



**UNITED STATES
NUCLEAR REGULATORY COMMISSION**

REGION III
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LISLE, IL 60532-4352

January 20, 2010

Mr. Christopher J. Schwarz
Site Vice President
Entergy Nuclear Operations, Inc.
Palisades Nuclear Plant
27780 Blue Star Memorial Highway
Covert, MI 49043-9530

**SUBJECT: PALISADES NUCLEAR PLANT EVALUATION OF CHANGES, TESTS, OR
EXPERIMENTS AND PERMANENT PLANT MODIFICATIONS BASELINE
INSPECTION REPORT 05000255/2009006(DRS)**

Dear Mr. Schwarz:

On December 16, 2009, the United States Nuclear Regulatory Commission (USNRC) completed an Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications Inspection at your Palisades Nuclear Plant. The enclosed report documents the inspection results, which were discussed on November 19 and on December 16, 2009, with Mr. A. Blind and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and to compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected design documents, procedures and records, performed field walkdowns, observed activities, and interviewed personnel.

Based on the results of this inspection, two NRC-identified findings of very low safety-significance were identified. The findings involved 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 these issues as Non-Cited Violations (NCVs) in accordance with Section VI.A.1 of the NRC Enforcement Policy.

If you contest the subject or severity of a Non-Cited Violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector Office at the Palisades Nuclear Plant. In addition, if you disagree with the characterization of any finding in this report, you should provide a response within 30 days of the date of this inspection report, with the basis for your disagreement, to the Regional Administrator, Region III, and the NRC Resident Inspector at the Palisades Nuclear Plant. The information that you provide will be considered in accordance with Inspection Manual Chapter 0305.

C. Schwarz

-2-

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response (if any), will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records System (PARS) component of NRC's Agencywide Documents Access and Management System (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

/RA/

Robert Daley, Chief
Engineering Branch 3
Division of Reactor Safety

Docket Nos. 50-255
License Nos. DPR-20

Enclosure: Inspection Report No. 05000255/2009006
w/Attachment: Supplemental Information

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U.S. NUCLEAR REGULATORY COMMISSION
REGION III

Docket No: 05000255

License No: DPR-20

Report No: 05000255/2009006 (DRS)

Licensee: Entergy Nuclear Operations, Inc

Facility: Palisades Nuclear Plant

Location: Covert, MI

Dates: November 2 through December 16, 2009

Inspectors: Z. Falevits, Senior Reactor Inspector (Lead)
A. Dunlop, Senior Reactor Inspector
J. Gilliam, Reactor Inspector

Approved by: R. Daley, Chief
Engineering Branch 3
Division of Reactor Safety (DRS)

Enclosure

SUMMARY OF FINDINGS

IR 05000255/2009006 (DRS); 11/02/2009 – 12/16/2009; Palisades Nuclear Plant; Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications.

This report covers a two-week announced baseline inspection on Evaluations of Changes, Tests, or Experiments and Permanent Plant Modifications. The inspection was conducted by Region III based engineering inspectors. Based on the results of this inspection, two finding of very low safety-significance (Green) were identified. The findings were considered Non-Cited Violations (NCVs) of NRC regulations. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process" (SDP). Findings for which the SDP does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Green. A finding of very low safety-significance (Green) and associated Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III "Design Control," was identified by the inspectors for the licensee's failure to translate the design bases into design drawings, procedures and appropriate test instructions. Specifically, the design basis requirements for Agastat Time Delay Relays (TDR) settings, as well as vendor tolerances, were not accurately reflected in the design drawings, procedures and test instructions for numerous TDR calibrations. This issue was entered into the licensee's corrective action program.

The inspectors determined that the finding was more than minor because it was associated with the Mitigating System Cornerstone attribute of "Design Control," and affected the cornerstone objective of ensuring the capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, failure to ensure that safety-related TDRs would operate, within the design specified setpoints and allowed tolerances, could lead to the inability of safety-related systems and components to respond to design basis events (e.g., during load sequencing onto the EDG). The finding screened as being of very low safety-significance because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality. Specifically, the licensee's subsequent evaluation of the TDRs tolerances showed that available margin remained for satisfactory completion of the required safety function.

This finding has an associated cross-cutting aspect in the area of problem identification and resolution because the licensee did not incorporate operating experience (OE) information, including internally generated lessons learned, to support plant safety. Specifically, even though the licensee was aware of the potential inadequacies of the Agastat TDR setpoints through internal OE, the licensee failed to adequately respond to the OE by implementing appropriate changes to station processes, procedures, equipment, and training program. P.2.(b) (Section 1R17.b.(1))

- Green. A finding of very low safety-significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the licensee's failure to translate and incorporate design basis criteria that ensured the functionality of TDRs for the CR HVAC chillers into design drawings, procedures and work instructions for implementation. Specifically, even though the licensee reduced the replacement interval frequency for the chiller mounted TDRs due to high vibration levels to ensure functionality, and then initiated Work Orders (WOs) to perform this replacement, one WO was closed without replacing the TDRs as intended, and the second WO was not approved for implementation. This issue was entered into the licensee's corrective action program.

The inspectors determined that the finding was more than minor because this failure to establish measures to translate and incorporate design basis criteria to ensure the functionality of TDRs for the CR HVAC chillers could lead to the inability of the chillers to respond to design basis events. Specifically, the finding screened as of very low safety-significance (Green) because the finding did not represent loss of system safety function.

This finding has an associated cross-cutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate problems such as that the resolution addresses causes and extent of condition, as necessary. This includes properly evaluating for operability conditions adverse to quality. P.1.(c) (Section 1R17.b.(2))

B. Licensee-Identified Violations

No findings of significance were identified.

REPORT DETAILS

1. REACTOR SAFETY

Cornerstone: Initiating Events, Mitigating Systems, and Barrier Integrity

1R17 Evaluation of Changes, Tests, or Experiments and Permanent Plant Modifications (71111.17)

.1 Evaluation of Changes, Tests, or Experiments

a. Inspection Scope

From November 2 through December 16, 2009, the inspectors reviewed six safety evaluations (SEs) performed in accordance with 10 CFR 50.59 to determine whether the safety evaluations were adequate and that prior NRC approval was obtained as required. The inspectors also reviewed 22 screenings and 10 permanent modifications/engineering changes. The inspectors reviewed these documents to determine whether:

- the changes, tests, or experiments performed were evaluated in accordance with 10 CFR 50.59 and that sufficient documentation existed to confirm that a license amendment was not required;
- the safety issue requiring the change, tests or experiment was resolved;
- the licensee conclusions for evaluations of changes, tests, or experiments were correct and consistent with 10 CFR 50.59; and
- the design and licensing basis documentation was updated to reflect the change.

The inspectors used, in part, Nuclear Energy Institute (NEI) 96-07, "Guidelines for 10 CFR 50.59 Implementation," Revision 1, to determine acceptability of the completed evaluations, and screenings. The NEI document was endorsed by the NRC in Regulatory Guide 1.187, "Guidance for Implementation of 10 CFR 50.59, Changes, Tests, and Experiments," dated November 2000. The inspectors also consulted Part 9900 of the NRC Inspection Manual, "10 CFR Guidance for 10 CFR 50.59, Changes, Tests, and Experiments."

This inspection constituted six samples of safety evaluations, and 22 samples of screenings as defined in IP 71111.17-04.

b. Findings

(1) Agastat Time Delay Relays Design, Testing and Configuration Control Issues

Introduction: The inspectors identified a finding of very low safety-significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in that the licensee had not assured the correct design basis for safety-related (SR) Agastat Time Delay Relays (TDR) were translated into design drawings, procedures, and test instructions. Specifically, the design basis requirements for the TDR settings, as well as vendor tolerances, were not accurately reflected in the design drawings and in the instructions for

TDR calibrations. Additionally, the inspectors noted a lack of adequate TDR setpoint configuration. For example, the allowed tolerance ranges were not specified for a number of the TDRs in the design drawings, the calculations, plant database or in the Agastat TDR data sheets.

Description: The inspectors reviewed design basis information related to SR Agastat TDRs. Specifically, the inspectors reviewed the licensee's evaluation of Agastat TDRs in corrective action document CR-PLP-2009-00346. This CR was initiated on January 28, 2009, to evaluate an operating experience issue identified at the FitzPatrick in regard to failures of Agastat TDRs. This CR documented that approximately 75 SR Agastat TDRs used in both critical and non-critical applications were not in the Palisades Calibration Sheet Database. Even though the licensee had initiated this CR for further engineering evaluation of the issue, the inspectors determined that the licensee had failed to thoroughly evaluate the potential plant vulnerabilities associated with the concern. The licensee originally classified this design and configuration control issue to be an administrative issue and the CR due dates were extended twice, due to other job priorities, with the latest due date of February 2010. However, during review of TDR design basis and configuration control information and field walkdown inspection of the installed Agastat TDRs, the inspectors did not agree that this issue was purely administrative and determined that the licensee had only periodically tested the TDRs for functionality during surveillance activities. The inspectors were concerned, because the licensee did not routinely time test or calibrate Agastat TDRs to ensure that they had not fallen out-of-calibration (e.g., setpoint drifted with time). This type of testing ensures the proper operation of the TDRs and not just the functional operation of the control circuitry in its entirety. Additionally, the inspectors were concerned that engineering evaluations were not performed to determine whether the lack of periodic time testing and calibration of the TDRs could impact the performance of SR components and functions. Some of these TDRs were found to be out of tolerance both in the past and during the inspection. In addition, plant records that normally specify relay time delay setpoints and their basis, as-found and as-left time delay setting ranges and their basis, repeat accuracy, vendor information, and relay test periodicities were not available or easily retrievable for many of the 75 Agastat TDRs that were in question.

During the review of this issue, the inspectors noted that the licensee's "PM Basis Template" documented that their expert group identified the most common, (i.e., dominant) failure location and mechanisms for TDRs to be setpoint drift, lack of repeatability and thermal degradation. It further stated that the TDRs functional testing should include a test to ensure that the TDR operates within the nominal time as required by specifications and requirements.

The inspectors noted the following concerns associated with Agastat TDRs:

- (a) The inspectors noted that the lack of engineering approved TDR data sheet information contributed to TDR setpoint ranges in WO preventive maintenance (PM) packages which were different from the setpoint ranges specified by engineering in the approved design drawings. For example, WO 51637079-04, dated September 23, 2008, was initiated to bench test TDR 62-1206. The inspectors identified that the completed work plan instructions specified the time delay as 50 ± 5 seconds; however, design basis schematic diagram E-257, Sheet 1A, specified 50 ± 1 second. The inspectors noted that a PM change form was initiated on November 25, 2003, to correct the ± 5 seconds tolerance to ± 1 second, but this change has not been implemented yet. The inspectors verified that the

actual as-left test results in the completed work order were within 1 second. Based upon the inspectors findings, CR-PLP-2009-5312 was initiated on November 17, 2009, to document and address this issue.

- (b) On November 18, 2009, following NRC questions related to lack of TDR time testing and design configuration control issues, the licensee performed an engineering evaluation and review of TDR setpoints to determine if inadequacies related to TDR setpoints could result in a potential loss of equipment safety function. As a result of this effort, the licensee issued CR-PLP-2009-5371 to document that containment spray pump (CSP) P-54C Agastat TDR 62X/152-114 had not been specifically time tested for actuation during any surveillance or PM activities in the past. This relay was designed to provide a 15 ± 0.5 seconds time delay with a ± 10 percent vendor specified allowance for repeatability. The desired settings for the TDR were 13 to 17 seconds. The purpose of the time delay is to prevent loading/sequencing of the three largest loads onto EDG 1-1 following a delayed containment high pressure (CHP) event coincident with a loss of offsite power (LOOP) and to ensure the starting of the CSP.

On November 19, 2009, the licensee issued WO 216537 to perform a time test of TDR 62X/152-114 to confirm an actuation time delay of 13 to 17 seconds. The inspectors observed the time test/calibration. The time test as found measurement was 17.5 seconds, which was outside of the desired settings. The inspectors questioned past operability of this TDR since it operated 0.5 seconds slow. To address this concern, the licensee conducted an evaluation which concluded that operability of the system was still maintained. This conclusion was based upon the availability of 3.6 seconds of further margin. With the time delay being out of tolerance 0.5 seconds, available margin was reduced from 3.6 seconds to 3.1 seconds.

- (c) The inspectors noted design and configuration inconsistencies between design drawings, work orders, and database information in regard to specified/required TDR set-point values. Some TDRs lacked specified set-point acceptance tolerance ranges. Out-of-tolerance (i.e., drift) data was not being trended and set-point calculations were not found for some of the TDRs. For example, no calculations were found for TDRs 62-2/P8B, G1-1/JWPT1, G1-1/OCT2, G1- 1/PLT, or PCX/021B. However, no operability concerns were identified in regard to these deficiencies.
- (d) During the review of design drawings and WOs, the inspectors noted that TDR 62-2/P-8B, "auxiliary feedwater pump P-8B start," exceeded the specified setpoint of 112.5 ± 2.5 seconds on design drawing E-238 sh. 6. The as-found and as-left value for the setpoint in WO 52023729 was 117.9 sec. However, based upon further licensee review, even though the setpoint was exceeded by 2.9 seconds, there was 10 seconds of further margin available. Similarly, the inspectors discovered that relays 162-105 and 162-106 had as-left settings above their specified settings. The as-left settings for relay 162-105 was 1.54 seconds while the specified setting was less than 1.25 seconds, and the as-left setting for relay 162-1065 was 1.53 seconds while the specified setting was less than 1.2 seconds. Again, there was adequate margin to ensure functionality.
- (e) The inspectors also identified the following two instances where the TDRs were found drifted outside specified tolerance values; however, the required CRs were not initiated to document, evaluate and trend these adverse findings.

- 1) In April 2007, G1-1/JWPT2, D/G jacket water pressure TDR, was tested under WO 298439. The work order package specified an acceptable TDR time range from 43 to 47 seconds. The actual measured as-found time setting was 57.5 seconds. The relay was then adjusted to within tolerance with no further evaluation. Based upon inspector concerns regarding the failure to initiate a CR and perform an the licensee issued CR-PLP-2009-5343 on November 18, 2009 to evaluate the as-found reading of the G1-1/JWPT2 relay and initiate additional actions if necessary
- 2) In April 2007, G1-1/EXA2, D/G crankcase exhauster failure alarm, was tested under WO 298439. The work order package specified an acceptable relay time range from 14 to 18 seconds. The actual measured as-found time setting was 20 seconds. The TDR was adjusted to within tolerance with no further evaluation. Based upon inspector concerns regarding the failure to initiate a CR and perform an evaluation, the licensee issued CR-PLP-2009-5360 on November 19, 2009, to evaluate the as-found reading of this TDR and initiate additional actions. It was recommended that G1-1/EXA2 and the associated EDG equipment remain operable as the TDR was adjusted to within tolerance per the work order.

Based upon these numerous concerns involving TDR design and configuration management, the inspectors determined that the licensee had not assured that the correct design basis for TDRs were translated into design drawings, procedures and test instructions. Specifically, the design basis requirements for the TDR settings, as well as vendor tolerances, were not accurately reflected in the test instructions for TDR calibrations.

Analysis: The inspectors determined that the failure to assure that the correct design basis for TDRs were translated into design drawings, procedures and test instructions was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and a performance deficiency.

The finding was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability of multiple safety-related systems and components to respond to initiating events to prevent undesirable consequences. Specifically, not ensuring that SR Agastat TDRs used in safety-related and critical applications have adequate setpoints established could ultimately lead to the inability to respond to design basis events.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems cornerstone. The finding screened as of very low safety-significance (Green) because the finding was a design or qualification deficiency confirmed not to result in loss of operability or functionality.

This finding has an associated cross-cutting aspect in the area of problem identification and resolution because the licensee did not incorporate operating experience (OE) information, including internally generated lessons learned, to support plant safety. Specifically, even though the licensee was aware of the potential inadequacies of the Agastat TDR setpoints

through internal OE, the licensee failed to adequately respond to the OE by implementing appropriate changes to station processes, procedures, equipment, and training program. P.2.(b)

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires in part, that measures shall be established to assure that that applicable regulatory requirements and the design basis as specified in the licensee application are correctly translated into specifications, drawings procedures and instructions. The design control measures shall provide for verifying or checking the adequacy of design such as by performance of design reviews or by performance of suitable testing program.

Contrary to the above, as of November 19, 2009, the licensee failed to translate the design bases into design drawings, procedures and appropriate test instructions. Specifically, based upon the numerous concerns involving TDR design and configuration management, the inspectors determined that the licensee had not assured that the correct design basis for TDRs were translated into design drawings, procedures and test instructions. Specifically, the design basis requirements for the TDR settings, as well as vendor tolerances, were not accurately reflected in the test instructions for TDR calibrations. For example, inconsistencies were noted between design drawings, work orders and the Agastat TDR database concerning TDR set-point acceptance tolerance ranges, and most of the Agastat TDRs lacked specified set-point acceptance tolerance ranges and drift data was not routinely being trended. Because this violation was of very low safety-significance and was entered into the licensee's corrective action program as CR-PLP-2009 5137, CR-PLP-2009 5343, CR-PLP-2009 5359, CR-PLP-2009 5360 and CR-PLP-2009 5371, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000255/2009006-01(DRS)).

(2) Failure to Translate the Design Basis for Control Room HVAC Chiller CV-11 Into Specifications and Drawings

Introduction: The inspectors identified a finding of very low safety-significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." Specifically, the licensee failed to establish measures to incorporate design basis criteria that ensured the functionality of TDRs for the CR HVAC chillers.

Description: On November 11 and on December 6, 2007, CR HVAC chiller VC-11 failed to start on demand from the control room (CR). The licensee's initial analysis initially determined that pressure switches PS-1699 and PS-1687 had failed and both pressure switches were replaced. Subsequently, on February 7, 2008, VC-11 failed again to start on demand from the CR. After troubleshooting of chiller associated relays and switches, the licensee determined that TDRs 1CR and 1TR were not performing as designed and identified the failure of the 1CR and 1TR, TDRs to perform as designed as the root cause for the three failures of VC-11 to start on demand. TDRs 1CR and 1TR were replaced after the third failure on February 9, 2008. Post test results of these two relays confirmed that both removed relays were not performing per design specifications. CR-PLP-2008-00614, CA-00002 was initiated on February 9, 2008, to perform the CR chiller VC-11 Maintenance Rule (MR) evaluation. The evaluation determined that the VC-11 chiller unit had 4 Maintenance Preventable Functional Failures (MPFF) in 24 months prior to February 2008 and the VC-11 chiller unit was placed in Maintenance Rule (MR) (a)(1) status.

Following the second failure of the CR HVAC chiller unit (VC-11) to start on demand, on December 6, 2007, the licensee initiated apparent cause evaluation (ACE) CR- 2007-6193, dated December 7, 2007. The ACE determined that a negative trend existed in regard to the reliability of the VC-11 chiller. The ACE extent of condition concluded that Agastat TDRs have exhibited failures in the past on both trains of chiller units. Relays 1TR and 1CR which are used in the chiller start control logic circuitry were found to be the root cause of the chiller failures to start on demand in 2007.

On February 12, 2008, ACE CR- 2007-6193, CA 06 was initiated to evaluate the relay failures by performing vibration tests on VC-11 while it was in service. The vibration test results indicated that the VC-10 and VC-11 cabinets, which houses the electrical components (relays pressure switches), experienced high levels of vibration which was detrimental to the long term performance of the relays. The ACE further stated that vibration levels should be dampened by incorporating isolation/dampening pads. The inspectors determined that this recommendation to address the root cause of the relay failures was not adopted by the licensee. However, as part of the corrective action to address this issue, the licensee elected to reduce the existing replacement interval frequency of most of the TDRs for the CR Chillers VC-10 and VC-11. Specifically, the licensee reduced the replacement interval frequency for TDRs 1TR and 1CR from every 10 years to every 18 months.

The licensee initiated preventive maintenance ID (PMID) 50085809, Task 02 (VC-10) and PMID 50085808 Task 02 (VC-11) on April 29, 2008, to replace the Chiller mounted TDRs 1TR and 1CR every 18 months. The inspectors noted that VC-11 TDR 1TR was last replaced in February 2008 following the 2007 chiller failures (20 month prior to November 2009), and the VC-10 TDRs 1TR and 1CR were last replaced in April 2007 (28 months prior to November 2009). The inspectors were informed that PMID 50085809 Task 02 (VC-10), model work order has been in planning since it was issued in April 2008 and has not been approved for use. In addition, the inspectors noted that WO 51662409, which was initiated for replacement of a number of VC-11 TDRs was erroneously closed out in September 2008 to meet the specified 18 month periodicity of PMID 50085808 Task 02. However, due to parts unavailability, some of the relays were not replaced as intended. Subsequently, Work Order 162224 was created to replace these relays in March 2010. The licensee initiated CR-PLP-2009-5315, on November 17, 2009 and CR-PLP-2009-5349 on November 18, 2009, to address this issue.

After this inspection, on December 8, 2009, the licensee performed ACE 2009-05315, to evaluate the failure to replace the VC-11 and VC-10 TDRs by their PM scheduled late date. The licensee concluded that the failure to replace the TDRs could be attributed to inadequate procedures and failure to follow procedures.

Analysis: The inspectors determined that failure to translate the design basis for the maximum level of vibration values evaluated and tested for CR HVAC chiller unit (VC-11) into specifications, drawings, procedures and instructions was contrary to 10 CFR Part 50, Appendix B, Criterion III, "Design Control," and was a performance deficiency.

The performance deficiency was determined to be more than minor in accordance with IMC 0612, "Power Reactor Inspection Reports," Appendix B, "Issue Disposition Screening," because the finding was associated with the Mitigating Systems cornerstone attribute of equipment performance and affected the cornerstone objective of ensuring the availability of multiple safety-related systems and components to respond to initiating events to prevent undesirable consequences. Specifically, not addressing the TDRs high vibration issue to

ensure the functionality and operability of the TDRs used in safety-related applications could lead to the inability to respond to design basis events.

The inspectors determined the finding could be evaluated using the SDP in accordance with IMC 0609, "Significance Determination Process," Attachment 0609.04, "Phase 1 - Initial Screening and Characterization of Findings," Table 4a for the Mitigating Systems cornerstone. The finding screened as of very low safety-significance (Green) because the finding did not represent loss of system safety function.

This finding has an associated cross-cutting aspect in the area of problem identification and resolution because the licensee failed to thoroughly evaluate problems such as that the resolution addresses causes and extent of condition, as necessary. This includes properly evaluating for operability conditions adverse to quality. P.1.(c)

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires in part, that measures shall be established to assure that that applicable regulatory requirements and the design basis as specified in the licensee application are correctly translated into specifications, drawings procedures and instructions. The design control measures shall provide for verifying or checking the adequacy of design such as by performance of design reviews or by performance of suitable testing program.

Contrary to the above, as of November 19, 2009, the licensee failed to translate and incorporate design basis criteria that ensured the functionality of TDRs for the CR HVAC chillers into design drawings, procedures, and work instructions for implementation. Specifically, even though the licensee reduced the replacement interval frequency for the chiller mounted TDRs due to high vibration levels to ensure functionality, and then initiated WOs to perform this replacement, one WO was closed without replacing the TDRs as intended, and the second WO was not approved for implementation. This issue was entered into the licensee's corrective action program. Because this violation was of very low safety-significance and it was entered into the licensee's corrective action program as CR-PLP-20095312, CR-PLP-20095315 and CR-PLP-20095349, this violation is being treated as an NCV, consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000255/2009006-02(DRS)).

.2 Permanent Plant Modifications

a. Inspection Scope

From November 2, 2009 through December 16, 2009, the inspectors reviewed 10 permanent plant modifications that had been installed in the plant during the last three years. The modifications were selected based upon risk significance, safety-significance, and complexity. The inspectors reviewed the modifications selected to determine whether:

- the supporting design and licensing basis documentation was updated;
- the changes were in accordance with the specified design requirements;
- the procedures and training plans affected by the modification have been adequately updated;
- the test documentation as required by the applicable test programs has been updated; and

- post-modification testing adequately verified system operability and/or functionality.

The inspectors also used applicable industry standards to evaluate acceptability of the modifications. The list of modifications and other documents reviewed by the inspectors is included as an Attachment to this report.

This inspection constituted 10 permanent plant modification samples as defined in IP 71111.17-04.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES (OA)

4OA2 Identification and Resolution of Problems

.1 Routine Review of Condition Reports

a. Inspection Scope

The inspectors reviewed Corrective Action Process documents that identified or were related to 10 CFR 50.59 evaluations and permanent plant modifications. The inspectors reviewed these documents to evaluate the effectiveness of corrective actions related to permanent plant modifications and evaluations for changes, tests, or experiments issues. In addition, corrective action documents written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problems into the corrective action system. The specific corrective action documents that were sampled and reviewed by the inspectors are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Exit Meeting Summary

On November 19 and on December 16, 2009, the inspectors presented the inspection results to Mr. Alan Blind, and other members of the licensee staff. The licensee personnel acknowledged the inspection results presented and did not identify any proprietary content.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

A. Blind, Engineering Director
D. Hamilton, Nuclear Safety Assurance Director
B. Kemp, Design Engineering Manager
M. Sicard, Operations Manager
B. Ford, Maintenance Manager
P. Anderson, Licensing Manager
M. Nordin, Design Engineering Supervisor
D. MacMaster, Design Engineering Supervisor
T. Groth, Design Engineer
K. Stevens, Design Engineer
K. Erickson, Licensing Engineer
B. Dotson, Licensing Technical Specialist
J. Baskin, Enercon Site Project Manager

Nuclear Regulatory Commission

R. Daley, Chief, Engineering Branch 3, DRS
J. Ellegood, Senior Resident Inspector

LIST OF ITEMS OPENED, CLOSED AND DISCUSSED

Opened and Closed

05000255/2009006-01	NCV	Agastat Time Delay Relays Design, Testing and Configuration Control Issues
05000255/2009006-02	NCV	Failure to Translate the Design Basis for the CV-11 Control Room HVAC Chiller Into Specifications and Drawings

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 or 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.

MODIFICATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EC 0000014078	Replace Fuses Due to Motor Starter Inrush Issues	7/8/2009
5000122379	Containment Cooler Recirculation Fan Breaker Failed	Revision 0
EC 10306	ESS Suction Header Cross-Tie Operation	Revision 1
5000122087	Replace Control XFMR IN Breakers 52-151 & 52-157, MCC #1	Revision 0
5000122387	Revise Set point for the Station Power Transformer 1-1 and 1-2 Winding Hot Spot and Hot Oil Alarms	Revision 0
EC 5885	Emergency Diesel Generator 1-1 and 1-2 Starting Air System	Revision 0
5000122454	Replace Containment Spray Isolation Valves Per GSI-191 Resolution (CV-3001 & CV-3002)	Revision 2
5000122395	LIA-1338 Service Water Bay Low Level - Lower The Low Level Alarm Setpoint To Eliminate Nuisance Alarm Due To Lower Lake Levels	Revision 0
5000121762	P-7A, P-7B AND P-7C Service Water Pump Refurbishment	Revision 0
9121	Install Devices to Block/Strain Flow Through Reactor Building 590' Elevation Equipment Drains to Reactor Building Sump	Revision 0

10 CFR 50.59 EVALUATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
07-0199	ESS Suction Header Cross-Tie Operation	Revision 0
08-0001	ESS Suction Header Cross-Tie Operation	Revision 1
08-0030	EC-5885, EDG 1-1 and Starting Air System Reliability Upgrades	Revision 0
09-0398	EC 15011/ FSAR Change Rev 27	Revision 2
08-0002	Replace Containment Spray Isolation Valves per GSI-191 Resolution	Revision 1
08-0094	Modification Package for Cycle 19 Reload Design, Reload W Assemblies	Revision 2

10 CFR 50.59 SCREENINGS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
09-0423	EC-15265 Updated DC Bus Short Circuit Ratings in FSAR	5/29/2009
08-0021	MCC Power Circuit Minimum Required Voltage Analysis	Revision 0
08-0064	Battery Single Cell Charging	3/27/2008
07-0248	Technical Specifications Bases Revised to Remove Extraneous Text	12/18/2007
07-0078	EC 10638, Disable Fast Transfer	Revision 0
07-0222	Evaluation of the Impact of 110% Emergency Diesel Generator Overload Operating Condition on Ambient Temperature	Revision 1
08-0298	RO-128-2, DG 1-2 24 Hour Load Run	Revision 14
08-0299	MO-74-2, Emergency Diesel Generator 1-2	Revision 67
08-0492	EM-20-01	Revision 2
09-0162	TSST ME-12, "ED-01 and ED-02 Battery Checks-Monthly	Revision 8
07-0178	Revise Set point for the Station Power Transformer 1-1 and 1-2 Winding Hot Spot and Hot Oil Alarms	Revision 0
09-0453	TSST RE, "Diesel Generator 1-1 Load Reject"	Revision 4
08-0531	Admin 1.04	Revision 0
09-0522	Admin 1.04/ Containment Entry & Egress	Revision 0
09-0550	Determination of Initial Condensate Storage Tank (T-2) Indicated Level to Ensure 100,000 Gallons of Available Inventory	Revision 2
09-0015	Diesel Fuel Oil Testing Program	Revision 0
09-0003	Revision of Low Suction Pressure Trip Setpoints for P-8A, P-8B, and P-8C	Revision 0
08-0549	Generation of Flow Rate Acceptance Criteria for Technical Specification Surveillance Test RO-216	Revision 2
08-0463	Install Devices To Block/Strain Flow Through Reactor Building 590' Elevation Equipment Drains To Reactor Building Sump	Revision 0
08-0020	Change Bay Alarms & Power Rate Input	Revision 0
08-0011	LIA 1338, Service Water Bay Low Level, Lower the Low Level Alarm Set Point to Eliminate Nuisance Alarm Due to Lower Lake Levels	Revision 0
07-0186	Augment Containment Purge When on Shutdown Cooling With Equipment Hatch Open and When LCO 3.7.12 is Not Applicable	Revision 0

CORRECTIVE ACTION PROGRAM DOCUMENTS GENERATED

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
CR-PLP-2009-5120	Typographical Error in Calculation EA-EC5885-01	11/5/2009
CR-PLP-2009-5129	Admin Issues in 50.59 Evaluation for Engineering Change 10306 (EC5000121797), ESS Suction Cross-Tie Operation	11/5/2009
CR-PLP-2009-5137	Agastat Time Delay Relays Not in Calibration Sheet Database	11/6/2009
CR-PLP-2009-5236	Acceptance Criteria Was Not Met for Calc EA-0EC8350-04	11/6/2009
CR-PLP-2009-5298	Administrative Error in Step 5.5.10 of MSE-E-45	11/17/2009
CR-PLP-2009-5312	PM to Change Tolerance for P-55B Aux Relays Has Not Been Implemented	11/17/2009
CR-PLP-2009-5315	PMID 50085808-02 Was Not Completed by its Scheduled Late Date	11/17/2009
CR-PLP-2009-5343	Condition Report Was Not Initiated for Agastat Relay Calibration Out of As-found Tolerance	11/18/2009
CR-PLP-2009-5349	Model Work Orders for PMQR 50085808-01 and 50085808-02 Incorrectly Cover the Same Scope RFI 198	11/18/2009
CR-CLP-2009-5359	Agastat Relay 62X/152-114, "Provide Time Delay on P-54C start", Is Not Explicitly Timed for Actuation	11/19/2009
CR-PLP-2009-5360	Condition Report Was Not Initiated for Agastat Relay Calibration Out of As-Found Tolerance	11/19/2009
CR-PLP-2009-05371	Relay 62X/152-114, "Provide Time Delay on P-54C start" As Found Time delay Outside of Expected Tolerance	11/19/2009
CR-PLP-2009-05236	EA-EC8350-04 Acceptance Criteria not Met	11/12/2009

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
CR-PLP-2009-05349	Model Work Orders for PMRQ 50085808-01 and PMRQ 50085808-02 Incorrectly Cover the Same Scope	11/18/2009
CR-PLP-2007-06193	Determine if Any Other Switches Require a Modified PM Strategy associated with VC-10 and VC-11	1/7/2008
CR-PLP-2009-04041	50.59 Screening for Rev 38 to GOP-14 Did Not Provide Sufficient Justification to Conclude that an Evaluation Was Not Needed	8/22/2009
CR-PLP-2009-02505	Sixteen CTs Were Disconnected and Reconnected with No Post Maintenance Testing	5/1/2009

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
CR-PLP-2009-03166	EN-DC-136, Temporary Modifications Requirement to Conduct and Document Periodic Review of Installed Temporary Modifications Not Completed	6/16/2009
CR-PLP-2009-02274	251X-301 Model 7806E Lockout Relay Did Not Actuate 251-1 Overcurrent Relay Flags During Testing	4/21/2009
CR-PLP-2009-00439	Fast Transfer from Station Power Transformer 1-2 (EX-02) to Start Up Transformer 1-2 (EX-04) is Not in Compliance with FSAR	2/3/2009
CR-PLP-2004-01678	Agastat Relay Test Failure During Diesel Control Circuit Calibration	3/3/2004
CR-PLP-2009-00340	Ten Safety Related Agastat Time Delay Relays Not Located in Indus Asset Suite Database	1/27/2009
CR-PLP-2009-00348	Engineering Analysis EA-A-PAL-90-018-01, Revision 2 Does Not Include Timer Delay Repeat Accuracy Error	1/28/2009
CR-PLP-2008-02011	Technical Specification acceptance criterion for fuel oil determined to be non conservative	05/02/2008
CR-PLP-2009-01792	An uncontrolled set of Emergency Operator actions were not formalized into a procedure	04/06/2009
CR-PLP-2008-03681	Administrative issues Identified during 50.59 documentation reviews	08/28/2008
CR-PLP-2009-03981	PAD for the Administrative Procedure AP 1.04, "Containment Entry and Egress" failed to perform a 50.59 screening review	08/19/2009
CR-PLP-2009-03503	Administrative Condition Report written to document an Emergency Temporary Modification Implementation	07/10/2009
CR-PLP-2008-04913	Calculation Deficiencies Associated with the Station Battery Chargers	12/04/2008
CR-PLP-2007-03617	Probable Incorrect Winding and Liquid Temperature Alarm Set points for EX-02 (Station Power Transformer 1-2)	09/06/2007
CQ-HQN-2009-00495	Evaluate PAD Question V.E for Simplification or Elimination	06/13/2009
CR-PLP-2009-03982	50.59 Evaluation for EC8350 did not Properly Address Question 2	8/19/2009
CR-PLP-2008-00250	MV-CVC808 Leaks by Allowing Leakage Downstream at the Pipe Cap	1/18/2008
CR-PLP-2007-04002	Concentrations of Noble Gases in Containment Increased	9/15/2007
CR-PLP-2008-04707	Allowable Water Level in T-10A	11/19/2008
CR-PLP-2007-04145	S/G Manway HEPA Filter Installed Backwards	9/19/2007

CORRECTIVE ACTION PROGRAM DOCUMENTS REVIEWED

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
CR-PLP-2008-00614	VC-11 CR HVAC Chiller failed to start	2/7/2008

CALCULATIONS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EA-EC5885-01	Evaluation of Starting Air Capacity for the Emergency Diesel Generators	Revision 0
EA-ELEC-VOLT-050	MCC Control Circuit Voltage Drop Analysis	Revision 1
EA-ELEC-AMP-025	Battery Chargers ED-15, 16, 17, 18 Output Current Required to Recharge Station Batteries ED-01 & ED-02	Revision 1
EA-ELEC-AMP-025	Battery Chargers ED-15, 16, 17, 18 Output Current Required to Recharge Station Batteries ED-01 & ED-02	Revision 2
EA-EC10838-01	Allowable Time for Operating HPSI Pump with no CCW Cooling	Revision 0
EA-EC8350-04	Calculation for Sizing New Nitrogen Bottles Backup N ₂ Supply at Station #5 and Evaluation of Seismically Mounting New Nitrogen Bottles	Revision 0
EA-FC722-02	Sizing of N ₂ Distribution Lines and Cylinders	Revision 0

DRAWINGS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
E251	Schematic Diagram—Containment Spray Pump – P54C, Sh. 3	1
E12660, Sh 44	Terminal Block Wiring Diagram, Section C04-1	Revision 40
E12660, Sh 46	Terminal Block Wiring Diagram, Section C04-2	Revision 60

PROCEDURES

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
RO-12	Technical Specification Surveillance Procedure – Containment High Pressure (CHP) and Spray System Tests	April 11, 2009
RT-8C	Technical Specification Surveillance Procedure – Engineered Safeguards System – Left Channel	April 8, 2009
EN-DC-324	Preventive Maintenance Program	Revision 6
EN-LI-102	Corrective Action Process	Revision 13
EN-WM-105	Planning	Revision 5
EN-LI-101	10 CFR 50.59 Evaluation Program	Revision 5

PROCEDURES

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
EN-LI-100	Process Applicability Determination	Revision 8
FP-E-SE-03	10 CFR 50.59 and 72.48 Processes	Revision 0
SOP-30	Station Power	Revision 55
1.04	Containment Entry an Egress	Revision 2
RE-136	Performance Test- Battery Charger No. 4 (ED-18)	Revision 7
EN-LI-100	Process Applicability Determination	Revision 8
ME-12	ED-01 and 02 Battery Checks- Monthly	Revision 36
DWO-1	Operator's Daily/ Weekly Items Modes 1,2,3, and 4	Revision 86
EM-20-01	Emergency Diesel Generator Reliability Program	Revision 2
ARP-17	Station Power Transformer 1-2 EK-X02 on SP Trans 1-2	Revision 6
EN-DC-198	Emergency Diesel Generator Reliability Program	Revision 1
MO-7A-2	Emergency Diesel Generator 1-2	Revision 70
RO-128-2	Diesel Generator 1-2 24-Hour Load Run	Revision 16
SOP-24	Ventilation and Air Conditioning System	Revision 53
RO-144	Comprehensive Pump Test Procedure Service Water Pumps P-7A, P-7B, and P-7C	Revision 5
COP-22A	Diesel Fuel Oil Program	Revision 14

WORK ORDERS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
24324626	PM-Diesel Gen K-6A Agastat Relay Functional Check	3/6/2004
24110555	PM-Diesel gen K-6A Agastat Relay Functional Check	10/7/2001
00298439	PM-Diesel Gen K-6A Agastat Relay Functional Check	4/4/2007
51662409	Replace Control & Timing Relays (VC-11)	12/14/2008
00269849	Bench Test Control & Timing Relays for VC-11	6/14/2006
00162224	Replace ITR and 2TR on VC-11	
51634053	PS-1687, CRHVAC, VC-11, Compressor Oil Pressure Found Tripped	2/9/2008
51637079	Replacement of PC/0218B for P-55B	9/23/08
52189957	Replace Control & Timing Relays 1CR & 1TR (VC-10)	4/21/2010
51624432	ED-02; Performance Test PER FE-5B	Revision 1
00165102	ED-01; EVI-27/D1; Replace Digital Meter	Revision 2
51624433	ED-01; Performance Test PER FE-5A	Revision 1
00165108	ED-02; EVI-27/D2; Replace Digital Meter	Revision 2

WORK ORDERS

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
00295847	Performance Test- Battery ED-02	Revision 1
00290972	Perform Diagnostic per MSM-M-57, CV-3002	10/10/ 2007
00290970	Perform Diagnostic per MSM-M-57, CV-3001	10/10/2007
52023729	QO-21B – P8B, IST Auxiliary Feedwater System	7/20/2009

OTHER DOCUMENTS/REFERENCES

<u>Number</u>	<u>Description or Title</u>	<u>Date or Revision</u>
SC-92-099	Palisades Nuclear Plant - Specification Changes Addition of Time Delay Relay 62X/152-114 to Control Circuit for P-54C CSP	0
EA-APAL-90-018-01	DBA Sequencer Timing Study	2
QA-4-2008-PLP-1	Quality Assurance Audit Report	09/5/2008
LO-PLP-2008-00210	Evaluation of Changes, Tests, or Experiments (50.59 Processes) and Permanent Plant Modifications	8/14/2009
PCRS # LO-WTPLP-2009-00220	Snapshot Assessment on Process Applicability Determinations	7/15/2009
Series E7000	Agastat Nuclear Qualified Time Delay Relays Vendor Specifications	4/24/2002
ML092890336	50.59 Annual Report of Changes, Tests or Experiments Made Without Approval	10/15/2009
WI-SC-91-0044-02	Testing of the Replacement of Relay 63X/LS-0204 Per SC-91-044	3/1/1991
EAR-2003-0060	Change Setpoint for Intake Bay Low Level alarm	Revision 0
M-203	Safety Injection, Containment Spray and Shutdown Cooling	Revision 25
M-222	Miscellaneous Gas Supply Systems	Revision 29
FSAR Change 1051369	Replaced Containment Spray Valves (CV-3001 & CV-3002) with Throttling Valves	9/28/2006
PPAC CVC021	Periodic and Predetermined Activity Change Form	11/25/03
VC-10, VC-11	System Health Report for CR HVAC	9/10/2009
EC 10638	Temporary Modification to Disable Fast Transfer	Revision 1

LIST OF ACRONYMS USED

ACE	Apparent Cause Evaluation
ADAMS	Agencywide Documents Access and Management System
CFR	Code of Federal Regulations
CR	Control Room
CR	Condition Report
DRS	Division of Reactor Safety
EC	Engineering Change
IMC	Inspection Manual Chapter
IR	Inspection Report
LOOP	Loss of Offsite Power
MPFF	Maintenance Preventable Functional Failures
MR	Maintenance Rule
NCV	Non-Cited Violation
NEI	Nuclear Energy Institute
NRC	U.S. Nuclear Regulatory Commission
PARS	Public Available Records System
SDP	Significance Determination Process
SE	Safety Evaluation
SR	Safety Related
TDR	Time Delay Relay
WO	Work Order

C. Pardee

-2-

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Sincerely,

/RA/

Robert Daley, Chief
Engineering Branch 3
Division of Reactor Safety

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