to Bulletin 2003-01:

- Revise "Containment Closeout Inspection" 0-SMM-051.3 to include guidance from NEI-02-01 Revision 1.
- Revise "Containment Sump Screen Inspection" 0-SMM-050.1 to inspect sump bolting.
- Engineering supported the sump screen inspections to validate the proper implementation of

the inspection procedure in the field (0-SMM-050.1).
- Containment recirculation flow path walkdown.

All of the procedure changes have been completed for Turkey Point Units 3 and 4. The containment recirculation flow path walkdown for Unit 4 has been completed. The Unit 3 walkdown will be completed during the current refueling outage.

Walkdowns were performed on Unit 4 to specifically document the relative cleanliness of the accessible and inaccessible areas within the containment building. The accessible areas surveyed included stairways, ladders, and floors, working areas of platforms, accessible pipes, supports, ventilation ducts, plant equipment, and containment structures. No significant accumulation of dust or debris was observed in these areas. The in-accessible areas surveyed included cable trays, inaccessible pipes, supports, ventilation ducts, etc. These areas showed a fine layer of dust accumulation on horizontal surfaces. Vertical surfaces showed negligible dust accumulation. These walkdowns confirmed that the containment closeout procedure is accomplishing its intended objectives.

All Unit 4 inspections and walkdowns have been completed. A similar cleanliness inspection will be performed for Unit 3. All Unit 3 inspections and walkdowns will be completed during the fall 2004 refueling outage.

REFERENCES

1. Letter from E. A. Brown to J. A. Stall. "Turkey Point Plant, Unit 3 & 4 – Request for Additional Information regarding Bulletin 2003-01 Responses," Enclosure, September 17, 2004.

2. Letter from J.A. Stall "NRC Bulletin 2003-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized Water Reactors," August 8, 2003.

3. Turkey Point Units 3 and 4 EOP E-0, "Reactor Trip or Safety Injection."

4. Turkey Point Units 3 and 4 EOP E-1, "Loss of Reactor or Secondary Coolant."

5. Turkey Point Units 3 and 4 EOP ECA-1.1, "Loss of Emergency Coolant Recirculation."

6. Turkey Point Units 3 and 4 EOP ES-1.2 "Post LOCA Cooldown and Depressurization."

7. Turkey Point Units 3 and 4 EOP ES-1.3, "Transfer to Cold Leg Recirculation."

8. Westinghouse WCAP-16204, "Evaluation of Potential ERG and EPG Changes to

Address NRC Bulletin 2003-01 Recommendations."

9. NUREG/CR-6808 "Knowledge Base for the Effect of Debris on Pressurized Water Reactor Emergency Core Cooling Sump Performance"

10. 0-SMM-051.3, "Containment Closeout Inspection."

11. 0-SMM-050.1, "Containment Sump Screen Inspection."