

August 10, 2005

EA-05-156

Mr. Eugene S. Grecheck  
Vice President - Nuclear Support Services  
Dominion Resources  
5000 Dominion Boulevard  
Glenn Allen, VA 23060-6711

SUBJECT: RESPONSE TO DISPUTED VIOLATION (NRC Integrated Inspection Report  
Nos. 05000336/2005002 and 05000423/2005002)

Dear Mr. Grecheck:

Thank you for your letter dated June 24, 2005, in response to NRC Inspection Report Nos. 05000336/2005002 and 05000423/2005002 dated May 11, 2005. In your response, you contested our issuance of two, green, non-cited violations (NCV) for Millstone Unit 3. These NCVs related to (1) the licensee's failure to take prompt and appropriate corrective actions associated with the divider plate for all three reactor plant component cooling water (RPCCW) heat exchangers (HX) and (2) the licensee's failure to properly assess and correct degradation of the "A" residual heat removal (RHR) system caused by air introduction during the Spring 2004 refueling outage.

We appreciate the information you provided. However, upon reconsideration and consultation with the NRC Office of Enforcement and the NRC Office of Nuclear Reactor Regulation, we have determined that both NCVs are valid.

In the case of the RPCCW HX finding, we determined that NCV 05000423/2005002-02 is valid based on corrective actions that were not implemented on a schedule commensurate with the safety significance of the issue, an untimely evaluation of related operating experience, and an untimely operability determination. Without inspector involvement, it is likely that HX repairs would have continued in a 'broke-fix' manner given (1) six instances of straightening the deflected divider plate without questioning continued operability, failure of a similar HX while in service, or divider plate differential pressures exceeding the design rating; (2) engineering reviews that were extended seven times since August 2003; and (3) a corrective action item to modify the HX inspection form that was not completed despite having been documented as such in September 2003. The issue was considered more than a minor violation based on inspector and Region I management judgement that Dominion Nuclear Connecticut (DNC) was not prompt in identifying the root cause and implementing effective corrective actions and was not prompt in evaluating and ensuring continued operability until the corrective actions were implemented.

In the case of the finding related to air in the "A" RHR system, the inspectors were concerned that a thorough extent of condition review was not conducted following the first discovery of air entrapment. This resulted in a number of subsequent venting and operability evaluations being necessary prior to final resolution in February 2005 despite repeated inspector questioning to

ensure that all the technical issues were addressed, documented, and answered in a timely fashion. It is the NRC staff's judgement that a more rigorous examination of the condition in July 2004 would have precluded the RHR system operability uncertainties and would have minimized the unavailability of this accident mitigation system. We acknowledge DNC's position and conclusion that the RHR system was and is operable with the air pocket in the HX, but this conclusion was not substantially supported until approximately 9 months after initial discovery. The NRC has reaffirmed its conclusion that this condition constitutes an issue of more than minor significance and that NCV 05000423/2005002-06 is valid. *NOTE: Air was initially found in the RHR discharge piping following the Spring 2004 refueling outage, and this was attributed to a related failure to follow procedures (NCV 05000423/2004007-08 – Failure to vent the 'A' RHR train while coming out of an outage).*

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Sincerely,

**/RA by David C. Lew, Acting For/**

Brian E. Holian, Director  
Division of Reactor Projects

Docket Nos.: 50-336, 50-423  
License Nos.: DPR-65, NPF-49

Enclosures:

1. NRC Response to DNC Denial of  
NCV 05000423/2005002-02  
(RPCCW HX Issue)
2. NRC Response to DNC Denial of  
NCV 05000423/2005002-06  
("A" RHR Issue)

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3

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4

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## **NRC Response to DNC Denial of Non-Cited Violation 05000423/2005002-02 (RPCCW HX Issue)**

### Restatement of Basis for Denial

With respect to the reactor plant component cooling water (RPCCW) heat exchanger (HX) issue, we understand that you deny the non-cited violation (NCV) based on the following:

1. You contend that your engineering staff performed an appropriate level of evaluation in each instance of divider plate deflection noted in the NRC inspection report. In addition, you contend that, consistent with NRC guidance for degraded and nonconforming condition resolution, your staff restored the plate to its original configuration prior to returning the affected HX to service.
2. You contend that following Dominion Nuclear Connecticut's (DNC) review of the D.C. Cook operating experience (OE), your staff used appropriate engineering judgment in assessing the safety significance and long-term impact of the conditions observed at Millstone Unit 3.
3. You contend that your staff implemented long-term resolution of the degraded condition in a manner that was appropriately reflective of the safety significance of the issue.

With respect to the RPCCW HX issue, you also expressed the opinion that Manual Chapter (MC) 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," in general, sets a threshold condition for classifying violations as more than minor when the condition involves actual consequences affecting safety and/or operability. You asserted that since the given condition did not impact operability or safety of operations, any violation in this instance should not be characterized as more than minor. Specifically, you referenced MC 0612, Appendix E, examples 3.g, 4.a, 4.d, and 4.f, and expressed the opinion that the examples provided further justification for why the observed condition should not be characterized as more than minor.

### NRC Response

NRC Region I has reviewed your contention with the Office of Enforcement and the Office of Nuclear Reactor Regulation and has determined the following:

### Consideration of the First Basis for DNC Denial

With respect to the recurring RPCCW HX divider plate deflections (degraded conditions on safety-related components), the inspectors assessed your organization's performance in this regard using NRC Inspection Manual Part 9900 Technical Guidance, "Operable/Operability: Ensuring the Functional Capability of a System or Component." Part 9900 states, in part:

A licensee may become aware of degraded or nonconforming conditions affecting safety-related systems, structures, or components (SSC) during the course of their review activities or through normal plant operation. These paths for identifying degraded or nonconforming conditions, including reports from

industry and other utilities, should result in the prompt identification and correction of the deficiency by the licensee. The process of ensuring operability is continuous and consists of verification of operability by surveillances and formal determinations of operability whenever a verification or other indication calls into question the system's or component's ability to perform its specified function. Whenever the ability of a system or structure to perform its specified function is called into question, operability must be determined from a detailed examination of the deficiency. The determination of operability for systems is to be made promptly with a timeliness that is commensurate with the potential safety significance of the issue. If the licensee chooses initially not to declare a system inoperable, the licensee must have a reasonable expectation that the system is operable and that the prompt determination process will support the expectation.

It was noted in the inspection report that contrary to the Part 9900 guidance for operability referenced above, your staff did not determine operability from a detailed examination of the deficiency to support the expectation that the RPCCW system is operable within a period commensurate with the potential safety significance of the issue. Specifically, the DNC engineering staff was aware of recurring RPCCW HX divider plate deflections and related industry OE since June 2003 and did not assess the condition to ensure continued operability of the RPCCW system until February 2005. The subject NRC inspection report stated, "The inspector noted that engineering had treated each of the six instances of deflected divider plates discovered since May 2003 in a 'broke-fixed' manner without evaluating the degraded condition for continued operability of the RPCCW HXs. Given the degraded condition of the divider plates deflecting over time and potentially causing fatigue failure of the divider plate welds, and the industry OE documenting the failure of a similar HX under operating conditions, the inspector determined that engineering should have promptly evaluated and documented their basis for a reasonable expectation of operability."

Your response letter stated each case was evaluated at the time of discovery and, consistent with NRC guidance for degraded and nonconforming condition resolution, the plate was restored to its original configuration prior to returning the affected HX to service. While maintenance used mechanical means to straighten the plates in each case prior to returning the HX to service, the inspectors determined that this approach was not consistent with the Part 9900 guidance for operability or for degraded and nonconforming condition resolution (see paragraphs below under Considerations of Third Basis for DNC Denial). In particular, merely straightening the divider plate prior to HX restoration did not ensure the plate would not continue to deflect once placed in service as evidenced by the recurring "as-found" condition of the HX plates since May 2003. In addition, during an operability review of the condition documented in condition report (CR) 03-04924 in May 2003, an operations shift manager determined that the deflected divider plate condition made the SSC inoperable. In response, your maintenance personnel straightened the divider plate and your operations staff declared the "B" RPCCW HX operable; however, the inspectors noted that engineering found this same divider plate deflected on subsequent HX inspections on September 20, 2004, and December 1, 2004.

In your letter, you also stated that in each instance where the divider plate was determined to be deflected, this condition was evaluated in accordance with the Millstone Corrective Action Program (CAP) for potential safety, quality, and operability implications. However, the inspectors noted that none of the associated corrective action CRs included an assessment of continued operability of the RPCCW HXs given the condition of a deflected divider plate while in service.

In your response letter, you stated, "During a surveillance test in February 2005, DNC engineers observed that differential pressures across the RPCCW HXs could exceed the design rating (i.e., 23 vs. 20 psi) when two service water pumps were operated in parallel on a single header. Accordingly, a prompt operability determination was made upon identification of this non-conforming condition." We do not agree that this operability evaluation was prompt given the longstanding nature of this issue. Since May 2003, your engineering staff had attributed the divider plate bending to "high differential pressure across the divider plate due to tube plugs." However, your engineering staff did not initiate additional actions to verify this apparent cause in spite of the recurring nature of the condition. There is also strong evidence that the February 2005 evaluation was initiated as a result of NRC questioning based on information contained in CR-05-01767 which stated, "During the NRC 89-13 [Generic Letter 89-13, Service Water Problems Affecting Safety-Related Equipment] inspection, the NRC auditor questioned the operability of the [service water] side of the CCP HX with regards to the bending of the divider plate. During the investigation of his question, on February 25, 2005, high differential pressure (45.2 psid) was first observed across the 'A' CCP HX exchanger while performing the 'A' service water pump surveillance." The observed differential pressure (45.2 psid) far exceeded the HX design (20 psid). Subsequently, your engineering staff determined that the pressure gauge was not accurately calibrated and that the actual differential pressure was 23 psid. The inspectors determined that the deficiency (differential pressures exceeding the design rating of the RPCCW HX causing divider plate deflections) was reasonably within DNC's ability to identify, appropriately evaluate, and correct prior to February 2005.

#### Consideration of the Second Basis for DNC Denial

In your response letter, you stated that the Level of Effort (LOE) process can only be used after it is first determined that the initiative does not involve restoration or maintenance of equipment functionality or operability and involves two levels of management review. The inspectors noted that your management-approved Request-for-Engineering LOE Support for the RPCCW HX issue stated, "The divider plates have been flexing since 1991. In 1992, a crack was found [in the] divider plate weld to the 'A' CCP [RPCCW] HX. OE16319 documented a divider plate failure [due] to weld fatigue cause[d] by divider plate bending. Original design standard was not conservative." According to the inspectors, your staff did not provide documented evidence that an engineering evaluation of OE16319 and the reported non-conservative design was conducted in 2003 or that the associated management review questioned (1) the continued operability of the RPCCW HXs, (2) the failure of a similar component cooling water HX while in service, or (3) the reported non-conservative design. Your engineering staff subsequently documented the results of their evaluation of OE16319 in a report dated March 3, 2005; however, the inspectors did not consider this a timely evaluation given their original awareness of the OE in June 2003.

Consideration of the Third Basis for DNC Denial

NRC Inspection Manual Part 9900 Technical Guidance, "Resolution of Degraded and Nonconforming Conditions," also states, in part:

Whenever degraded or nonconforming conditions of SSCs subject to Appendix B are identified, Appendix B requires prompt corrective action to correct or resolve the condition. The licensee must establish a time frame for completion of corrective action. The timeliness of this corrective action should be commensurate with the safety significance of the issue. The time frame governing corrective action begins with the discovery of the condition, not with the time when it is reported to the NRC. In determining whether the licensee is making reasonable efforts to complete corrective action promptly, NRC will consider whether corrective action was taken at the first opportunity, as determined by safety significance (effects on operability, significance of degradation) and by what is necessary to implement the corrective action. The NRC expects time frames longer than the next refueling outage to be explicitly justified by the licensee as part of the deficiency tracking documentation. If the licensee does not resolve the degraded or nonconforming condition at the first available opportunity or does not appropriately justify a longer completion schedule, the staff would conclude that the licensee failed to take prompt corrective action and, thus, is in violation of 10 CFR Part 50, Appendix B (Criterion XVI). When the NRC concludes that corrective action to implement the final resolution of the degraded or nonconforming condition is not prompt or that the operability determination is not valid, enforcement action will be taken.

The inspectors determined that an Appendix B, Criterion XVI, violation was appropriate and warranted in this case based on the Part 9900 guidance associated with the resolution of degraded and nonconforming conditions referenced above. Specifically, the inspectors concluded that your corrective action to implement the final resolution of the recurrent deflecting divider plate condition was not prompt and that you did not have a valid operability determination. The NRC inspection report stated "Engineering designated the divider plate stiffening modification as a low priority item. The inspector noted that engineering extended the due date for the associated LOE review seven times since August 2003 and, in March 2004, deferred the activity out to 2005. Presently, the engineering portion of the modification package is scheduled to be completed by September 2005. The inspector determined that the timeliness of Dominion's corrective actions were not commensurate with the potential safety significance of the issue. The inspector found no evidence that Dominion evaluated the effects on operability or the significance of the degraded condition when extending the corrective actions beyond their first opportunity to correct." We noted that you did not provide any additional specific information in your recent response letter to cause us to reach a different conclusion in this regard. The inspectors noted that your staff missed an opportunity to correct the condition during Unit 3's ninth refueling outage (April 2 through May 9, 2004) and did not explicitly and appropriately justify a longer completion schedule for their proposed corrective action modification.

In your letter, you also stated that corrective actions to resolve identified deficiencies captured in your CAP are implemented on a schedule commensurate with the safety significance of the issue. The inspectors noted that corrective action No. 1 (develop a method to prevent the divider plate from bending) for CR-03-04924 (initiated on May 20, 2003) is still under engineering review. In addition, the inspectors identified that corrective action No. 2 (to revise the HX inspection form to include the divider plate) for CR-03-04924 was not completed even though your engineering staff documented it as complete in September 2003. Based on these observations, we do not share your view that corrective actions were implemented on a schedule commensurate with the safety significance of the issue.

### Summary

We have determined that the NCV remains valid based on:

- failure to implement corrective actions on a schedule commensurate with the potential safety significance of the issue (Timely actions were not taken to address a condition adverse to quality in that your engineering staff did not fully evaluate the condition to ensure continued operability of the RPCCW HXs and/or correct the condition.);
- an untimely operating experience evaluation (Although your engineering staff was aware of the related operating experience in June 2003, they did not fully evaluate it until February 2005);
- the untimeliness of a valid operability determination (Your engineering staff had treated each of the six instances of deflected divider plates discovered since May 2003 in a “broke-fixed” manner without evaluating the degraded condition for continued operability of the RPCCW HXs.); and
- the failure to promptly evaluate and correct a degraded condition adverse to quality associated with the divider plate for all three RPCCW HXs.

### Consideration of MC 0612, “Power Reactor Inspection Reports,” Appendix E, “Examples of Minor Issues”

In your letter, you stated that you believe that any violation in this circumstance should not be characterized as more than minor because the condition did not involve actual consequences affecting safety and/or operability and that there are examples of minor issues in IMC 0612, Appendix E, that are similar in nature to the condition cited. In general, a performance deficiency does not need to result in actual safety consequences or in inoperable equipment to be considered more than minor. In all cases, the inspectors should compare the identified issue with the Appendix E examples to help determine whether the issue can be considered minor; however, the final determination is based on the judgment of the inspector and the regional management involved and depends on the circumstances of the particular issue. In all cases, minor issues should (1) have no actual safety consequences, (2) have little to no potential to impact safety, (3) have no impact on the regulatory process, and (4) not involve willfulness. Although your staff determined that the RPCCW HXs were operable, we

determined that, since June 2003, there existed a potential to impact safety due to your engineering staff's failure to fully evaluate and/or correct a condition adverse to quality.

We would also like to address the four Appendix E examples that you identified as similar issues in your response letter.

1. Example 3.g describes a mis-oriented insert in a safety-related concrete wall. This is minor if it had no direct safety impact because the out-of-specification inserts were abandoned in place. This is not minor if a safety-related attachment had been made to an out-of-specification insert and placed in service. We did not consider this example similar in nature as none of the three safety-related RPCCW HXs with the degraded divider plates are abandoned in place.
2. Examples 4.a, 4.d, and 4.f are all examples of insignificant procedural errors. Since the violation did not involve insignificant procedural errors, the inspectors did not consider these examples similar in nature. However, we will provide comments on the merits of these examples. Example 4.a involves engineering staff failure to assess the seismic impact of a scaffold on safety-related equipment as required by licensee procedures. This is minor if the procedural error has no safety impact. This is not minor if the licensee routinely failed to perform engineering evaluations on similar issues. In the RPCCW HX case which is the subject of this enclosure, we determined that the issue is more than minor because your engineering staff routinely did not evaluate the recurring deflected divider plates for continued operability (as noted above).
3. Example 4.d involves corrective actions to address less than adequate lighting in a safety injection pump room. This is minor if the failure to take prompt corrective action had no safety impact, e.g., operators were procedurally required to carry flashlights to compensate for the degraded condition. This is not minor if the degraded lighting condition contributed to an operator error. In the RPCCW HX case, we did not see a correlation between degraded lighting and degraded HXs that were not adequately assessed for continued operability (as noted above). In addition, the inspectors did not identify any compensatory measures taken by DNC to mitigate the deficiency. For example, the corrective action to improve the HX inspection form was not completed, and in 2003, your engineering staff began doing less frequent HX inspections (annual vice semi-annual). Also, your engineering staff's failure to address the degraded condition in a timely manner contributed to increased unavailability of the RPCCW HXs.
4. Example 4.f involves the use of the wrong sealant in performing a temporary repair of a diesel fuel oil leak resulting in soaking a safety-related solenoid. This is minor if the failure to implement a corrective action had no safety impact because the problem did not affect diesel generator operability. This is not minor if the damage to the solenoid affected diesel operability or caused a fire hazard. Again, we did not see a correlation between a procedural error during the conduct of a temporary repair and inadequate corrective actions for a longstanding condition adverse to quality, i.e., RPCCW HX divider plate deflection. We noted, however, that this example is more than minor if it caused a fire hazard (potential for an initiating event). Thus, an issue can be more than

minor based on its potential even if it does not result in actual consequences (a fire, in this example).

## **NRC Response to DNC Denial of Non-Cited Violation 05000423/2005002-06 (“A” RHR Issue)**

### Restatement of Basis for Denial

With respect to air in the “A” residual heat removal (RHR) system, we understand that you deny the non-cited violation (NCV) based on the following:

1. The Dominion Nuclear Connecticut (DNC) Engineering Technical Evaluation (TE) supporting the original investigation of the condition addressed the July 14, 2004, pump performance test and concluded that it was likely a small amount of air that had been swept into the HX. Additionally, following an extended “A” RHR pump run in December 2004, DNC estimated the volume of air potentially trapped in the HX at one to five standard cubic feet, a volume not considered significant with respect to the functional performance requirements of the RHR system.
2. While the August 2004 root cause evaluation (RCE) concluded all air was removed from the system, this statement was not intended to imply that all dissolved gas had been removed. The RCE was supported by TE M3-EV-04-0021 which discussed the likelihood that small amounts of air had been swept into the “A” RHR HX during the July 14 pump performance test and that small volumes of air likely remained in portions of the system which could not be vented under normal operating conditions. The TE also concluded that the RHR HX was not a significant source of air as flow through the HX was isolated prior to the introduction of air saturated water during the reactor coolant system fill, sweep, and venting evolution. The TE addressed the going forward implications of air remaining in unventable portions of the system as well as the historical safety and operability implications of conditions observed through July 14, 2004. Discussions with the August 2004 RCE lead evaluator indicated that the RCE team considered the implications of the July 14 venting results and concluded those results were consistent with the prevailing gas transport theory of the time and did not contradict the root cause.
3. Upon identification of air accumulations following the October 2004 quarterly pump performance verification, guidance was provided to operations personnel to support ongoing assessment of operability and frequency of pump runs was increased to monthly. The threshold value provided by engineering for assessment of operability was exceeded in November 2004, and the system was declared inoperable. A second RCE (M-2004-10268) was initiated at that time. This RCE was conducted by a different team under different management sponsorship and included a critical evaluation of previous investigation activities. Dominion stated that while this report identified several opportunities where more investigation could have yielded greater understanding of the status of air remaining in the “A” train of RHR, it did not identify a fundamental flaw with any particular decision made during the original evaluation.

With respect to air in the “A” RHR system, you also expressed the opinion that Manual Chapter (MC) 0612, Appendix E, in general, sets a threshold condition for classifying violations as more than minor when the condition involves actual consequences affecting safety and/or operability. You asserted that since the given condition did not impact operability or safety of operations,

any violation in this instance should not be characterized as more than minor. Specifically, you referenced MC 0612, Appendix E, examples 3.g, 4.a, 4.d, and 4.f, expressing the opinion that the examples provided further justification for why the observed condition should not be characterized as more than minor.

### NRC Response

NRC Region I has reviewed your contention with the Office of Enforcement and the Office of Nuclear Reactor Regulation and has determined the following:

#### Consideration of the First Basis for DNC Denial

On May 28, 2004, air was reported at the "A" RHR system high point vents (condition report (CR) CR-04-05384). The resident inspectors discussed this issue with the shift manager and the system engineer and attended the condition review team screening meeting for the CR. The review team did not consider the CR to be a significant issue. During a routine meeting with site directors on June 2, 2004, the resident inspectors repeated their concerns with the impact of air in the RHR system being fully understood and evaluated. Following another venting evolution on June 13, 2004 (CR-04-05822), the inspectors again discussed the status of the current and past operability evaluations with the system engineer and a design engineer.

On July 12, 2004, air was found at vent valve 3SIL\*V875 on the "A" RHR pump suction line (CR 04-06615). The addition of this valve to the vent and valve line-up of both trains had been recommended as part of the RCE performed in August 2004. The inspectors had originally discussed the failure to include the suction vent valves in the venting procedure with the licensee in September 2003. At the time, the licensee did not consider adding these valves a necessary change to the procedure.

On November 9, 2004, the NRC resident inspectors reviewed the DNC engineering TE (M3-EV-04-0021, Revision 1) supporting the investigation of the July 14, performance test. The inspectors found that the TE left many unanswered questions including: (1) technical justification for 3 cubic feet of air at the RHR pump suction not impacting operability, (2) a strong basis for the 30 minute mission time of the RHR pump for a design basis loss of coolant accident, (3) the rationale as to why ultrasonic tests (UT) had not been performed so as to better quantify the potential voids remaining in the system, and (4) the application of single failure criteria during a design basis event to the transport or movement of voids in the system. The TE was subsequently revised based on the inspector's observations.

The TE was shown not to have been bounding on November 12, 2004, when unexpected results were obtained during the monthly venting surveillance. Namely, 20 seconds of gas at 1/4 turn open on "A" RHR pump suction vent valve 3SIL\*V875 and 4 seconds of gas at 1/4 turn open on valve 3SIL\*V877 were unexpected system responses. Since the assumptions of the TE were no longer met, Millstone entered the applicable 72-hour limiting condition for operation (LCO) action statement. The events of November 12-15, 2004, indicated that Millstone did not have a full understanding of the condition of gases and voids in the RHR system prior to November 12. The LCO was exited after operability determination (OD) MP3-080-04 determined that the "A" RHR pump was operable with compensatory measures required for

running of the pump. These compensatory measures had not been foreseen as part of the TE and were absent from May to October 2004.

On February 25, 2005, the "A" RHR pump was operated on miniflow recirculation in accordance with OP 3310. Subsequent ultrasonic tests showed the "A" RHR suction piping to be 82 percent full, a condition which placed the system outside the allowable air accumulation rates of OD MP3-080-04. The licensee again entered the 72-hour LCO action statement and initiated a troubleshooting plan to investigate the increase in air accumulation rates which included flushing the system at 2,000 and 4,000 gpm, several pump runs in the recirculation mode, and ultrasonic tests at 22 points in the system. The OD was subsequently revised based on the new results. The licensee ascertained that following the 4,000 gpm flush, no air remained in the RHR HX. Rather, the air remaining in the system was attributed to air-saturated water from the RWST that was used to flush the HX and small air pockets remaining in various valve traps and header points.

Following February 26, 2005, the inspectors determined that the licensee (1) had reached the point where the condition of air in the RHR system was understood, (2) had evaluated other possible causes of air introduction, and (3) had properly characterized the system as operable-but-degraded due to the continued identification of small amounts of air at the "A" RHR pump suction following pump runs. The initial identification opportunity for air problems in the system occurred in May 2004, and a full understanding of the degraded condition was not achieved until February 2005, a period of approximately 9 months.

#### Consideration of the Second Basis for DNC Denial

The August 2004 RCE included the premise that small amounts of air had been swept into the "A" RHR HX during the July 14 pump performance test, that small volumes of air likely remained in portions of the system, and that the July 14 venting results had been consistent with the prevailing gas transport theory of the time. The gas transport theory used for the August 2004 RCE, however, was not well developed in that air accumulation rates were not well understood or quantified until the troubleshooting and flushing evolutions of December 6, 2004, and January 28, 2005, had been completed. Objective proof of the air transport mechanisms and accumulation rates used to justify operability were only available following the December 6 and January 28 testing, events that occurred approximately 4 months after the August 2004 RCE was completed. The December 6 and January 28 results emphasize that Millstone did not have a full understanding of the condition and impact of the air in the "A" RHR system when the August 2004 RCE was completed.

#### Consideration of the Third Basis for DNC Denial

On October 6, 2005, a quarterly operational test for the "A" RHR pump was performed. A monthly venting surveillance for the "A" RHR pump was performed on October 15, 2004, in accordance with SP3610A.3. The venting surveillance found ~0.037 cubic feet of air in the system, minor air that was believed to have been residual air left in un-ventable areas of the system that the August 2004 RCE team had previously identified.

Following the October 15, 2004, result, the resident inspectors engaged licensee staff as to the level of effort that had been used to address the degraded "A" RHR conditions. Specifically, the inspectors discussed UT methods to determine the potentially voided areas in the system and the source of the air. The inspectors also questioned the possible connection between quarterly pump runs and monthly air venting results, questions which highlighted the lack of understanding of the air transport mechanisms. The unexpected amounts of air vented on November 12, 2004, and the subsequent inoperability declaration emphasized the lack of licensee understanding of the degraded condition of the system.

Furthermore, the second RCE (M-2004-10268) acknowledged that there had been several opportunities where more investigation could have yielded a greater understanding of the air remaining in the "A" train RHR system.

### Summary

We have determined that the NCV remains valid based on:

- the 9-month period that was necessary to fully understand the degraded condition associated with a risk significant, safety-related system (The air in the "A" RHR system was considered a condition adverse to quality that was not assessed and corrected in a timely manner.);
- two periods of system unavailability when unexpected results caused LCO action statements to be entered during November 2004 and February 2005 (These periods of unavailability could have been avoided if earlier and more rigorous evaluations of the degraded condition had been performed.);
- the level of resident inspector involvement necessary to ensure that all the technical issues were addressed, documented, and answered in a timely fashion (Specifically, during September 2003 and on May 28, June 2 and 13, October 6, and November 9, 2004; resident interaction with several levels of the site organization ranging from system engineers to operating crew shift managers to site directors represented no less than six occasions where the inspectors questioned and challenged the licensee's assessment of the degraded condition.); and
- the failure to properly assess and correct degradation of the "A" RHR system (caused by air introduction during the Spring 2004 refueling outage) during a number of attempts from May to October 2004.

### Consideration of MC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues"

Manul Chapter 0612, Appendix E, states that in all cases, the inspectors should compare the identified issue with the examples to help determine whether the issue can be considered minor; however, the final determination is based on the judgment of the inspector and the regional management involved and depends on the circumstances of the particular issue. While the degraded condition associated with the "A" RHR system did not have any actual

safety impact, the repetitive aspects of the resident inspector engagement (6 occasions) over a period of 14 months (September 2003 to November 2004) represented a condition in which the inspectors identified several deficiencies associated with the technical adequacy, depth of evaluation, and timeliness of the extent-of-condition evaluation associated with the issue. The repetitive nature of the inspector engagement over an extended period of time represented substantial NRC involvement that went beyond the minor examples in Appendix E, examples 3.g, 4.a, 4.d, and 4.f.

In addition, example 4.a discusses engineering's failure to assess the seismic impact of a scaffold on safety-related equipment as required by licensee procedures. The example indicates that the issue would be considered more than minor if the licensee routinely failed to perform engineering evaluations on similar issues. In a similar manner, the above discussion indicates the difficulty DNC had in fully understanding the degraded condition and performing accurate engineering evaluations, a condition which makes the issue more than minor.