NRC FORM 757
NRC MD 10.158
(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

SECTION A - TO BE COMPLETED BY NON-CONCURRING INDIVIDUAL

TITLE OF DOCUMENT	ADAMS ACCESSION NO.
Nonconcurrence to DAEC Heat Sink Triennial inspection NCV input to report 50-331/2010002	
DOCUMENT SPONSOR	SPONSOR PHONE NO.
Patricia **Lougheed**	630-829-0721
NAME OF NON-CONCURRING INDIVIDUAL	PHONE NO.
Gerard O'Dwyer	630-829-9624

☒ DOCUMENT AUTHOR ☐ DOCUMENT CONTRIBUTOR ☐ DOCUMENT REVIEWER ☒ ON CONCURRENCE

TITLE	ORGANIZATION
Power Reactor Inspector	Region III, DRS, Engineering Branch 2

REASONS FOR NON-CONCURRENCE

I believe all versions of the violation that Mrs. Lougheed directed to be issued against DAEC do not address the real fundamental deficiency. The fundamental deficiency is that DAEC detennined that the RHR pump seals do not have safety functions. The violation that Mrs. Lougheed wants to issue does not address the fundamental deficiency but rather addresses only one of the deficiencies resulting from the fundamental deficiency. The NRC must issue at least one violation that requires DAEC to classify and treat the seals in accordance with the seals' safety functions. This will require DAEC to apply all the license requirements to the seals e.g., applying aU the Technical Specification and QA program requirements, Fire program requirements, etc.. The violation Mrs. Lougheed directed me to write cited 10 CFR 50.59 and 50.71e and only required the licensee to restore the requirement for six gpm to the seal coolers back into the FSAR or do a design analysis to justify keeping the requirement at zero gpm. DAEC senior management and staff stated in a teleconference on March 24, 2010 (Wednesday) that the 2002 Operability Evaluations' (OE's) analyses and conclusions are valid and justify zero gpm in the FSAR. [The OEs incorrectly detennined that the seals could fail catastrophically and no safety function of the RHR system would be prevented.] Mrs. Lougheed sidestepped the OEs and stated that the OEs are for meeting Operability considerations which have lesser requirements than the design analyses that are required by 10 CFR 50.59 and 50.71e. I have explained to Mrs. Lougheed that the OEs analyses and conclusions are fundamentally incorrect, in that, the OEs incorrectly conclude that the seals can fail catastrophically and no safety function of the RHR system would be prevented. Mrs. Lougheed did not inform the DAEC that the OEs analyses and conclusions are fundamentally incorrect.

I agree that the requirements for DEs are lesser than design analyses, however, the DEs do not meet either set of requirements. Mrs. Lougheed will not issue a violation for the licensee failing to do an appropriate DE either. By not informing the licensee that the DEs are incorrect, it seems like Mrs. Lougheed is willing to let the licensee just make a formal calculation out of the DEs and not correct anything or even if the licensee restores the flow requirement of six gpm to the FSAR that will not ensure that all other license requirements are applied to the seals. As I have told management many times the violation is vague and ineffective and doesn't get to the real safety issues. DAEC already received a similar violation (just as vague) which did not correct the reallSCs. Mrs. Lougheed's insistence that we issue another vague and weak NCV recklessly fast just "to get it on the licensee's plate so they will fix it" is without merit.

☑ CONTINUED IN SECTION D

SIGNATURE Gerard O'Dwyer

DATE April 7, 2010

SUBMIT FORM TO DOCUMENT SPONSOR AND COpy TO YOUR IMMEDIATE SUPERVISOR AND DIFFERING VIEWS PROGRAM MANAGER

NRC FORM 757
NRC MD 10.158
(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT

ADAMS ACCESSION NO.

Nonconcurrence to DAEC Heat Sink Trien'nial inspection NCV input to repOrt 50-33112010002

SECTION D: CONTINUATION PAGE

CONTINUATION OF SECTION ☑ A ☐ B ☐ C

page one of two continuation sheets

Mr. Hills was assigned to supervise my writing of the violation [redacted] The violation that Mr. Hills directed me to write was only against 10 CFR 50.71e. Mr. Hills requested me to writeup all of my "concerns". I was referring to them as ISCs. Mr. Hills then improperly inserted his interpetation of my ISCs into the violation writeup. Mr. Hills said this was because my ISCs were good concerns and we should get them on the licensee's plate so they can fix them. The improper insertion of these concerns into the NCV will not properly inspect nor correct my Immediate Safety Concerns. The violation still does not document the fundamental deficiency of the seals being treated by OAEC as having no safety functions. The concerns (which include questions and requests for "exploration" of aspects that "may be pertinenf' that Mr. Hills has now improperly inserted into the violation documentation are so indefinite they legally violate all requirements of properly documenting and issuing violations or performance deficiencies based on facts not questions. The questions and requests for "exploration" of aspects that "may be pertinenf' that have been jammed in violate even the legal requirements for specificity in documenting even Unresolved Issues (URIs). The requests for "exploration" of aspects that "may be pertinent" also definitely violate the requirements of IMC 0612 for documentation of violations, performance deficiencies and even URis. Mr. Hills insistence that we issue another vague and weak NCV with requests for "explorations" of aspects that "may be pertinent" recklessly fast just "to get it on the licensee's plate so they will fix if' is without merit also especially since these exploration requests are illegal and in the non-binding portions of the draft NCV. OAEC may have already operated with excessive risk and I do not know if they have incorrectly declared any other equipment to have no safety function and can fail catastrophically with no adverse consequences during license required events, accidents, etc..

I believe that all the violations (even though they have changed from a combination 50.59 & 50.71e to just a 50.71e violation) are "potentially" greater than green. I believe that the violations that should be written are also "potentially" greater than green. Exhibit 1 of IMC 0609.04 is "User Guidance for Phase 1 - Initial Screening and Characterization of Finding" and step 1.1(2) states: "However, a bounding determination of significance may be made by assuming a worst case condition. For example, assume a complete loss of function, even if not supported by the facts known at that time. However, if a bounding determination results in a White, Yellow or Red Characterization, greater factual detail will be necessary to complete the official SOP." The first question for Mitigating Systems in Table 4a asks "Is the finding a design or qualification deficiency confirmed not to result in loss of operability or functionality?" Because I am not allowed to ask a simple question that would take 15 minutes, I can not confirm that the licensee has not isolated all the ESW water from any RHR seal coolers without declaring the associated RHR pump inoperable per TS and therefore have caused the RHR pump to be inoperable without declaring it inoperable.

Gerard J O'Dwyer April 7) 2010

NRC FORM 757
NRC MD 10.158
(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT

,ADAMS ACCESSION NO.

Nonconcurrence to DAEC Heat Sink Triennial inspection NCV input to report 50·33112010002

SECTION 0: CONTINUATION PAGE

CONTINUATION OF SECTION ☑ A 0 B 0 C

page two of two continuation pages

As the licensee told us by teleconference on 3/24 Wed, they still believe the operability evaluations which conclude that it is acceptable to isolate the ESW water, treat the seals &heat exchangers as non-safety-related, etc.. However I also can not confirm that they have failed to treat the seals and coolers iaw the QA program, e.g., installed non-safety-related inadequate parts; therefore I again have to answer that I can not confirm that the deficiency has not resulted in loss of operability or functionality. Question 5 also leads to a "potential" Greater than Green finding because it asks, "Does the finding screen as potentially risk significant … using criteria of page 5 of this worksheet?" and other questions that I do not have time to detail. IMC 0609.04 requires the NRC to ensure that the finding is not Greater than Green by giving guidance on how to do a bounding determination. If the bounding determination results in Greater than Green then it directs "greater factual detail will be necessary to complete the official SOP" but it can not be just left as Green if it could be greater than Green.

All 2002 DAEC Operability Evaluations are significantly incorrect and self-contradictory. All 2002 DAEC Operability Evaluations concluded that the AECL report concluded that the seals would not leak excessively during a DBA and no safety function of the RHR system would be prevented. However, the AECL report concluded that "Given what is known, this analysis has shown that the RHR and CS pump seals are marginal for the predicted LOCA conditions. Degradation could be initiated by the lubricating film between the faces drying out due to frictional heat generation." "The leakage resulting from a degraded or failed seal cannot be predicted because it is unclear how far the degradation would proceed." "It [AECL report] simply shows they [the seals] do not pass the available analytical scrutiny. Testing would be required to demonstrate the actual performance that could be expecteq from these seals under the postulated DBA LOCA conditions."

The 2003 NCV however, clearly states in the Analysis section, "A failure of the mechanical seals would have resulted in a failure of the RHR Pump." This statement is in complete opposition to the conclusion of the OEs however the NRC report does not state that nor is a violation given.

Unfortunately, I have other technical support that I was not given time to document.

Gerard O'Dwyer April 7, 2010

NRC FORM 757
NRC MD 10.158
(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT

INonconcurrence to DAEC Heat Sink Triennial inspection NCV input to report 50-331/2010002

ADAMS ACCESSION NO.

SECTION B - TO BE COMPLETED BY NON-CONCURRING INDIVIDUAL'S SUPERVISOR
(THIS SECTION SHOULD ONLY BE COMPLETED IF SUPERVISOR IS DIFFERENT THAN DOCUMENT SPONSOR.)

NAME
Patricia Lougheed

TITLE
Acting Branch Chief

PHONE NO.
630-829-9721

ORGANIZATION
Region HI, Division of Reactor Safety, Engineering Branch 2

COMMENTS FOR THE DOCUMENT SPONSOR TO CONSIDER

D I HAVE NO COMMENTS

☑ I HAVE THE FOLLOWING COMMENTS

Although Mr. O'Dwyer indicated that [am the document sponsor, Mr. David Hills will actually serve as document sponsor. This assignment was made by the Divison Director for Mr. Hills to provide supervisory oversight due to other ongoing issues.

Based on my interactions and information I had receivedand reviewed prior to the issue being turned over toMr. HilIs, [noted that the 2002 opel'ability evaluation does not appear to serve as the licensee's current basis f0l' opel'ability. Specifically, in 2003 the NRC closed an unresolved item and issued a Green non-cited violation. The NRC acknowledged the licensee's 2002 openlbility evaluation but did not address it. Instead, the NRC documented the reasons why the NRC independently determined the system was operable. As cOlTective actions to the 2003 violation, the licensee restored seal cooling to the 89-13 testing program to enslll'e continued seal operability without reliance on the information in the operability evaluation.

☐ CONTINUED IN SECTION D

SIGNATURE
/Patricia Lougheed/

DATE
4/9/10

SUBMIT THIS PAGE TO DOCUMENT SPONSOR

NRC FORM 757
NRC MD 10.158
(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT

ADAMS ACCESSION NO.

Nonconcurrence to **DAEC Heat** Sink **Triennial** inspection **NCV input to report 50-331/2010002**

SECTION B - TO BE COMPLETED BY **DOCUMENT ~~SPONSOR~~** SUPERVISOR

NAME

David E. Hills

TITLE

PHONE NO.

Chief, Engineering Branch 1

630-829-9733

ORGANIZATION

RIll, Division of Reactor Safety

ACTIONS TAKEN TO ADDRESS NON-CONCURRENCE (This section should be revised, as necessary, to reflect the final outcome of the non-concurrence process, including a complete discussion of how individual concerns were addressed.)

As requested, I assisted Mr. O'Dwyer in documenting the finding that had been discussed with the licensee during the exit meeting. While Mr. O'Dwyer had developed several follow-up questions with respect to the issue since completion of his inpsection, he had not addressed these during his inspection, and hence he had not pursued these as seperate findings/enforcement, and there was insufficent information to address them as such. However, in light of the absence of inspection to pursue these questions, I viewed these questions as the natural consequence of the identified finding which one would expect the licensee to evaluate as extent of condition. However, given that it was not clear whether the licensee had adequately done so following the related 2002 NRC finding and given what Mr. O'Dwyers described as the licensee's current position, I felt it prudent to include these questions in the inspection report input in association with the documented finding. Hence, the licensee would have ample notice of these extent of condition questions with the possibility of a future NRC followup (PI&R) inspection to ensure the licensee properly pursued the questions in response to the current finding. Mr. O'Dwyer verified that the input encompassed all his current questions. Considering that Mr. O'Dwyer had not performed inspection to resolve his current questions, Mr. O'Dwyer had not identified any specific circumstances/examples which could be considered potentially Greater than Green (or greater than Severity Level IV) through the SDP process and hence could be submitted to a SERP or Enforcement Panel for further consideration. Specifically, the SDP process does not allow one to postulate situations that were not confirmed to have occurred (Le. simultaneous isolation of seal cooling for multiple RHR pumps or isolation of seal cooling on an RHR pump for an extensive period of time). It is also my understanding that the resident inspectors have requested that the licensee notify them if for any reason flow is isolated from the seal coolers such that NRC staff can expeditiously pursue possible operability implications.

REVIEWER

SPONSOR C CONTINUED IN SECTION D

SIGNATURE - DOCUMENT ~~SPONSOR~~	DATE	SIGNATURE - DOCUMENT ~~SIGNER~~	DATE
David E Hills	4-12-10		5/21/10

NON-CONCURRING INDIVIDUAL *(To be completed by document sponsor when process is complete, i.e., after document is signed):*

N/A

☐ CONCURS

☐ NON-CONCURS

☐ WITHDRAWS NON-CONCURRENCE (i.e., discontinues process)

N/A

☐ WANTS NCP FORM PUBLIC

☐ WANTS NCP FORM NON-PUBLIC

NRC FORM 757
NRC MD 10.158
(3-2009)

U.S. NUCLEAR REGULATORY COMMISSION

NON-CONCURRENCE PROCESS

TITLE OF DOCUMENT

DAEC Triennial I Heat Seat Inspection Report, 50-331/2010002; RHR Seal Water Cooler NCV

ADAMS ACCESSION NO.

SECTION C - TO BE COMPLETED BY DOCUMENT SPONSOR

NAME

Kenneth G. O'Brien

TITLE

Deputy Director

PHONE NO.

630-829-9701

ORGANIZATION

Division of Reactor Safety, Region III

ACTIONS TAKEN TO ADDRESS NON-CONCURRENCE (This section should be revised, as necessary, to reflect the final outcome of the non-concurrence process, including a complete discussion of how individual concerns were addressed.)

See Attached.

☑ CONTINUED IN SECTION 0

SIGNATURE - DOCUMENT SPONSOR	DATE	SIGNATURE - DOCUMENT SIGNER	DATE
/RA/	5/21/10	/RA/ Ann Marie Stone	5/21/10

NON-CONCURRING INDIVIDUAL *(To be completed by document sponsor* when process is complete, i.e., after document is signed):

- O CONCURS
- ☒ NON-CONCURS
- O WITHDRAWS NON-CONCURRENCE (Le., discontinues process)
- ☒ WANTS NCP FORM PUBLIC
- O WANTS NCP FORM NON-PUBLIC

NON-CONCURRENCE PROCESS

Document Title: DAEC Triennial I Heat Seat Inspection Report, 50-331/2010002; RHR Seal Water Cooler NCV

Document Sponsor: Kenneth G. O'Brien, Deputy Director
Division of Reactor Safety, Rill

ACTIONS TAKEN TO ADDRESS NON-CONCURRENCE

In response to the Non-concurrence, I:

- reviewed the draft inspection report input;
- discussed the issue with the inspector/author of the input;
- discussed the focus of the input and the approach taken with the Acting Branch Chief and the Document Reviewer;
- reviewed the current status of the system with the cognizant DRP Branch Chief, and;
- reviewed information from the licensee, that was provided to the NRC Resident Inspector Office, relative to the licensee's current classification of the system, the current system alignment, the availability of cooling water to the cooling water heat exchanger, and their corrective actions to a previous related violation issued by the NRC in Inspection Report 05000341/2003-003.

Based upon the information provided by the NRC Resident Office, I understood that the licensee:

- maintained that the RHR pump seal water cooling system was not required for RHR pump seal functionality or RHR pump operability;
- indicated that essential service water was currently available to the RHR pump seal water cooler;
- had returned the seal water cooler [heat exchanger] to its GL 89-13 monitoring program as a part of its corrective actions to the 2003 NRC NCV;
- had not completed any other corrective actions that were originally documented to address the 2003 NRC NCV such as installing new higher temperature seals, addressing short-comings in the original 10 CFR 50.59 evaluation that was used to modify the classification of the seal water cooler system or to eliminate the FSAR requirement for ESW flow to the seal water cooling system, and;
- had not made any substantial modifications to the RHR seal water cooling system since the 2003 NRC NCV was issued.

Based, in part, on the above information, I concluded that an immediate safety concern did not exist with regard to the licensee's operation and maintenance of the RHR pump seal water cooling system and associated ESW cooling water. I communicated this assessment to the inspector/author of the inspection report input.

Based upon my review of the Non-concurrence document and discussions with its author, I understood the individuals concerns to be:

- that the proposed violation in the draft inspection report input did address a perceived fundamental deficiency that the licensee does not believe or treat the RHR pump seals as having a safety function;
- that the NRC has not issued a violation to the licensee for failing to do an appropriate operability evaluation; and
- that the violations, however they may be cited, may be "greater than green," from a risk perspective.

I also understood that the inspector believed that an appropriate resolution of the Non-concurrence would be for the NRC to issue a violation to the licensee to require the licensee to classify and treat the RHR pump seals in accordance with their safety function; to issue a violation to the licensee for failing to do an appropriate operability evaluation; and to gather additional information through inspection to determine whether the licensee's treatment, over the past 7 years, of the RHR pump seals and the RHR pump seal cooling water system may have resulted in the proposed violations being considered "greater than green."

Having reviewed the draft inspection report input and the information provided by the inspector, I determined that sufficient information did not appear to have been developed to support the proposed 10 CFR 50.71 (e) violation. Specifically, neither the information included in the draft input nor that provided by the inspector demonstrated that the licensee had developed new or different information regarding the requirements for operation of the RHR pump seals or seal cooling water system that would require it to update the Final Safety Analysis Report (FSAR).

Instead, it appeared, based upon information provided by the NRC Resident Inspector Office, that the latest information the licensee had with regard to the system, its design, and performance requirements was the same information that was the basis for the 2003 NRC violation. It also appeared that the licensee failed to take corrective actions for a violation issued by the NRC in 2003.

In as much as the 2003 NRC violation was associated with the same equipment, the same issues, and had not been address by the licensee through its corrective action program, it appeared that the most appropriate violation for the current conditions would be a Criterion XVI violation for failure to take corrective actions. Given the 2003 NRC violation and a proposed Criterion XVI violation, it would appear to be reasonable to expect the licensee to address the inadequacies noted in the original 1999 10 CFR 50.59 evaluation, that was previously used to modify the FSAR, including addressing any necessary changes to the systems safety classification and associated controls for operability and maintenance. These actions should also provide the licensee with the necessary opportunity to update the current operability evaluations, as necessary.

Therefore, I am returning the proposed inspection report input to the Branch Chief for consideration and documentation of a Criterion XVI violation, as appropriate.

Assuming appropriate and timely action by the licensee to address the Criterion XVI and the associated previous 2003 Criterion III violations, I believe that the inspector/Non-concurrence author's issues with regard to the licensee operating and maintaining the RHR pump seal and seal cooling water systems consistent with their documented and technically supported safety bases should be accomplished. These actions should also cause the licensee to revisit the continued validity of the current operability evaluations and past operability issues that may be developed based upon a more fully developed system design bases.

May21 , 2010

NOTE TO: FILE

FROM: Ann Marie Stone, Chief, Engineering Branch 2

SUBJECT: NONCONCURRENCE TO DAEC HEAT SINK TRIENNIAL INSPECTION NCV INPUT TO REPORT 50-331/201002

The purpose of this note is to document the individuals associated with the submittal, review, and resolution to the above non-concurrence.

Submitter:	Gerard O'Dwyer
Supervisor:	Patricia Lougheed (Acting Branch Chief, ending May 8, 2010)
Reviewer/Signer:	David Hills (initial activity)
Reviewer/Signer:	Ann Marie Stone (returned from rotational assignment)
Sponsor:	Ken O'Brien

It should be noted that the original document was intended to be an input into an integrated inspection report. Due to timing concerns, the integrated report was issued without this input and a decision was made to convert this input into an independent inspection report.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
LISLE, ILLINOIS 60532

DRAFT REPORT NOT ISSUED
(SEE ADAMS AT ML101690405 FOR THE FINAL IR 2010008)

MEMORANDUM TO: Robert Orlikowski
Senior Resident Inspector
Duane Arnold Energy Center

FROM: V. Patricia Lougheed, Acting Chief
Engineering Branch 2
Division of Reactor Safety

SUBJECT: DUANE ARNOLD ENERGY CENTER, DRS INPUT TO INTEGRATED REPORT 05000331/2010002

Enclosed is the report input for the Duane Arnold Energy Center, Inspection Report 05000331/2010002. This report input documents completion of Inspection Procedure (IP) 71111.07T, "Triennial Heat Sink Performance." I have reviewed this input and ensured compliance with Inspection Manual Chapter (IMC) 0612 including confirming each finding was reviewed for potential cross-cutting aspects. This input is ready for inclusion into the integrated report and dissemination to the public.

Please input the following post Inspection Data into RPS:

Inspection Procedure	Status (with explanation if needed)	Sample Size (with explanation if needed)
71111.XX		
71151.xxx		
TI 2515/xxx		
71111.07T	Closed	Three Samples

Unresolved Item	Responsible Person	Responsible Organization

Enclosure: Input to Inspection Report 05000331/2010002.

cc w/encl: K. Riemer, Chief
T. Ehrig, Site Secretary

CONTACT: Néstor J. Féliz Adorno, DRS
(630) 829-9739

DOCUMENT NAME: G:\DRS\WIP\DUANE ARNOLD Input to DRP Report 2010-002 NFA.doc
□ Publicly Available □ Non-Publicly Available □ Sensitive □ Non-Sensitive
To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl; "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII		RIII NON-ConCur	E				
NAME	Feliz Adorno:ls		GODwyer /RA/		VPLougheed			
DATE	4/ 08 /10 NOFA		4/ 9 /10 NONconcur		4/ 08/10			

OFFICIAL RECORD COPY

Cover Letter

_X_ Green findings involving violations were identified. Include the following:

Based on the results of this inspection, one NRC-identified finding of very low-safety-significance (Green) and one NRC-identified Severity Level IV finding were identified. The findings were determined to involve violations of NRC requirements. However, because of their very low-safety-significance and because the issues were entered into your corrective action program, the NRC is treating the issues as Non-Cited Violations, in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

TITLE PAGE

Inspectors: Néstor J. Féliz Adorno and Gerard O'Dwyer

SUMMARY OF FINDINGS

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. The inspectors identified a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low-safety-significance for the failure to evaluate the past operability of the 'B' control building chiller condenser following the discovery of an unanalyzed condition. Specifically, an operability evaluation was not performed to address the discovery of 45 percent of the heat exchanger tubes that were found to be either plugged or heavily fouled due to silt accumulation. Acceptance criteria for tube plugging did not exist at the time of this discovery. The licensee entered this issue into its corrective action program.

  The performance deficiency was determined to be more than minor because it was associated with the mitigating system cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. The finding screened as very low-safety-significance because the licensee was able to demonstrate the cooler had sufficient flow such that the finding did not represent an actual loss of safety function of a single train for a duration greater than its technical specification allowable outage time. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency. Section (1R07)

  Severity Level IV. The inspectors identified a Severity Level IV, NCV of 10 CFR 50.71(e), having very low-safety-significance for the failure to correct the updated final safety analysis report (UFSAR). Specifically, the licensee did not correct the UFSAR after learning that a previous 10 CFR 50.59 evaluation was not technically adequate to support a previous UFSAR change to eliminate the need for residual heat removal (RHR) pump seal cooling. The licensee entered this issue into its corrective action program.

The performance deficiency was determined to be more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. The finding was assessed through traditional enforcement because it had the potential for impacting the NRC's ability to perform its regulatory function. The finding screened as having very low-safety-significance, because the seal coolers appeared to be providing their function of providing cooling water to the seals for the RHR pumps. The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency. (1R07)

B. Licensee-Identified Violations

No violations of significance were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R07 Heat Sink Performance (71111.07T)

.1 Triennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed operability determinations, completed surveillances, vendor manual information, associated calculations, performance test results, and cooler inspection results, associated with the 'B' control building chiller condenser, the core spray pump motor coolers, and the service water systems. These heat exchangers/coolers were chosen based on their risk significance in the licensee's probabilistic safety analysis and their important safety-related mitigating system support functions.

For the 'B' control building chiller condenser and the core spray pump motor coolers, the inspectors verified that testing, inspection, maintenance, and monitoring of biotic fouling and macrofouling programs were adequate to ensure proper heat transfer. This was accomplished by verifying the test method used was consistent with accepted industry practices, or equivalent to whether test conditions were consistent with the selected methodology, the test acceptance criteria was consistent with the design basis values, and results of heat exchanger performance testing. The inspectors also verified that the test results appropriately considered differences between testing conditions and design conditions, the frequency of testing based on trending of test results was sufficient to detect degradation prior to loss of heat removal capabilities below design basis values and test results considered test instrument inaccuracies and differences.

In addition, the inspectors reviewed the methods and results of heat exchanger inspections. The inspectors verified if the methods used to inspect and clean heat exchangers were consistent with as-found conditions identified and expected degradation trends and industry standards, the licensee's inspection and cleaning activities had established acceptance criteria consistent with industry standards, and the as-found results were recorded, evaluated, and appropriately dispositioned such that the as-left condition was acceptable.

The inspectors also verified the condition and operation of the 'B' control building chiller condenser and the core spray pump motor coolers were consistent with design assumptions in heat transfer calculations and as described in the updated final safety analysis report (UFSAR). This included verification that the number of plugged tubes was within pre-established limits based on capacity and heat transfer assumptions. The inspectors verified the licensee evaluated the potential for water hammer and established adequate controls and operational limits to prevent heat exchanger degradation due to excessive flow-induced vibration during operation. In addition, eddy current test reports and visual inspection records were reviewed to determine the structural integrity of the heat exchanger.

The inspectors verified the performance of ultimate heat sinks (UHS) and their subcomponents such as piping, intake screens, pumps, valves, etc., by tests or other equivalent methods to ensure availability and accessibility to the in-plant cooling water systems. The inspectors reviewed the results of the licensee's inspection of the UHS weirs or excavations. The inspectors verified that the identified settlement or movement indicating loss of structural integrity and/or capacity was appropriately evaluated and dispositioned by the licensee. In addition, the inspectors verified the licensee ensured sufficient reservoir capacity. The inspector performed a system walkdown of the service water intake structure to verify the licensee's assessment on structural integrity and component functionality. This included the verification that the licensee ensured proper functioning of traveling screens and strainers, and structural integrity of component mounts. In addition, the inspectors verified that service water pump bay silt accumulation was monitored, trended, and maintained at an acceptable level by the licensee. The inspectors also verified the licensee's ability to ensure functionality during adverse weather conditions.

In addition, the inspectors reviewed condition reports related to the heat exchangers/coolers and heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and to evaluate the effectiveness of the corrective actions. The documents that were reviewed are included in the Attachment to this report.

These inspection activities constituted three heat sink inspection samples as defined in IP 71111.07-05.

b. Findings

(1) Failure to Evaluate the Past Operability of the 'B' Control Building Chiller Condenser

Introduction: A finding of very low-safety-significance and associated Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified by the inspectors for the failure to evaluate the past operability of the 'B' control building chiller condenser following the discovery of an unanalyzed condition.

Description: On March 10, 2010, the inspectors identified that the licensee failed to perform an operability evaluation associated with the 'B' control building chiller condenser on January 24, 2005, following an inspect and clean activity that found the heat exchanger in an unanalyzed condition.

The inspectors noted that the licensee's inspection of the 'B' control building chiller condenser performed in 2005 found approximately 29 percent of the tubes to be plugged and an additional 15 percent of the tubes to be heavily fouled with a visible reduction of internal diameter. The cause for the degradation was accumulation of silt. Although the licensee corrected the condition by cleaning the heat exchanger before returning it to service, the inspectors noted that the condition was not captured in the licensee's corrective action program and, consequently, an operability evaluation was not performed. The inspectors determined that this was an unanalyzed condition because the licensee had not established acceptance criteria for the maximum number of tubes that were allowed to be plugged without adversely affecting the ability of the equipment to perform its intended function. In addition, the inspectors noted that the licensee's procedure FP-OP-OL-01, "Operability Determination," stated that a determination of

operability shall be performed for structures, systems, and components found in an existing but previously unanalyzed condition.

The inspectors were concerned because the failure to evaluate for past operability of a system that is found to be in a degraded condition could result in the failure to identify that the system was inoperable. The failure to recognize that the system was inoperable could lead to a failure to take appropriate corrective actions, to determine if the clean and inspect frequency needed to be shortened, and/or to evaluate if the condition met any of the criteria for reportable events described in 10 CFR 50.73. For instance, licensee's procedure ACP 1402.3, "Regulatory Reporting Activities," stated that a licensee event report shall be prepared and submitted to the NRC within 60 days after discovery of any operation or condition prohibited by the plant's Technical Specifications (TS). This was consistent with 10 CFR 50.73(a)(2)(i)(B), which stated that the licensee shall report any operation or condition which was prohibited by the plant's TS. This was further explained by NUREG-1022, "Event Reporting Guidelines," which stated that "An LER is required if a condition existed for a time longer than permitted by the TS [i.e., greater than the allowed outage time (or completion time in ISTS)] even if the condition was not discovered until after the allowable time had elapsed and the condition was rectified immediately upon discovery." The plant's TS Section 3.7.5, "Control Building Chiller Systems," stated that the allowable outage time for one inoperable control building chiller is 30 days. The function of the control building chiller system was to provide temperature control for: (1) control room equipment; (2) control room habitability for a 30 day continuous occupancy; and (3) essential switchgear rooms.

The licensee captured the inspectors' concerns in their corrective action program (CAP) as CAP073762. In addition, the licensee performed an engineering calculation that determined that, around the time of the discovery of the condition, the 'B' control building chiller condenser had sufficient flow resulting in adequate heat removal capacity margin. The corrective actions included reinforcing to personnel that unexpected conditions must be entered into the corrective action program to assure that appropriate reviews take place in a timely manner.

Analysis: The inspectors determined that the failure to evaluate the past operability of the 'B' control building chiller condenser was contrary to the licensee's procedures and was a performance deficiency.

The performance deficiency was determined to be more than minor because, it was associated with the mitigating system cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the inspectors had reasonable doubt on the past operability of the control room chillers condenser because the as-found condition was not evaluated. The failure to evaluate for past operability of a system that is found to be in a degraded condition could result in the failure to identify that the system was inoperable and, subsequently, to take appropriate corrective actions and/or to evaluate if the condition was reportable to the NRC.

The inspectors determined the finding could be evaluated using the Significance Determination Process (SDP) in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of findings," Table 3b for the mitigating system cornerstone. The finding screened as very low-safety-significance (Green) because the licensee was able to demonstrate the

cooler had sufficient flow such that the finding did not represent an actual loss of safety function of a single train for a duration greater than its TS allowable outage time.

The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency. Specifically, the licensee would have been expected to evaluate the past operability of the 'B' control building chiller condenser when the adverse condition was identified in 2005.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," requires, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings.

Contrary to the above, in January, 25, 2005, the licensee did not follow procedure FP-OP-OL-01. Specifically, the licensee failed to perform an operability evaluation to address the discovery of a previously unanalyzed condition affecting the 'B' control building chiller condenser. Because this violation was of very low-safety-significance and it was entered into the licensee's CAP as CAP073762, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000331/2010002-[redacted], Failure to evaluate the past operability of the 'B' control building chiller condenser).

(2) Failure to Update the UFSAR to Reflect Required Cooling to the Residual Heat Removal (RHR) Pump Seals

Introduction: A finding of very low-safety-significance (Green) and associated Severity Level IV, NCV of 10 CFR 50.71(e) was identified by the inspector for the licensee's failure to correct the UFSAR after learning that a previous 10 CFR 50.59 evaluation was not technically adequate to support a previous UFSAR change to eliminate the need for RHR pump seal cooling.

Description: On April 15, 2003, the NRC issued Inspection Report 05000341/2003-003 which documented a finding concerning the RHR pump seal cooling requirements. Specifically, in 2000, the licensee performed an evaluation under 10 CFR 50.59, revised the UFSAR Table 9.2-1, "ESW Flow Requirements," to list the required flow for the RHR pump seals as zero (0) gallons per minute (gpm), and removed the seal coolers from the Generic Letter (GL) 89-13, "Service Water System Problems Affecting Safety-Related Equipment," testing program. However, the inspectors concluded that the RHR pump seal coolers required cooling flow because vendor information indicated that the seals were only qualified to 150 degrees Fahrenheit (°F) and the licensee's evaluation did not address the ability to stay within this limitation without cooling. The inspectors determined the issue was of very low-safety-significance (Green) because, the seals appeared to have cooling water at the time. In addition, the seals were not damaged when they were previously subjected to temperatures above 300 °F. As a result of the previous finding, the licensee restored the seal coolers to the GL 89-13 testing program.

During the current inspection, the inspectors determined that, while the licensee was maintaining the seal coolers in the GL 89-13 testing program, it had not revised the UFSAR or performed a new 10 CFR 50.59 evaluation that ensured the existing value for the RHR pump seal flow could remain in the UFSAR without NRC approval. As a result,

it appeared that the licensee had not adequately addressed or explored the following possible aspects from an extent of condition perspective that the inspectors believed may be pertinent in any such decision or in the treatment of the seal coolers with respect to RHR pump operability:

- Given the failure to address the seal cooler flow value in the UFSAR, a potential existed for the licensee to consider an RHR pump operable with a non-functioning seal cooler without performing a suitable evaluation to support that decision.

- The licensee had classified the seal coolers as non-safety related. Given the previous NRC finding and NCV, the inspector did not find evidence that the licensee had adequately considered that information in verifying that the previous classification justification remained applicable and was sufficient.

- Given the current seal cooler flow value in the UFSAR and the licensee's non-safety-related classification, and depending on answers to the above two items, the licensee may have treated the seal coolers incorrectly with respect to previous activities such as operability evaluations, operating, and maintenance practices including application of quality assurance requirements, risk assessment, and performance indicator data. Hence, it was not clear if there were any future impacts from related past decisions.

- The inspectors noted that the NRC credited a 1.5 gpm limit for RHR seal leakage in Section 2.2.1.e, "Leakage from Emergency Core Cooling Systems," of the NRC Safety Evaluation Report supporting the license amendment granted on July 31, 2001, for the use of the Alternate Source Term. The licensee did not have an evaluation, which supported that the RHR seal leakage would remain below 1.5 gpm with 0 gpm cooling to the seals.

- Without proper seal cooling, the potential existed that one or more RHR pump seals could fail during a shutdown and allow sufficient leakage to cause excessive heat-up of the RHR pump rooms causing the pumps to fail and prevent the plant from reaching cold shutdown after a fire, possibly contrary to the Fire Plan.

In summary, while the licensee had taken action in response to the previous NRC finding to address the primary focus of the inspection, specifically placing the seal coolers back into the testing program, questions remained regarding the current required seal cooler flow value specified in the UFSAR and the resulting broader implications that lay at the core of the inspectors' concern, namely seal cooling as a necessary support function of the RHR pumps.

Analysis: The failure to restore the requirement for RHR pump seal cooling to the UFSAR in the absence of an adequate 10 CFR 50.59 evaluation to support its removal was contrary to 10 CFR 50.71(e) and was a performance deficiency.

The performance deficiency was determined to be more than minor because, if left uncorrected, it had the potential to lead to a more significant safety concern. Specifically, if the licensee terminates the flow to the RHR pump seal coolers as allowed presently by the UFSAR then the seals could operate outside their design and one or more of the RHR pump seals could fail during a design basis accident. This finding was

primarily associated with the Mitigating Systems Cornerstone. The finding was of very low-safety-significance (Green) because the seal coolers appeared to be providing their function of providing cooling water to the seals for the RHR pumps. Water was identified as flowing in the site glasses and the licensee had restored the seal coolers to the GL 89-13 testing program.

The inspectors did not identify a cross-cutting aspect associated with this finding because the finding was not confirmed to reflect current performance due to the age of the performance deficiency. Specifically, the licensee would have been expected to correct or justify the current value in the USFAR when addressing the previous finding in 2003.

Enforcement: The inspector determined that the finding had the potential for impacting the regulatory process and therefore evaluated enforcement under the traditional enforcement process.

Title 10 CFR 50.71(e) requires, in part, that each licensee periodically update the UFSAR originally submitted as part of the application for the license, to assure that the information included in the report contains the latest information developed.

Contrary to the above, from April 15, 2003 to March 26, 2010, the licensee did not update the UFSAR to assure that the information included in the report with respect to RHR pump seal cooling contained the latest information developed. Specifically, on April 15, 2003, the licensee learned that the written 10 CFR 50.59 safety evaluations (SE) contained in SE 99-041, Revisions 0 and 1, did not provide an adequate technical basis for removing cooling water flow to the RHR pump seals. These SEs had been used to justify a change in UFSAR Section 9.2, Table 9.2-1, to change the RHR cooling water flow value from 6 gpm to 0 gpm. Subsequently, in the continued absence of an adequate 10 CFR 50.59 evaluation, the licensee failed to restore the cooling requirement to the UFSAR. Because this violation was of very low-safety-significance and it was entered into the licensee's corrective action program as CAP 074081, this violation is being treated as a Severity Level IV NCV, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000331/2010002-[redacted], Failure to update the UFSAR to reflect required cooling to the RHR pump seals).

4. OTHER ACTIVITIES

4OA6 Management Meetings

.1 Exit Meeting Summary

On Friday, March 26, 2010, the inspectors presented the inspection results to Mr. C. Costanzo, and other members of the licensee staff. The licensee acknowledged the issues presented. The inspectors confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

S. Catron, Licensing Manager
R. Murrell, Licensing Engineer

Nuclear Regulatory Commission

V.P. Lougheed, Acting Chief
N.J. Féliz Adorno, Reactor Engineer

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened

05000331/2010002-XX	NCV	Failure to evaluate the past operability of the 'B' control building chiller condenser
05000331/2010002-XX	NCV	Failure to update the UFSAR to reflect required cooling to the RHR pump seals

Closed

05000331/2010002-XX	NCV	Failure to evaluate the past operability of the 'B' control building chiller condenser
05000331/2010002-XX	NCV	Failure to update the UFSAR to reflect required cooling to the RHR pump seals

Discussed

None

LIST OF DOCUMENTS REVIEWED

The following is a list of documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety, but rather, that selected sections of portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document on this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R07 Heat Sink Performance (71111.07T)

STP 3.7.5-01B; Quarterly Surveillance Test for "B" Control Building Chiller Operability; 1/9/2010

STP 3.7.5-01B; Quarterly Surveillance Test for "B" Control Building Chiller Operability; 10/9/2009

STP 3.7.5-01B; Biannual Surveillance Test for "B" Control Building Chiller Operability; 7/9/2008

STP NS540002; Emergency Service Water Operability Test; 2/3/2010

CAP 066572; A Chiller Will Not Remain Running More Than 3-5 Min After Start; 4/16/2009

CAP 063302; Chiller Placed In 50.65(A)(1) Maintenance Rule RED; 1/29/2009

CAP 061115; "B" Chiller Tripped With No Alarm in the Control Room; 10/21/2008

CAP051235; CAQ – Loose Material in Lower RHRSW Pump Motor Air Flow Area; 7/20/ 2007

CAP061471; CAQ – B SBDG Jacket Water HX Leaked 100 dpm; 11/2/2008

CAP062296; NCAQ – ESW FLANGE LEAK FROM SCAVENGING AIR COOLER; 12/12/2008

CAP062658; RHRSW Pump Motor Windings PI Results Were Not Sat; 1/5/2009

CAP072204; NCAQ – ESW Leak from B JWHX; 1/7/2010

CAP062296; NCAQ – ESW Flange Leak From Scavenging Air Cooler; 12/12/2008

CAL-466-M007; Chiller Performance; 9/21/1990

CAL-466-M-003; ESW Heat Loads; 9/24/2007

WO1141621; Heat Exchanger Bio/Silt Fouling Inspection Form; 4/13/2009

WO1126573; Heat Exchanger Bio/Silt Fouling Inspection Form; 1/24/2005

WO1137879; Calibration Data Sheet: TC6924B; 5/21/2007

WO1145232; Calibration Data Sheet: PI6932B; 4/15/2009

WO1137870; Calibration Data Sheet: PI6932B; 5/20/2007

WO1145410; Calibration Data Sheet: TC6924B; 10/05/2009

PWO 1147549; Inspect and Clean A Intake STRUCTURE PIT COMPLETED; 9/15/2009

PWO 1147554; Inspect and Clean A RHRSW/ESW Pit Completed; 9/11/2009

PWO 1147557; Inspect/Clean River Side Of Intake Structure Pits Completed; 9/11/2009

PWO 1147574; Inspect/Clean Pumphouse Stilling Basin Completed; 9/1/2009

PWO 1147569; Inspect and No Cleaning Needed B RHRSW & ESW Pits Completed; 9/2/2009

PWO 1147564; Inspect and No Cleaning Needed B intake structure pit completed; 8/21/2009

PWO 1147561; Inspect and No Cleaning Needed B Intake Structure Pit Completed, 6/2/2009

PWO 1147566; Inspect and Clean B RHRSW and ESW Pit Voided; 6/2/2009

PWO 1147571; Inspect and No Cleaning Needed and No Growth Pumphouse Stilling Basin Completed; 6/1/2009

PWO 114570; Inspect And No Cleaning Needed Pumphouse Stilling Basin Completed; 4/7/2009

NMC47-DAEC-02; Control Building Chiller B 1E235B, 1E236B, 1E237B; 1/26/2005

SE-99-041; 10 CFR 50.59 Safety Evaluation to Remove the Requirement for ESW Flow to the RHR Pump Seal Coolers From the TS Bases And the FSAR; Revisions 0 and 1

NRC-Indentified Condition Reports

CAP073762; Tubes Found Plugged During 1/24/2005 Cleaning Of CB Chiller Condenser Were Not Evaluated; 3/10/2010

CAP073747; Conflicting Parameters Between ACP1208.4 and STP 3.7.5-01; 3/9/2010

CAP073821; Missing Jam Nuts for 1VHX031A&B; 3/11/2010

CAP073369; CAQ – V42-0012 Not Full Stroke Exercised As Required by ASME; 2/23/2010

CAP074081; RHR Pump Seal Cooler – NRC Finding; 3/25/2010