October 19, 2005

MEMORANDUM TO: Herbert N. Berkow, Acting Chair
Petition Review Board

FROM: George F. Dick***/RA/***
Petition Manager

SUBJECT: STAFF RESPONSE TO COMMENTS ON PROPOSED DIRECTOR'S DECISION REGARDING BYRON STATION, UNIT 1 LOOP STOP ISOLATION VALVE, GT20050160 (TAC. NOS. ML6312 AND MC6313)

In a letter dated July 29, 2005 (ML051940352), the NRC solicited comments on its proposed Director's Decision (DD) from Mr. Barry Quigley (Petitioner) regarding his concern that the 1C cold leg loop stop isolation valve (LSIV) at Byron Station, Unit 1 has been broken and not repaired. The Petitioner replied by e-mail dated August 14, 2005 (ML052500244). On August 12, 2005 (ML052500241), the licensee responded to the staff's August 1, 2005, request for comments. The licensee's comments were editorial in nature and were addressed in the final DD.

This memorandum documents the staff's response to the Petitioner's Comments.

Specific Petitioner Comments:

Comment 1 The proposed DD states that the licensee has made a commitment to develop a plan for the LSIV and placed the commitment in the Corrective Action Program. This is not true.

The Petitioner stated that the items for the Corrective Action Program (CAP) are tracked in the Action Tracking Module of Passport. This module is also used to track non-Corrective Action Program items. Per the CAP procedure, actions from Issue Reports (IRs) are to be coded as CA or ACIT. The item to develop the plan is coded as MREQ (Management Request) and is, therefore, not in the Corrective Action Program. This is significant since items coded as MREQs can be closed out with no review and they receive no oversight from the CAP. Additionally, the item is not coded as a commitment to the NRC.

Staff's Response

The Petitioner's statement is accurate. The commitment was coded as MREQ and tracked in the Action Tracking module of the Passport computer data base. The Corrective Action Program is another module of the Passport computer data base. The commitment to develop a LSIV plan has been recoded as RCMT and while still being tracked in the Action Tracking module, it is a Regulatory Commitment and is managed in accordance with Exelon's procedure LS-AA-110, "Regulatory Commitment." Exelon procedure LS-AA-110 references NEI 99-04, Rev. 0 "Guidelines for Managing NRC Commitment Changes," which has been determined to be acceptable for licensees to follow for managing and changing their regulatory commitments

to the NRC. The monitoring plan was completed on October 14, 2005, thus fulfilling the licensee's commitment to the NRC.

The Director's Decision was revised accordingly.

Comment 2 Regarding the impact of loose parts on the pressurizer spray line, the licensee takes credit for the capability to cool down and depressurize the RCS without normal spray. This capability relies on the use of the PZR PORVs and the ability to bleed and feed the Pressurizer Relief Tank [PRT]. Currently the ability to fill the PRT with cool water is degraded.

The Petitioner stated that IR 314770 and 357944 describe the degraded condition for which corrective actions are due in October 2006. The Petitioner further stated that difficulties in filling and draining the Unit 1 PRT formed the basis of an allegation in 2000 or 2001. The petitioner concludes that the licensee's argument is invalidated by a longstanding equipment problem.

Staff's Response

The PRT is a non-safety, seismically-mounted ASME Section VIII vessel that condenses and cools steam discharged from the pressurizer power operated relief valves and pressurizer relief valves. The PRT design is based on the requirement to absorb a discharge of steam equivalent to 110 percent of the full power pressurizer steam volume. The steam volume requirement is approximately that which would be experienced if the plant were to suffer a complete loss of load accompanied by turbine trip but without the resulting reactor trip. The PRT water is cooled by a spray line in the tank from the primary water makeup pumps.

In 2003, the NRC received an allegation, which stated in part that data from a March 2003 fill of the Byron Station, Unit 1 PRT indicated a primary water flowrate of 42.1 gpm based on the tank level over time. The measured flowrate was substantially less than the 150 gpm design flow. In a letter dated January 30, 2004, the licensee responded to the allegation which had been forwarded to them. The licensee stated that based on a review of plant data, it could not verify the 42.1 gpm because neither the Unit 1 nor Unit 2 PRT was filled during March 2003. The licensee stated that on three subsequent occasions fill rates of 156 gpm (one pump assumed to be running), 311 gpm (two pumps assumed running), and 140 gpm (one pump running) were measured.

As the Petitioner mentioned there were two IRs generated in 2005 (although they both dealt with the same observed situation) related to PRT fill rate. The licensee's proposed closeout of the issue is scheduled for October 2006.

In its licensing Safety Evaluation Report, the staff reported that it concluded that Byron Station met the requirements of Branch Technical Position (BTP) RSB 5-1, which requires in part, that the reactor can be taken from normal operating conditions to cold shutdown using only safety-grade systems. The PRT has an operational design basis in that it supports transitioning from hot to cold shutdown for the applicable Class 1 and Class II analyzed transients when reactor coolant system letdown is not available. In the event that a discharge to the PRT would result in a pressure that exceeded the PRT design value, the rupture disks on the tank would rupture,

thus directing the tank discharge to the containment drains and into the containment sump. While not a preferred operation, there would be no increase in radiation exposure to the public.

The Director's Decision was expanded to clarify that the PRT is a non-safety vessel and that BTP RSB 5-1 includes being able to shut a reactor down with safety-grade equipment.

Comment 3 The petitioner states that the proposed DD states that "a key issue is whether the valve blocks are still in position in 1RC8002C [1C LSIV]." The petitioner states that there is no rationale to support what the NRC states is a key issue [i.e. the position that the valve blocks are in place].

The Petitioner states that the NRC acknowledges the licensee's failure to inspect the valve blocks but then gives inappropriate credit for the inspection of the reactor vessel. Based on the absence of valve blocks in the reactor vessel, the NRC appears to conclude that the valve blocks are still properly installed, Note that the material lost from the 1RC8002A over 6 years ago was approximately the same general weight and dimensions as the valve blocks. Since this material has never been found, it counters the assumption that if the valve blocks had dislodged that they would be in the vessel. Additionally, the time when the valve blocks are subjected to the most stress is when the valve is being closed. Since the RCP is off at this point, there is no flow to transport it to the vessel. Based on these facts, there is no remaining rationale to support what the NRC states is a key issue.

Staff Response

The NRC staff agrees that there does not exist absolute proof that the valve blocks have not broken from the valve. However, the staff considered several factors in evaluating whether the valve guides in LSIV 1RC8002C remain in place. For example, the licensee's installation package included quality control points during the welding process for the valve blocks. Also, the licensee stated during the public meeting on March 21, 2005, that visual inspection of the valve blocks had been performed by remote means during their installation. The welding process should provide the capability for the valve blocks to withstand significant force in their installed position. Although not absolutely conclusive that the valve blocks remain installed in the valve, the licensee did not locate any valve blocks during the 10-year inservice inspection of the reactor vessel at Byron station, Unit 1. Therefore, the NRC staff considered that reasonable assurance existed to support the licensee's assumption that the valve blocks remain in place in LSIV 1RC8002C. In that absolute assurance did not exist for the presence of the valve blocks, the licensee evaluated the capability of the valve guides to maintain their structural integrity if the valve blocks did not prevent the guides from slipping into the path of the valve disc when the valve is closing. The licensee determined that the torque switch setting of the motor actuator for LSIV 1RC8002C was not set sufficiently high to break the valve guides. When intact, the valve guides are too long to enter the RCS flow stream. Therefore, the staff considered the determination of whether the valve blocks were properly installed in LSIV 1RC8002C to be a key issue and concluded that the licensee provided reasonable assurance that the valve blocks remain in place.

The Director's Decision was revised to address Comment 3.

Comment 4 NRC also applies a risk argument that it is unlikely that a large loose part would be generated coincident with a large break LOCA. Given the weakness in the argument that the valve blocks are intact (because they were not found in the vessel), the concern remains that the dynamic forces of a LOCA could propel debris towards the core barrel.

Staff Response

Because the NRC staff has concluded that there is reasonable assurance the valve blocks are in place (see response to Comment 3), the staff made no changes to its previous statements regarding a large loose part coincident with a LOCA.

Comment 5 On the last page of the proposed DD, the NRC states that the licensee has a loose parts monitoring and retrieval system; this is incorrect, as there is no retrieval system for loose parts.

Staff Response

The Petitioner's comment is accurate. There is a loose parts monitoring system at Byron Station; however, there is no pre-established retrieval system. Guidance for operation of the Loose Parts Monitoring System, and identification and determination is given in procedure BOP LM-5, "Loose Parts Monitoring System Operation and Alarm Response," and Byron Station annunciator response procedure, BAR 1-13-E9, "Loose Parts Monitoring System Trouble."

The licensee has indicated that retrieval of a loose part would be addressed on a case-by-case basis depending on the size and location of the loose part. Guidance for evaluating the consequences of loose parts on nuclear fuel is provided in procedure NF-AP-130-3760, "PWR Fuel Lost Parts Evaluations." In addition, procedure MA-AA-716-008, "Foreign Material Exclusion Program," provides guidance for investigation and recovery actions when unexpected foreign material is discovered in a system.

The final Director's Decision was revised accordingly.

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