September 7, 2004

Mr. Dennis L. Koehl
Site Vice-President
Point Beach Nuclear Plant
Nuclear Management Company, LLC
6610 Nuclear Road
Two Rivers, WI 54241-9516

SUBJECT: POINT BEACH NUCLEAR PLANT, UNITS 1 AND 2
NRC SAFETY SYSTEM DESIGN AND PERFORMANCE CAPABILITY
INSPECTION 05000266/2004004(DRS); 05000301/2004004(DRS)

Dear Mr. Koehl:

On July 16, 2004, the U.S. Nuclear Regulatory Commission (NRC) completed a baseline inspection at your Point Beach Nuclear Plant, Units 1 and 2. The enclosed report documents the inspection findings, which were discussed on July 16, 2004, with you and members of your staff.

The 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 procedures and records, observed activities, and interviewed personnel. Specifically, this inspection focused on the design and performance capability of the service water and 480 Vac systems. We noted that design modifications that you have made to the service water system have enhanced the system=s operational availability and reliability. The inspection team did identify several examples where design outputs were not properly translated into field documents. The team also identified examples which illustrated knowledge and program implementation deficiencies pertaining to certain ASME Code standards. Collectively, these inspection findings illustrated the continuing challenge which remains for the engineering organization. We will continue to monitor your progress in implementing engineering program improvements as part of our Confirmatory Action Letter follow-up activities. In addition, four Action Plan steps of your Excellence Plan were reviewed during the inspection. The reviews conducted during this inspection were in-progress assessments with the full effectiveness of the Action Plans being assessed during future follow-up inspections.

Based on the results of this inspection, six findings of very low safety significance (Green) were identified which were also determined to involve violations of NRC requirements. Because these violations were of very low safety significance and because they have been entered into your corrective action program, the NRC is treating these findings as Non-Cited Violations in accordance with Section VI.A.1 of the NRC's Enforcement Policy.

If you contest the subject or severity of the 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 Point Beach Nuclear Plant.

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

Sincerely,

***/RA/***

Steven A. Reynolds, Acting Director
Division of Reactor Projects

Docket Nos. 50-266; 50-301
License Nos. DPR-24; DPR-27

Enclosure: Inspection Report 05000266/2004004(DRS);
05000301/2004004(DRS)

cc w/encl: F. Kuester, President and Chief
Executive Officer, We Generation
J. Cowan, Executive Vice President
Chief Nuclear Officer
D. Cooper, Senior Vice President, Group Operations
D. Weaver, Nuclear Asset Manager
Plant Manager
Regulatory Affairs Manager
Training Manager
Site Assessment Manager
Site Engineering Director
Emergency Planning Manager
J. Rogoff, Vice President, Counsel & Secretary
K. Duveneck, Town Chairman
Town of Two Creeks
Chairperson
Public Service Commission of Wisconsin
J. Kitsembel, Electric Division
Public Service Commission of Wisconsin
State Liaison Officer

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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| Docket Nos: | 50-266; 50-301 |
| License Nos: | DPR-24; DPR-27 |
| Report No: | 05000266/2004004(DRS); 05000301/2004004(DRS) |
| Licensee: | Nuclear Management Company, LLC |
| Facility: | Point Beach Nuclear Plant, Units 1 and 2 |
| Location: | 6610 Nuclear Road<br>Two Rivers, WI 54241 |
| Dates: | June 28 through July 16, 2004 |
| Inspectors: | S. Burgess, Senior Reactor Analyst/Team Leader<br>C. Baron, Mechanical Contractor<br>M. Holmberg, Engineering Inspector<br>A. Klett, Engineering Inspector<br>J. Neurauter, Engineering Inspector<br>G. O=Dwyer, Engineering Inspector<br>G. Skinner, Electrical Contractor<br>N. Valos, Operations Inspector<br>R. Winter, Engineering Inspector |
| Observer: | J. Bond, Nuclear Safety Professional |
| Approved by: | J. Lara, Chief<br>Electrical Engineering Branch<br>Division of Reactor Safety (DRS) |

Enclosure

## SUMMARY OF FINDINGS

IR 05000266/2004004(DRS); 05000301/2004004(DRS); 06/28/2004 - 07/16/2004; Point Beach Nuclear Plant, Units 1 & 2; Safety System Design and Performance Capability.

The inspection was a three week baseline inspection of the design and performance capability of the service water and 480 Vac systems. The inspection was conducted by regional engineering inspectors and a mechanical and electrical consultant. Six issues of very low safety significance were identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter 0609, ASignificance 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 3, dated July 2000.

A. Inspector-Identified and Self-Revealing Findings

**Cornerstone: Mitigating Systems**

- Green. The inspectors identified a Non-Cited Violation of 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(g)(5)(iv) associated with failure to perform testing of the buried service water header piping in accordance with the American Society of Mechanical Engineers Code Section XI requirements. The licensee=s corrective actions included verifying that quarterly system flow tests provided basis for service water header operability.

  This finding was more than minor because it affected the Mitigating Systems Cornerstone objective of equipment reliability and if left uncorrected, could have allowed undetected through-wall flaws to develop in the header piping. These flaws could then continue to grow in size until leakage from the buried headers degraded system operation or if sufficient general corrosion occurs, a gross rupture or collapse of the piping sections could occur. The finding is of very low safety significance and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2b.1)

- Green. The inspectors identified a Non-Cited Violation of 10 CFR 50.55a(g)(4) associated with failure to conduct non-destructive examinations and repair of valve SW 0322 in accordance with American Society of Mechanical Engineers Code Section XI requirements. The licensee=s corrective actions included replacement of the valve during the next opportunity.

  This finding was more than minor because it affected the Mitigating Systems Cornerstone objective of equipment reliability and if left uncorrected, could have allowed unacceptable base metal flaws to remain in service. Additionally, the failure to heat treat the weld repairs could have resulted in high welding residual stresses and untempered

martensite formation. Untempered martensite is a hard brittle phase of steel (e.g., not flaw tolerant) and can serve to allow rapid crack propagation that could jeopardize the pressure retaining function of the valve body. The finding is of very low safety significance and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2b.2)

- Green. The inspectors identified a Non-Cited Violation of 10 CFR 50.55a(g)(4) associated with failure to implement the American Society of Mechanical Engineers Code Section XI examinations and repair requirements for service water pump discharge check valves SW 32C and SW 32F. The licensee=s corrective actions included verifying that quarterly surveillance tests verified check valve operability.

  This finding was more than minor because it affected the Mitigating Systems Cornerstone objective of equipment reliability and if left uncorrected, the failure to perform the required examinations could have allowed unacceptable base metal flaws to remain in-service. Additionally, the failure to select and follow a repair Code or standard may have resulted in inadequate post weld heat treatments for the weld repairs that could result in high welding residual stresses and untempered martensite formation. Untempered martensite is a hard brittle phase of steel (e.g., not flaw tolerant) and can serve to allow rapid crack propagation which could jeopardize the pressure retaining function of these valve disks. The finding is of very low safety significance and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2b.3)

$ Green. The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, ADesign Control,@ in that, the design bases for the maximum Condensate Storage Tank (CST) temperature was not correctly translated into procedures and instructions. Specifically, the Main Steam Line Break (MSLB) Containment Integrity Analysis assumed a maximum value of 100°F for the temperature of the water in the CST, while operations procedures allowed a maximum of 120°F for the CST temperature. This finding applies to both units. The licensee=s corrective actions included procedural changes to reflect the correct temperature limit.

  This finding was more than minor because an evaluation was required to ensure that accident analysis requirements were met, since the CST was heated up to greater than the maximum analysis value of 100°F during unit startup/shutdown operations with the CST aligned to the operating unit. The finding is of very low safety significance and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2b.4)

$ Green. The inspectors identified a Non-Cited Violation of Technical Specification Surveillance Requirements SR 3.7.8.1 and SR 3.6.3.2 associated with the periodic verification of the position of valves and flanges in the service water (SW) system flow paths servicing safety related equipment and in lines associated with containment isolation. Specifically, the licensee did not verify that approximately 100 valves in the

SW system flow path servicing safety related equipment that were not locked, sealed, or otherwise secured in position, were in the correct position every 31 days while the Units were in Mode 1, 2, 3, or 4. In addition, the licensee did not verify that 12 containment isolation manual valves were closed and two pipe fittings associated with containment isolation were in place every 31 days while the Units were in Mode 1, 2, 3, or 4. This finding applies to both units. The licensee=s corrective actions included locking the appropriate valves and procedural changes.

This finding was more than minor because it was, for the most part, associated with the Mitigating Systems attribute of Configuration Control, which affected the Mitigating Systems Cornerstone objective of ensuring the availability and reliability of the service water (SW) system to respond to initiating events to prevent undesirable consequences. The finding is of very low safety significance and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.2b.5)

$ Green. The inspectors identified a Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, ADesign Control,@ for the licensee=s failure to adequately translate original design requirements for the 480 Vac system into specifications during procurement of new and replacement equipment. The original specifications for equipment such as motors and cables identified the intended service as suitable for a 480 Vac ungrounded system. Specifications for replacement motors did not specify the intended service as an ungrounded system. The licensee=s corrective actions included a verification that the identified equipment that did not specify use in a 480 Vac ungrounded system could withstand the overvoltage conditions that can occur on ungrounded systems.

This finding was more than minor because it involved the design control attribute of the Mitigating Systems cornerstone and affected the objective of ensuring the capability of the safety related 480 Vac system in response to initiating events to prevent undesirable consequences. Specifically, the failure to specify the correct service conditions may have resulted in motors being supplied without the enhanced insulation systems required to withstand the overvoltage conditions that can occur on ungrounded systems when a single line to ground occurs. The finding is of very low safety significance and screened as Green using the SDP Phase 1 screening worksheet. (Section 1R21.3b)

**B. <u>Licensee-Identified Violations</u>**

None.

## REPORT DETAILS

### 1. REACTOR SAFETY

**Cornerstone: Mitigating Systems and Barrier Integrity**

1R21 Safety System Design and Performance Capability (71111.21)

Introduction: Inspection of safety system design and performance verifies the initial design and subsequent modifications and provides monitoring of the capability of the selected systems to perform design bases functions. As plants age, the design bases may be lost and important design features may be altered or disabled. The plant risk assessment model is based on the capability of the as-built safety systems to perform the intended safety functions successfully. This inspectable area verifies aspects of the mitigating systems cornerstone for which there are no indicators to measure performance.

The objective of the safety system design and performance capability inspection is to assess the adequacy of calculations, analyses, other engineering documents, and operational and testing practices that were used to support the performance of the selected systems during normal, abnormal, and accident conditions.

The systems and components selected were the service water (SW) and 480 Vac systems (two samples). These systems were selected for review based upon:

$ having high probabilistic risk analysis rankings;
$ considered high safety significant maintenance rule systems; and
$ not having received recent NRC review.

The criteria used to determine the acceptability of the system=s performance was found in documents such as:

$ licensee technical specifications (TS);
$ applicable updated final safety analysis report (UFSAR) sections; and
$ the systems' design documents.

The following system and component attributes were reviewed in detail:

System Requirements

Process Medium - water;
Energy Source - electrical power, steam, air;
Control Systems - initiation, control, and shutdown actions;

Operator Actions - initiation, monitoring, control, and shutdown; and
Heat Removal - ventilation.

System Condition and Capability

Installed Configuration - elevation and flow path operation;
Operation - system alignments and operator actions;
Design - calculations and procedures; and
Testing - flow rate, pressure, temperature, voltage, and levels.

Component Level

Equipment Qualification - temperature and radiation; and
Equipment Protection - seismic and electrical.

.1 System Requirements

a. Inspection Scope

The inspectors reviewed the UFSAR, TS, system notebooks, lesson plans, drawings, and other available design basis information, as listed in the attached List of Documents, to determine the performance requirements of SW and the 480 Vac systems. The reviewed system attributes included process medium, energy sources, control systems, operator actions, and heat removal. The rationale for reviewing each of the attributes was:

**Process Medium**: This attribute required review to ensure that the SW system would supply the required amount of water to the safety-related equipment following normal transients and design basis events.

**Energy Sources**: This attribute needed to be reviewed to ensure that the SW and 480 Vac systems would function when called upon, and that appropriate SW valves would have sufficient power to change state when so required.

**Controls**: This attribute required review to ensure that the automatic controls for the SW and 480 Vac systems were properly established. Additionally, review of alarms and indicators of off-normal conditions was necessary to ensure that operator actions would be accomplished in accordance with the design.

**Operations**: This attribute was reviewed because operator actions played an important role ensuring that the selected systems would accomplish their safety functions.

**Heat Removal**: This attribute was reviewed to ensure that pump bearings were adequately cooled and that room coolers provided sufficient heat removal capability for equipment needed for accident mitigation.

b. Findings

No findings of significance were identified.

.2 System Condition and Capability

a. Inspection Scope

The inspectors reviewed design basis documents and plant drawings, abnormal and emergency operating procedures, requirements, and commitments identified in the UFSAR and TS. The inspectors compared the information in these documents to applicable electrical, instrumentation and control, and mechanical calculations, setpoint changes, and plant modifications. The inspectors also reviewed operational procedures to determine whether instructions to operators were consistent with design assumptions.

The inspectors reviewed information to determine whether the actual system condition and tested capability was consistent with the identified design bases. Specifically, the inspectors reviewed the installed configuration, the system operation, the detailed design, and the system testing, as described below.

**Installed Configuration**: The inspectors determined that the installed configuration of the SW and 480 Vac systems met the design basis by performing detailed system walkdowns. The walkdowns focused on the installation and configuration of piping, components, and instruments; the placement of protective barriers and systems; the susceptibility to flooding, fire, or other environmental concerns; physical separation; provisions for seismic and other pressure transient concerns; and the conformance of the currently installed configuration of the systems with the design and licensing bases.

**Operation**: The inspectors performed a procedure walk-through of selected manual operator actions to determine if the operators had the knowledge and tools necessary to accomplish actions credited in the design basis.

**Design**: The inspectors reviewed the mechanical, electrical, and instrumentation design of the SW and 480 Vac systems to determine whether the systems would function as required under design conditions. This included a review of the design basis, design changes, design assumptions, calculations, boundary conditions, and models as well as a review of selected modification packages. Instrumentation was reviewed to determine appropriateness of applications and setpoints based on the required equipment function. Additionally, the inspectors performed limited analyses in several areas to determine the appropriateness of the design values.

**Testing**: The inspectors reviewed records of selected periodic testing and calibration procedures and results to determine whether the design requirements of calculations, drawings, and procedures were incorporated in the system and were adequately demonstrated by test results. Test results were also reviewed to ensure automatic initiations occurred within required times and that testing was consistent with design basis information.

b. Findings

b.1 Failure to Perform Code Testing to Confirm the Integrity of Buried Service Water Headers

Introduction: The inspectors identified a Non-Cited Violation (NCV) of 10 CFR 50.55a(g)(4) and 10 CFR 50.55a(g)(5)(iv) having very low safety significance (Green) for failure to perform testing of the buried SW header piping in accordance with the American Society of Mechanical Engineers (ASME) Code Section XI requirements.

b.1.1 Failure to Test Service Water Headers During Last Code Interval

Description: The Unit 1 and 2 SW systems contain a buried 31-inch diameter header that carries service water from the pump house to SW system loads in the auxiliary and turbine buildings. These buried headers were installed with protective coatings applied to the exterior of the piping, but were not actively protected from corrosion by a cathodic protection system. Therefore, the only means of confirming that interior or exterior corrosion had not affected the pressure retaining integrity of this piping was through periodic testing required by the Section XI of the ASME Code. The inspectors identified that this periodic testing had not been performed.

On July 1, 2004, the inspectors identified that the licensee had not performed the periodic pressure drop test or change in flow rate test to confirm the integrity of the buried SW headers as required by 1986 Edition of Section XI, IWA-5244 (the licensee was committed to this Edition of the ASME Code during the previous Code Inservice Inspection (ISI) interval). The licensee acknowledged that the 1986 Code Edition requirements were not met, but considered that compliance with the current requirements was achieved for nonisolable buried pipe as identified in the 1998 Edition through 2000 Addenda of Section XI (see Section b.1.2). Therefore, the licensee documented in CAP 057701 that this was an administrative issue and that there were no operability concerns. The inspectors questioned the licensee staff as to why a failure to complete Code testing was an administrative issue. This question prompted the licensee staff to initiate a second CAP 057789, in which the licensee staff documented that the quarterly system flow test (IT-7) provided the basis for confirming SW header operability (e.g., no gross leakage existed because the SW system flow was above minimum requirements).

Analysis: The inspectors determined that the failure to perform the required periodic testing of the buried SW headers or request NRC relief from the ASME Code requirements was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was greater than minor in accordance with Inspection Manual Chapter (IMC) 0612, APower Reactor Inspections Reports,@ Appendix B, AIssue Disposition Screening,@ because, if left uncorrected, the failure to perform the required periodic tests could have allowed undetected through-wall flaws to develop. These flaws could then continue to grow in size until leakage from the buried headers degrades system operation or if sufficient general corrosion occurs, a gross rupture or collapse of the piping sections could occur. This finding was assigned to the Mitigating System Cornerstone because the affected headers were in the SW system (mitigating system) and the finding affected the Mitigating System Cornerstone objective of equipment reliability. The inspectors evaluated the finding using Inspection Manual Chapter 0609, ASignificance Determination Process,@ Appendix A, ASignificance Determination of Reactor Inspection Findings for At-Power Situations,@ Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system=s safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Title 10 CFR 50.55a(g)(4) requires, in part, that throughout the service life of a boiling or pressurized water reactor facility, components classified as ASME Code Class 1, 2, and 3 must meet requirements of Section XI. Section XI, IWA-5244, ABuried Components,@ required A(a) In nonredundant systems where buried components are isolable by means of valves, the visual examination VT-2 shall consist of a leakage test that determines the rate of pressure loss. Alternatively, the test may determine the change in flow between the ends of the buried components...@ or A(b) In redundant systems where buried components are nonisolable, the visual examination VT-2 shall consist of a test that determines the change in flow between ends of the buried components.@

Title 10 CFR 50.55a(g)(5)(iv) requires, in part, where an examination required by the Code or Addenda is determined to be impractical by the licensee and is not included in the revised ISI Program as permitted by paragraph (g)(4) of this section, the basis for this determination must be demonstrated to the satisfaction of the commission not later than 12 months after and each subsequent 120-month period of operation during which the examination is determined to be impractical.

Contrary to these requirements, as of July 1, 2004, the licensee failed to perform the pressure drop or change in flow rate testing required on the buried portions of the 31-inch SW system headers. Additionally, as of June 30, 2003, which was 12 months

after the third 120-month Code ISI interval end date, the licensee had not submitted to the NRC the basis for considering this testing impractical. However, because of the very low safety significance of this finding and because the issue was entered into the licensee=s corrective action program (CAPs 057866, 057789, 057701), it is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000266/2004004-01; NCV 05000301/2004004-01).

b.1.2 Lack of Service Water Headers Testing During Current Code Interval

Description: On July 1, 2004, the inspectors identified that the licensee did not intend to perform a pressure drop test or change in flow rate test to confirm the integrity of the buried SW system headers during the current 120-month Code ISI interval that started on July 1, 2002. For this Code ISI interval, the licensee was committed to follow the requirements of the 1998 Edition through 2000 Addenda of the ASME Code of Section XI. With respect to this Code Edition, the licensee stated that APressure testing of the SW system is performed on a 40 month interval; however, due to the installed and licensed configuration of the plant, it is not prudent to suspend flow to perform a pressure drop test. In addition, it is not likely that the header sectionalizing valves would be sufficiently leak-tight to obtain valid test results using a pressure drop method.@ Further, the licensee stated, AThere is an insufficient length of straight upstream piping in which to install flow instrumentation with the accuracy and precision necessary to obtain valid flow test results. Even the downstream flow instrumentation that is installed (which does have adequate straight runs upstream and downstream) has an uncertainty of approximately 300gpm. Based upon these considerations, the piping cannot be considered isolable to the extent necessary to perform valid testing per IWA-5244(b)(1). IWA-5244(b)(2) requires that the system pressure test for non-isolable buried components shall consist of a test to confirm that flow during operation is not impaired. The frequent performance of IT-7A through F verifies that flow through the piping is in fact unimpaired...@

The inspectors noted that each of the buried SW headers is surrounded by butterfly type isolation valves; therefore, the inspectors concluded that the requirements of the 1998 Edition 2000 Addenda of Section XI, Article IWA-5244(b)(1) were applicable. The licensee=s basis for concluding that the buried section of SW pipe was nonisolable appeared to be a justification for deviation from the 1998 Section XI ASME Code Article IWA-5244(b)(1) requirements. Further, the licensee did not propose corrective actions to perform flow testing or pressure drop testing that was required under the previous ASME Code Section XI requirements.

Part 9900 of the NRC Inspection Manual would normally require the inspectors to submit the licensee=s position on a disputed Code requirement to the Office of Nuclear Reactor Regulation (NRR) for review. In this case, the licensee staff stated the intent to discuss the application of the 1998 Code requirements for testing of buried SW piping in a relief request submittal to justify not meeting the 1986 Edition of Section XI requirements. The inspectors confirmed with NRR staff that the scope of a relief request review for this topic would include the licensee=s application of current Code requirements in this area.

Therefore, the inspectors considered the issue of application of current Code requirements for buried SW piping addressed by the licensee=s planned corrective actions, which included submitting a Code relief request on the impracticality of testing the buried SW system headers (CAP 057866).

b.2 Non-Code Repair Performed on Unit 1 Service Water Valve SW 0322

Introduction: The inspectors identified an NCV of 10 CFR 50.55a(g)(4) having very low safety significance (Green) for failure to conduct non-destructive examinations and repair of valve SW 0322 in accordance with the ASME Code Section XI requirements.

Description: The licensee performed weld repairs (reference work order No. 9709004) to erosion cavities identified inside the valve body of SW 0322, which is the outlet isolation/throttle valve to component cooling water heat exchanger 12A. The inspectors identified that the licensee had failed to perform nondestructive examinations and implement a weld repair process in accordance with Section XI of the ASME Code.

In August of 1997, the licensee added weld metal to ten erosion cavities inside the valve body of SW 0322 to restore minimum wall thickness. The final acceptance was recorded as a visual examination to verify Aoriginal contour@ and a system leakage test. On July 1, 2004, the inspectors identified that the licensee had not performed liquid penetrant or magnetic particle examinations of the repair cavity surfaces to verify the indications were reduced to an acceptable size in accordance with requirements of Article IWD-4200(b)(1) of the 1986 Edition of Section XI. The licensee documented this non-compliance in CAP 057711 and concluded that valve SW 0322 was operable based on annual thickness measurements and no noted problems with valve performance.

The inspectors also identified that the licensee had not performed the weld repair in accordance the Owners Design Specification and original Construction Code or Section III as required by Article IWA-4120 of Section XI. The licensee documented in the Code repair replacement form No. 97-0050, that USAS B16.5, BECH 6118-M-85 and Section XI (1986 Edition) were used for the repair of this valve. However, the licensee had not followed Section XI repair methods (e.g., half bead weld technique) and the other documents referenced did not contain any guidance on welded repairs. Subsequently, the licensee identified that the vendor drawing (William Powell drawing No. 059960) for the valve identified ASTM A-216 as the applicable specification for the weld repairs made on the body of this valve. ASTM A-216 required post weld heat treatments for weld repairs exceeding 20 percent of the wall thickness. The licensee had not performed a post weld heat treatment for these repairs, which exceeded 20 percent of the wall thickness and documented the failure to perform the required heat treatments in CAP 057799. The inspectors also identified that the weld procedure used for this repair may not be appropriate in that the weld metal applied by procedure (WPS-1) was potentially weaker than the minimum tensile strength required for ASTM A-216 Grade WCB, which required a minimum of 70,000 psi tensile strength. Specifically, in a weld metal tensile test recorded in procedure qualification report No. 34, specimen A-2 failed in the weld metal at 69,750 psi, which is less than the

minimum tensile strength required for ASTM A-216 grade WCB. The licensee entered this issue into CAP 057911 and concluded that valve SW 0322 was operable because of long acceptable service and the lack of flaws detected during ultrasonic thickness measurements.

Analysis: The inspectors determined that the failure to perform the required nondestructive examinations and implement a repair in accordance with Section XI of the ASME Code was a performance deficiency warranting a significance evaluation. The inspectors concluded that the finding was greater than minor in accordance with IMC 0612, APower Reactor Inspections Reports,@ Appendix B, AIssue Disposition Screening,@ because, if left uncorrected, the failure to perform the required surface examinations could have allowed unacceptable base metal flaws to remain in-service. The licensee=s failure to follow heat treatments in ASTM A-216 for the weld repairs could result in high welding residual stresses and untempered martensite formation. Untempered martensite is a hard brittle phase of steel (e.g., not flaw tolerant) and can serve to allow rapid crack propagation that could jeopardize the pressure retaining function of the valve body. This finding was assigned to the Mitigating System Cornerstone because the affected valve was in the SW system (mitigating system) and the finding affected the Mitigating System Cornerstone objective of equipment reliability. The inspectors evaluated the finding using Inspection Manual Chapter 0609, ASignificance Determination Process,@ Appendix A, ASignificance Determination of Reactor Inspection Findings for At-Power Situations,@ Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system=s safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.
Enforcement: Title10 CFR 50.55a(g)(4) requires, in part, that throughout the service life of a boiling or pressurized water reactor facility, components classified as ASME Code Class 1, 2 and 3 must meet requirements of Section XI. Section XI, Article IWD-4200(b)(1) required AAfter final grinding, the affected surfaces, including surfaces of cavities prepared for welding, shall be examined by magnetic particle or liquid penetrant method to ensure that the indication has been reduced to an acceptable limit in accordance with IWA-3000.@ Article IWA-4120(a) of Section XI required, ARepairs shall be performed in accordance with the Owners Design Specification and the original Construction Code of the component or system.@ The applicable specification for the material repaired was ASTM A-216 and Paragraph 10.2 required, in part, AWeld repairs shall be inspected to the same quality standards that are used to inspect the castings@ and Paragraph 10.3 required in part, ACastings containing any repair weld that exceeds 20 percent of the wall thickness or 1 inch, whichever is smaller, or ... shall be stress relieved or heat-treated after welding. This mandatory stress relief or heat treatment shall be in accordance with the procedure qualification used.@

Contrary to these requirements, on July 1, 2004, inspectors identified that in August of 1997 (reference work order No. 9709004), the licensee performed welded repairs to valve SW 0322 and failed to perform magnetic particle or liquid penetrant examinations after final grinding and failed to perform post weld stress relief or heat treatments for

repair cavities that exceeded 20 percent of the wall thickness. However, because of the very low safety significance of this finding and because the issue was entered into the licensee=s corrective action program (CAP 057711 and CAP 057877), it is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000266/2004004-02).

b.3 Pump Discharge Check Valves Improperly Exempted From The Code Repair/Replacement Requirements

Introduction: The inspectors identified an NCV of 10 CFR 50.55a(g)(4) having very low safety significance (Green) for failure to implement the ASME Code Section XI examination and repair requirements for SW pump discharge check valves SW 32C and SW 32F.

Description: On July 13, 2004, the inspectors identified a concern related to exemption of the SW pump discharge check valves from the ASME Code Section XI repair requirements. The licensee concluded in a number of work orders (beginning in 1990) performed on each of the SW pump discharge check valves that the valve disks were exempt from the ASME Code Section XI repair requirements. In licensee procedure NP 7.2.5, ARepair/Replacement Program,@ the licensee exempted valve disks from the repair/replacement program unless they were part of a Code Class boundary. However, the inspectors noted that Section XI, Article IWD-1100, AScope,@ stated, in part, that Code inspection, repair and replacement rules applied to Class 3 pressure retaining components. Further, Section III, Article ND-2110, defined pressure retaining material and this definition included valve disks. Therefore, the inspectors concluded that the pump discharge check valve disks should be considered Class 3 pressure retaining components because they have a safety function to close and retain SW system pressure for any non-running SW pump. The licensee subsequently contacted five other nuclear plants that considered these valves to be under the ASME Code repair/replacement requirements. The license also identified a memorandum from the former Chair of the ASME Repair/Replacement Committee, which recommended that a valve disk be considered as a pressure boundary material unless proven otherwise. Based upon this information, the licensee staff agreed with the inspectors and initiated CAP 057903 to track this issue. Consequently, the inspectors identified repairs to check valve disks on valves SW 32C and SW 32F for which the licensee had not implemented Code repair requirements.

On April 17, 2003, in work order No. 9938090, the licensee weld repaired six pitted areas on the check valve disk for SW pump discharge check valve SW 32F. For two of these six repair areas, the licensee ground out in excess of 20 percent of the disk wall thickness. On December 3, 2003, in work order No. 0304633, the licensee weld repaired seven pitted areas on the check valve disk for SW pump discharge check valve SW 32C. For five of these seven repair areas, the licensee ground out in excess of 20 percent of the disk wall thickness. The licensee documented in these work orders that these repairs were exempt from the Code repair/replacement requirements and did not perform the repairs in accordance with a Code or standard. The inspectors noted

that if the licensee had implemented the ASTM A-216 material standard to which these valve disks were originally made, a post weld heat treatment would have been required following these repairs. Because the licensee had not performed the weld repair in accordance the Owners Design Specification and original Construction Code or Section III, they were in violation of Article IWA-4120 of Section XI. Additionally, the licensee had not performed liquid penetrant or magnetic particle examinations of the repair cavities nor documented the method of cavity measurement in accordance with Section XI, Article IWD-4200(b)(1) and Article IWA-4130(a)(2). The licensee documented this issue in CAP 057903 and considered these valves operable based upon passing their quarterly surveillance tests.

Analysis: The inspectors determined that the failure to properly classify the SW pump discharge check valves SW 32C and SW 32F as pressure boundary material was a performance deficiency warranting a significance evaluation. Consequently, the licensee failed to perform the nondestructive examinations and repair requirements from Section XI of the ASME Code. The inspectors concluded that this finding was greater than minor in accordance with IMC 0612, "Power Reactor Inspections Reports," Appendix B, "Issue Disposition Screening," because, if left uncorrected, the failure to perform the required surface examinations could have allowed unacceptable base metal flaws to remain in service. The licensee's failure to select and follow a repair Code may have resulted in inadequate post weld heat treatments for the weld repairs that could result in high welding residual stresses and untempered martensite formation. Untempered martensite is a hard brittle phase of steel (e.g., not flaw tolerant) and can serve to allow rapid crack propagation that could jeopardize the pressure retaining function of the valve disk. The finding was assigned to the Mitigating System Cornerstone because the affected valve was in the SW system (mitigating system) and the finding affected the Mitigating System Cornerstone objective of equipment reliability. The inspectors evaluated the finding using Inspection Manual Chapter 0609, "Significance Determination Process," Appendix A, "Significance Determination of Reactor Inspection Findings for At-Power Situations," Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system's safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Title 10 CFR 50.55a(g)(4) requires, in part, that throughout the service life of a boiling or pressurized water reactor facility, components classified as ASME Code Class 1, 2 and 3 must meet requirements of Section XI. Section XI, Article IWD-4200(b)(1) required "After final grinding, the affected surfaces, including surfaces of cavities prepared for welding, shall be examined by magnetic particle or liquid penetrant method to ensure that the indication has been reduced to an acceptable limit in accordance with IWA-3000." Article IWA-4120(a) of Section XI required "Repairs shall be performed in accordance with the Owners Design Specification and the original Construction Code of the component or system."

Contrary to these requirements, on July 15, 2004, inspectors identified that on April 17, 2003, in work order No. 9938090, the licensee weld repaired six pitted areas on the check valve disk for SW pump discharge check valve SW 32F and did not perform a liquid penetrant or magnetic particle examination on repair cavities and did not perform the repair in accordance with a documented Code or standard.

Contrary to these requirements, on July 15, 2004, inspectors identified that on December 3, 2003, in work order No. 0304633, the licensee weld repaired seven pitted areas on the check valve disk for SW pump discharge check valve SW 32C and did not perform a liquid penetrant or magnetic particle examination on repair cavities and did not perform the repair in accordance with a documented Code or standard.

However, because of the very low safety significance of this finding and because the issue was entered into the licensee=s corrective action program (CAP 057903), it is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000266/2004004-03).

b.4 Higher than Allowed Condensate Storage Tank Temperature

Introduction: The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, ADesign Control,@ having very low safety significance (Green), for failure to ensure design bases for the maximum Condensate Storage Tank (CST) temperature was correctly translated into procedures and instructions. Specifically, the Main Steam Line Break (MSLB) Containment Integrity Analysis assumed a maximum value of 100°F for the temperature of the water in the CST, while operations procedures allowed a maximum of 120°F for the CST temperature.

Description: On June 29, 2004, the inspectors identified that the daily rounds performed by the in-plant operators in accordance with PBF-2032, ATurbine Bldg Log - Unit 1," Revision 73, allowed a maximum of 120°F for the CST temperature. The inspectors requested the licensee to affirm that all the applicable analyses used a CST temperature of 120°F or higher.

On June 30, 2004, the licensee determined that the current MSLB Containment Integrity Analysis (Calculation Note Number CN-CRA-01-070, which became effective on November 26, 2002), assumed a maximum value of 100°F for the auxiliary feedwater (AFW) temperature (the water source for the AFW system is taken from the CST and is thus equivalent to an assumption of a maximum of 100°F in the CST). Other analyses that used AFW temperature as an input (e.g., Loss of Normal Feedwater, Small Break LOCA, and AFW Pump NPSH analyses) assumed an AFW temperature of 120°F.

The licensee reviewed the daily rounds performed by the in-plant operators in accordance with PBF-2032, ATurbine Bldg Log - Unit 1," and determined that for the past year CST temperatures were well below 100°F unless procedure OI 150, ACondensate Storage Tank Operations,@ was in use. When OI 150 was performed during unit startup/shutdown operations, the CST was intentionally heated to a temperature of

greater than 100°F (with a target temperature of 110°F) so that the steam generators (SGs) could be filled with warm water to ensure SG pressure/temperature limits were met when performing procedures that involve pressurizing the SG shells for system leak checks. During the performance of OI 150, the AFW pumps for both the shutdown unit and the operating unit were aligned to the heated CST. A review determined that at various times from October 5, 2003, through October 11, 2003, the CST was heated to a temperature of greater than 100°F (with a maximum recorded value of 108°F) with Unit 1 in power operations and aligned to the heated CST. Also, at various times from April 11, 2004, through April 16, 2004, the CST was heated to a temperature of greater than 100°F (with a maximum recorded value of 108°F) with Unit 2 in power operations and aligned to the heated CST.

To address current operability, the licensee reviewed the most recent available CST temperature data from June 30, 2004, and determined that CST temperatures were well within the bounds of the MSLB Containment Integrity Analysis of 100°F (the temperature for CST T-24A was 56°F and the temperature for CST T-24B was 57°F).

To address the past adequacy of the current MSLB Containment Integrity Analysis, the licensee determined that the analysis assumed a containment spray (CS) temperature of 100°F, an initial containment temperature of 120°F, and an AFW temperature (i.e., CST temperature) of 100°F. This analysis resulted in a peak containment pressure of 59.8 psig when all bounding assumptions were applied (which was within the containment design pressure of 60 psig). An informal analysis performed by Westinghouse at the time of the analysis found that if AFW (or CST) temperature were decreased by 20°F, the peak containment pressure could be reduced by approximately 0.2 psi. Therefore, if the CST temperature was at the procedurally allowed maximum limit of 120°F and all remaining bounding assumptions applied, a peak containment pressure of 60.0 psig could have occurred. Since the actual CST temperatures never exceeded 110°F, the actual penalty for exceeding 100°F was less than 0.2 psi. Therefore, the containment design pressure of 60 psig would not have been exceeded.

Formal sensitivity analyses performed by Westinghouse at the time of the MSLB Containment Integrity Analysis found that if CS temperature (i.e., Refueling Water Storage Tank (RWST) temperature) were decreased by 20°F, the peak containment pressure would be reduced by approximately 0.5 psi. Also, if the initial containment temperature were decreased by 20°F, the peak containment pressure would be reduced by approximately 0.9 psi. The actual containment and RWST temperatures during the time periods when the CST temperature was greater than 100°F, were less than the 120°F values assumed in the analysis. The containment temperatures did not exceed 100°F and the RWST temperatures did not exceed 80°F during the time periods of elevated CST temperature. Based on the results of the sensitivity analyses and the actual plant parameters (i.e., containment and RWST temperatures) when CST temperatures exceeded 100°F, the licensee concluded that if a MSLB had occurred on the operating unit during the time periods of elevated CST temperature, that the peak containment pressure for the operating unit would not have been exceeded.

The licensee immediately placed procedure OI 150, ACondensate Storage Tank Operations,@ on administrative hold so that the procedure could not be used until the CST temperature limitation was revised to reflect analysis limits. The licensee also revised the daily operator rounds PBF-2032, ATurbine Bldg Log - Unit 1," on July 15, 2004, to reflect the limit of 100°F for CST temperature. The licensee entered this issue into the corrective action program as CAP 057671.

Analysis: The inspectors determined that the failure to correctly translate the design bases for the maximum CST temperature into procedures and instructions was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC 0612, APower Reactor Inspections Reports,@ Appendix B, AIssue Disposition Screening,@ because an evaluation was required to ensure that accident analysis requirements were met and the CST was heated up to greater than the maximum analysis value of 100°F during unit startup/shutdown operations with the CST aligned to an operating unit.

The inspectors evaluated the finding using Inspection Manual Chapter 0609, ASignificance Determination Process,@ Appendix A, ASignificance Determination of Reactor Inspection Findings for At-Power Situations,@ Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system=s safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, ADesign Control,@ requires, in part, that measures be established to assure that applicable regulatory requirements and the design basis are correctly translated into procedures and instructions.

Contrary to this requirement, on June 30, 2004, it was identified that since November 26, 2002, the design basis for the maximum allowable value for the CST temperature was not correctly translated into procedures and instructions, in that the MSLB Containment Integrity Analysis assumed a maximum value of 100°F for the temperature of the water in the CST, while operations procedures OI 150, ACondensate Storage Tank Operations,@ Revision 6, and PBF-2032, ATurbine Bldg Log - Unit 1," Revision 73, allowed a maximum of 120°F for the CST temperature. In addition, during the performance of OI 150, ACondensate Storage Tank Operations,@ at various times during the time period of October 5, 2003, through October 11, 2003, the CST was heated to a temperature of greater than 100°F with Unit 1 in power operations and aligned to the heated CST. Also, at various times during the time period of April 11, 2004, through April 16, 2004, the CST was heated to a temperature of greater than 100°F with Unit 2 in power operations and aligned to the heated CST. The CST temperature during portions of these time periods exceeded the maximum allowable analysis limit of 100°F. However, because this violation was of very low safety significance and because the issue was entered into the licensee=s corrective action program, this violation is being

treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (NCV 05000266/2004004-04; NCV 05000301/2004004-04).

b.5 Valves Not Meeting Technical Specification Requirements for Position Verification

Introduction: The inspectors identified an NCV of Technical Specifications (TS) having very low safety significance (Green) for failing to perform the required periodic verification of the position of approximately 100 valves in the SW system flow path servicing safety-related equipment. In addition, the licensee did not verify that 12 containment isolation manual valves were closed and two pipe fittings associated with containment isolation were in place at the required periodic frequency.

Description: On June 30, 2004, the inspectors identified approximately 80 valves in the SW system flow path servicing safety-related equipment that were not periodically verified per TS Surveillance Requirement (SR) 3.7.8.1 to be in the correct position every 31 days while the Units were in Mode 1, 2, 3, or 4.

As a result the licensee placed both Units 1 and 2 in a 24 hour TS Surveillance Requirement (SR 3.0.3) for completion of the TS 3.7.8.1 surveillance. Temporary procedure changes were written and completed to address the valves identified. The licensee either locked the affected valves in the correct position or verified the valves to be in the correct position.

On July 1, July 6, and July 13, 2004, additional SW and containment isolation valves were identified by the NRC and licensee which were also required to be periodically verified to be in correct position to satisfy TS SR 3.7.8.1 and TS SR 3.6.3.2. On each date, the licensee placed both Units 1 and 2 in a 24 hour TS Surveillance Requirement (SR 3.0.3) for completion of the surveillance. Temporary procedure changes were written and completed to address the valves identified. The licensee either locked the affected valves in the correct position or verified the valves to be in the correct position.

In the extent of condition review, the licensee identified additional discrepancies in the component cooling system valve lineup checklists 1-CL-CC-001 and 2-CL-CC-001. This issue was entered into the corrective action program as CAP 057700 for evaluation.

The licensee entered these issues into the corrective action program as CAP 057665, CAP 057700, CAP 057712, CAP 057765, CAP 057766, CAP 057787, and CAP 057882. The licensee planned to perform a root cause evaluation on the issue of locked valves to investigate the issues that led to non-compliance with the TS surveillance requirements.

Analysis: The inspectors determined that the failure to perform TS SR 3.7.8.1 associated with periodic verification of the position of valves in the SW system flow path servicing safety-related equipment, and failure to perform TS SR 3.6.3.2 associated with periodic verification of the closed position of containment isolation manual valves/blind flanges was a performance deficiency warranting a significance evaluation. The inspectors determined that the finding was more than minor in accordance with IMC

0612, APower Reactor Inspection Reports,@ Appendix B, AIssue Dispositioning Screening,@ because it was, in most part, associated with the Mitigating Systems attribute of Configuration Control, which affected the Mitigating Systems Cornerstone objective of ensuring the availability and reliability of the SW system to respond to initiating events to prevent undesirable consequences. A potentially mispositioned valve in the safety related SW system flow path could render the affected equipment incapable of performing its required safety function.

The inspectors evaluated the finding using Inspection Manual Chapter 0609, ASignificance Determination Process,@ Appendix A, ASignificance Determination of Reactor Inspection Findings for At-Power Situations,@ Phase 1 screening, and determined that the finding screened as Green because it was not a design issue resulting in loss of function per GL 91-18, did not represent an actual loss of a system=s safety function, did not result in exceeding a TS allowed outage time, and did not affect external event mitigation.

Enforcement: Technical Specification Surveillance Requirement SR 3.7.8.1 requires, in part, that each SW valve in the flow path servicing safety-related equipment, that was not locked, sealed, or otherwise secured in position, be verified in the correct position every 31 days while the Units were in Mode 1, 2, 3, or 4.

Contrary to these requirements, on various occasions from June 30, 2004 through July 13, 2004, it was identified that since November 20, 2001 (following implementation of the Improved Technical Specifications per License Amendment Number 201 for Unit 1 and License Amendment Number 206 for Unit 2), the licensee did not verify the position of approximately 100 valves in the SW system flow path servicing safety-related equipment that were not locked, sealed, or otherwise secured in position, every 31 days while the Units were in Mode 1, 2, 3, or 4.

Technical Specification Surveillance Requirement SR 3.6.3.2 required, in part, that each containment isolation manual valve and blind flange that was located outside containment and was not locked, sealed, or otherwise secured and was required to be closed during accident conditions, be verified closed every 31 days while the Units were in Mode 1, 2, 3, or 4.

Contrary to these requirements, on July 6, 2004, it was identified that since November 20, 2001 (following implementation of the Improved Technical Specifications per License Amendment Number 201 for Unit 1 and License Amendment Number 206 for Unit 2), the licensee did not verify that 12 containment isolation manual valves were closed and two pipe fittings associated with containment isolation located outside containment were in place every 31 days while the Units were in Mode 1, 2, 3, or 4.

However, because this violation was of very low safety significance and because the issue was entered into the licensee=s corrective action program (CAP 057665, CAP 057700, CAP 057712, CAP 057765, CAP 057766, CAP 057787, and

CAP 057882), this violation is being treated as an NCV, consistent with Section VI.A.1 of the Enforcement Policy (NCV 05000266/2004004-05; NCV 05000301/2004004-05).

b.6 Additional Information Needed to Determine Adequacy of Piping Anchor Design for SW Subsystems to Containment Fan Coolers

Introduction: The inspectors identified an unresolved item concerning piping anchors that were not evaluated in detail to demonstrate compliance with the design codes associated with SW supply and return subsystems for primary containment fan coolers (CFCs).

Description: The inspectors reviewed a sample of design calculations for the reroute of SW supply and return piping subsystems associated with the replacement of primary CFCs. Calculations chosen for review were WE-200093, Revision 1 including Addendum B and WE-200095, Revision 2 including Addendum A.

These SW piping subsystems were evaluated by computer analysis methods. Separate computer models were developed for piping between modeling anchors such as containment wall penetrations, pipe anchors attached to the containment floor, and CFC heat exchanger nozzles. Due to this modeling technique, the total piping forces on each pipe anchor attached to the containment floor had reaction components from two piping models.

Pipe stresses were determined from loads and load combinations due to internal pressure, pipe system dead weight, pipe thermal expansion, seismic excitation, and hydraulic transient effects for a LOCA event coincident with a loss of offsite power (LOOP). Pipe support loads were determined from load combinations due to pipe system dead weight, pipe thermal expansion, seismic excitation, and hydraulic transient effects for a LOCA event coincident with a LOOP.

The original design code for these piping subsystems was United States Activities Board (USAB) B31.1.0-1967, APower Piping.@ The design calculations used the ASME Boiler and Pressure Vessel Code, Section III, Subsection NC and ND, 1977 Edition up to and including 1978 Addenda for design acceptance criteria. Design code differences were reconciled in documentation referenced in the design calculations.

As detailed on drawing P-438, sheet 12, the 8-inch nominal pump size (NPS) SW supply and return lines were routed vertically through a primary containment floor penetration and an oversized, concentric 14-inch NPS pipe cap. The pipe anchor design welded the 8-inch NPS SW process pipe to the 14-inch pipe cap, and the 14-inch NPS cap was also welded to a steel plate attached to the containment floor.

Both calculation WE-200093 for anchor HB-19-A2 and calculation WE-200095 for anchor HB-19-A2 qualified the anchor design and the anchor integral attachment weld to the 8-inch pipe using engineering judgement, determining that the structural capacity of the 14-inch NPS pipe cap was equal or greater than the 8-inch SW pipe. The

calculations indicated a full penetration weld attached the SW pipe to the 14-inch pipe cap. Since the piping met code acceptance criteria, the anchor=s integral weld to the pipe was qualified by comparison.

The inspectors inquired why pipe stress at the floor anchor locations were not evaluated using pipe reactions combined from two models since the anchor integral weld was subjected to pipe reaction forces from two distinct piping models. Also, drawings P-415, sheet 9 and P-438, sheet 12 indicated that the integral attachment welds may only be partial penetration groove welds, and therefore, could have less structural capacity than the 14-inch pipe cap.

The inspectors further reviewed ASME Section III, Division 1, Subsection NF, AComponent Supports,@ for code jurisdictional boundaries, design requirements and acceptance criteria related to integrally attached pipe supports. When applying the combined piping reactions into the 14-inch pipe cap, the inspectors determined that the engineering judgment used in the design calculations to qualify the 14-inch pipe cap and integral weld to the SW pipe was not valid. Specifically, the resultant stress in the pipe caps needed to be determined using all piping reaction forces and bending moments, not just the piping reaction moments used to calculate SW piping stress. Also, some of the piping reactions would cause localized bending stress in the 14-inch pipe caps. Therefore, the anchor 14-inch pipe caps may not have greater structural capacity than the SW pipe. Based on the magnitude of the piping reaction forces determined in calculation WE-200093 for Unit 2 anchors HB-19-A1, HB-19-A2, HB-19-A3 and HB-19-A4, the inspectors could not verify design code compliance without a detailed evaluation of all anchor structural components.

This item is considered to be unresolved pending additional information from the licensee to demonstrate that the integral piping anchor supports for SW supply and return subsystems to primary CFCs meet applicable design code requirements. The licensee has entered this issue into their corrective action system as condition report CAP 057947 (URI 05000266/2004-06; 05000301/2004-06).

.3 Components

a. Inspection Scope

The inspectors examined the SW and 480 Vac systems to ensure that component level attributes were satisfied. Specifically, the following attributes of the SW and 480 Vac systems were reviewed:

**Equipment/Environmental Qualification**: This attribute verifies that the equipment is qualified to operate under the environment in which it expected to be subjected to under normal and accident conditions. The inspectors reviewed design information, specifications, and documentation to ensure that the SW and 480 Vac components were qualified to operate in the temperatures and radiation fields specified in the environmental qualification documentation.

**Equipment Protection**: This attribute verifies that the SW and 480 Vac systems are adequately protected from natural phenomenon and other hazards, such as high energy line breaks, floods or missiles. The inspectors reviewed design information, specifications, and documentation to ensure that the SW and 480 Vac systems were adequately protected from those hazards identified in the UFSAR that could impact their ability to perform their safety function.

b. Findings

b.1 Failure to Procure Electrical Equipment for an Ungrounded Electrical System

Introduction: The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, ADesign Control,@ having very low safety significance (Green) associated with for the licensee=s failure to adequately translate original design requirements for the 480 Vac system into specifications during procurement of new and replacement equipment. The original specifications for equipment such as motors and cables identified the intended service as suitable for a 480 Vac ungrounded system. Specifications for replacement motors and battery chargers did not specify the intended service as an ungrounded system.

Description: The 480 Vac system for each unit consisted of two 480 Vac load center buses supplied through separate 4160/480 Vac transformers from the redundant 4160V safety buses. The transformers are connected in a delta-delta configuration so that the 480 Vac system is ungrounded. Ungrounded systems are susceptible to overvoltage conditions resulting from a single line to ground fault. A solid line to ground fault will result in a sustained 73 percent higher voltage to ground on the ungrounded phases, while an intermittent or sputtering ground fault can cause line to ground voltages several times normal voltage on all three phases. Because of the potential for overvoltage conditions, specifications for equipment such as motors, cables, and switchgear should identify that the equipment is intended for use on an ungrounded system. The original specification for PBNP safety-related motors, 6118-E-32, ASpecification for Electric Motors,@ appropriately identified the intended service condition as a 480 Vac ungrounded system. Specification PB 580 for the safety-related service water motors installed in 2001 did not contain this provision. Specification PB 92 for new battery chargers installed in 1985 similarly did not contain this provision. Equipment intended for service on ungrounded systems is designed to withstand the sustained higher line to ground voltages than can occur on grounded systems. These insulation systems are not typically provided unless the purchaser specifies an ungrounded system.

Interviews with plant personnel indicated that PBNP has experienced 480 Vac system grounds on several occasions. While the 480 Vac system was provided with ground alarms, these devices did not provide automatic protection, and did not indicate the location of the ground. Consequently, ground faults could persist for several hours before being located and cleared. If a ground fault occurred during an accident, the lack of the proper insulation system would increase the likelihood of secondary failures

elsewhere in the 480 Vac system. The inspectors noted that some non safety-related circuits are supplied from, and remain connected to, or can be manually connected to, the safety-related 480 Vac system during emergencies. A ground fault on a non-safety circuit would cause an overvoltage that would propagate to the safety-related supply without operation of protective devices to isolate the fault, thereby increasing the risk to safety-related equipment.

The inspectors noted that the licensee performs regular insulation checks of motors and other 480 Vac equipment to detect degradation of insulation, and that ground faults experienced to date have not resulted in secondary failures of safety-related equipment. The licensee initiated CAP 057803 and reviewed maintenance records to confirm that equipment insulation was not currently in a deteriorated condition.

Analysis: The inspectors determined that the failure to correctly specify equipment for use on an ungrounded system was a performance deficiency warranting a significance determination. The inspectors determined that the finding was more than minor in accordance with IMC 0612, APower Reactor Inspection Reports,@ Appendix B, AIssue Dispositioning Screening,@ because the finding involved the design control attribute of the mitigating systems cornerstone and affected the mitigating systems objective of ensuring the capability of the 480 Vac system in response to initiating events to prevent undesirable consequences. Specifically, the failure to specify the proper service for safety-related equipment increases the likelihood of its failure due to stresses that could occur during a postulated accident scenario.

The inspectors evaluated the finding using Inspection Manual Chapter 0609, ASignificance Determination Process,@ Appendix A, ASignificance Determination of Reactor Inspection Findings for At-Power Situations,@ Phase 1 screening, and determined that the finding was a design or qualification deficiency confirmed not to result in loss of function per Generic Letter 91-18. Therefore, the inspectors determined that the finding was of very low safety significance (Green). The licensee initiated CAP 057803 and reviewed maintenance records to confirm that equipment insulation was not currently in a deteriorated condition.

Enforcement: Title 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures shall be established to assure that the design basis, is correctly translated into specifications, drawings, procedures, and instructions. In addition, design changes, including field changes, shall be subject to design control measures commensurate to those applied to the original design. Contrary to these requirements, the licensee failed to specify the ungrounded service requirement for 480 Vac equipment procured after the original plant construction. Because this violation was of very low significance, and documented in the licensee=s corrective action program as Condition Report CAP 057803, this finding is being treated as an NCV, consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000266/2004004-07; NCV 05000301/2004004-07).

## 4. OTHER ACTIVITIES (OA)

### 4OA2 Problem Identification and Resolution

#### .1 Review of Condition Reports

a. Inspection Scope

The team reviewed a sample of SW and 480 Vac system problems that were identified by the licensee and entered into the corrective action program. The inspectors reviewed these issues to verify an appropriate threshold for identifying issues and to evaluate the effectiveness of corrective actions related to design issues. In addition, condition reports written on issues identified during the inspection were reviewed to verify adequate problem identification and incorporation of the problem into the corrective action system. The specific corrective action documents that were sampled and reviewed by the team are listed in the attachment to this report.

b. Findings

No findings of significance were identified.

#### .2 Confirmatory Action Letter (CAL) Follow-up Items

EQ-15-011 - Bolted Fault

The licensee committed to address bolted fault calculation issues. The inspectors reviewed the status of the following action steps:

Action Step 5: The licensee committed to revise the degraded grid calculations to support changing transformer tap settings as well as revise short circuit calculations based on the new tap settings. In support of these revisions, the licensee referenced these actions in LER 266/97-032-00, which also included actions to update the site one-line electrical model of the 345 kV bus down through the 480 Vac bus loads. The licensee made progress on the completion of the calculations and was on schedule to complete step 5 by the specified due date of September 30, 2004.

Action Step 12: The licensee committed to complete the procurement of the transformer tap change material by December 31, 2004. The licensee made progress on step 12 and was scheduled to complete Step 12 by December 15, 2004.

Action Step 16: The licensee committed to document interim progress confirming that the project was on track in accordance with the established schedule. The licensee was not scheduled to begin this step until May 9, 2005; therefore, no information regarding step 16 was available for review.

EQ-15-012 - Manhole and Cable Vault Flooding

The license committed to install a de-watering modification in Manhole 1 and Manhole 2 to eliminate cable vault flooding.

Action Steps 8 and 9: The licensee committed to implement the de-watering equipment and establish callups to inspect and maintain the modification. The licensee completed the modification package, which included a fire protection conformance checklist, a 10 CFR 50.59 screening and review, and a plant impact checklist. The effectiveness of the installed modification will be reviewed during future CAL close out inspections.

OP-14-003 - Validate Design Basis for High Risk Systems

The licensee determined that the Design Basis Documents (DBDs) needed to be updated to reflect the current plant configuration for the following high risk significant systems: AFW, SW, Fire Protection (FP), Emergency Diesel Generators, Component Cooling, 480 Vac and 13.8kV.

a. OP-14-003.3: Revise and implement NP 7.7.3, ADesign Basis Document Creation, Revision, and Maintenance,@ and DG-G10, ADesign Basis Document Writer=s Guide,@ to support validation and streamlining of the subject DBD=s. The licensee committed to issuing NP 7.7.3 and DG-G10 by November 10, 2004.

   As of July 16, 2004, the revision of NP 7.7.3 had not begun. The licensee was waiting for a contractor to complete the Validation Guideline, which will be incorporated into NP 7.7.3. The licensee informed the inspectors that the revision will be complete by the commitment due date of November 10, 2004. A draft revision of DG-G10 was completed on July 12, 2004.

b. OP-14-003.4: Issue validation plan and process for performing validation, performing revisions, and identifying open items and entering them into the CAP system. The licensee committed to having a completed Validation Guideline by March 25, 2005.

As of July 16, 2004, the Validation Guideline had not been completed. The Validation Guideline will be completed by the contractor performing the validation of the AFW DBD, and then incorporated into NP 7.7.3. The inspectors noted a problem with the commitment due date of March 25, 2005. Since the revision of NP 7.7.3 is due on November 10, 2004, the Validation Guideline needs to be completed before that date in order to be included in the revision of NP 7.7.3. The licensee informed the inspectors that the due date for OP-14-003.4 should be changed to November 10, 2004.

c. OP-14-003.6.A: Complete validation for AFW, SW, and FP, perform a progress review, and validate schedule and quality of completed work. The licensee committed to completing a progress review by May 26, 2005.

As of July 16, 2004, the progress review had not been completed. The licensee informed the inspectors that a contractor would complete the AFW DBD validation by September 30, 2004, and PBNP staff would model the validation of the SW and FP DBDs after the completed AFW DBD validation. The inspectors did not identify any issues with the progression of this action step in meeting a May 26, 2005 due date.

d. OP-14-003.6.B: Complete validation for AFW. The licensee committed to completing an updated and validated DBD for AFW by September 30, 2004.

As of July 16, 2004, the AFW DBD validation had not been completed. A bid specification and proposal were expected to be issued and a contract awarded the week of July 19, 2004. The inspectors were provided with a scope of the AFW DBD validation project, which was to be translated into a request for proposal. PBNP staff informed the inspectors that the project was on schedule for completion by the committed due date and the AFW DBD validation will focus primarily on significant changes to the AFW system.

OP-14-005 Validate and Integrate Calculations and Setpoints

The licensee determined that discrepancies existed in system calculations and that some setpoints did not have a clear and retrievable design basis.

a. OP-14-005.2.D: Revise/Update/Create calculations. The licensee committed to having a copy of the signature page from each calculation within the scope of the project showing approval signatures by June 5, 2005.

   As of July 16, 2004, this action step had not been completed. The calculations had been selected and were currently in the process of being reviewed. The signature pages would become available after the final revisions or validations have been completed. Since this action step was in its early stages and was due in June 2005, the inspectors did not identify any issues regarding its progression.

b. OP-14-005.2.E: Final review and acceptance of the revised emergency operating procedures (EOP) setpoint calculations. The licensee committed to providing a copy of each signature page from the revised EOP setpoint calculations showing Operations acceptance signatures by April 4, 2005.

   As of July 16, 2004, this action step had not been completed. This step was a subset of step 2.d and had a start date of December 29, 2004. Therefore, no information regarding this step was available for review. Since this action step had not been scheduled to begin until December 2004, the inspectors did not identify any issues regarding its progression.

c. OP-14-005.3: Identify the population of calculations subject to validation by April 8, 2004.

   This action step had been completed. The licensee provided the list of 1401 calculations to the inspectors. The inspectors did not identify any issues regarding the progression of this action step. The effectiveness of the installed modification will be reviewed during future CAL close out inspections.

d. OP-14-005.7: Prepare semi-annual progress report. The licensee committed to completing a progress report by July 2, 2004.

   This action step had been completed. The licensee provided the draft and final versions of the progress report to the inspectors. The effectiveness of the installed modification will be reviewed during future CAL close out inspections.

e. OP-14-005.8: Perform mid-project effectiveness review report by August 20, 2004.

   As of July 16, 2004, this action step had not been completed. This step had a start date of August 16, 2004; therefore, no information regarding this step was

available for review. The inspectors did not identify any issues regarding the progression of this step.

4OA6 Meetings, Including Exits

.1 Exit Meeting

The inspectors presented the inspection results to Mr. D. Koehl and other members of licensee management at the conclusion of the inspection on July 16, 2004. The inspectors determined that proprietary information was reviewed during the inspection. The inspectors confirmed that the proprietary material had been returned to the licensee or indicated it would be handled in accordance with NRC policy on proprietary information.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

## KEY POINTS OF CONTACT

Licensee
J. Brander, Maintenance Manager
T. Carter, System Engineering Manager
B. Cole, Acting NOS Manager
J. Connolly, Regulatory Affairs Manager
G. Corell, Chemistry Manager
R. Davenport, Acting Plant Manager (Production Planning Mgr)
B. Dungan, Operations Manager
F. Flentje, Excellence Team/Regulatory Affairs Principal Analyst
D. Hettick, Performance Improvement Manager
R. Hopkins, Nuclear Oversight Supvr/Equip Reliability Mgr
T. Kendall, Engineering Sr Technical Advisor
D. Koehl, Site Vice President
J. Marean, Mechanical/Structural Design Engineering Supervisor
J. McCarthy, Site Director
L. Peterson, Engineering Continuous Performance Manager
T. Petrowsky, Design Engineering Manager
M. Ray, EP Manager
A. Reiff, Acting Training Manager
M. Rosseau, Electrical/I&C Design Engineering Supervisor
G. Sherwood, Engineering Programs Manager
J. Schweitzer, Engineering Director
D. Shannon, Acting Radiation Protection Manager
T. Vandenbosch, Operating Supervisor/Operations Procedures
J. Walsh, Projects Manager

Nuclear Regulatory Commission
R. Caniano, Deputy Director, Division of Reactor Safety
J. Lara, Chief, Electrical Engineering Branch, Division of Reactor Safety
P. Louden, Chief, Branch 7, Division of Reactor Projects
P. Krohn, Senior Resident Inspector

## ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

| | | |
|---|---|---|
| 05000266/2004004-01<br>05000301/2004004-01 | NCV | Failure to Test Service Water Headers (Section 1R21.2b.1) |
| 05000266/2004004-02 | NCV | Non-Code Repair to Valve SW 0322 (Section 1R21.2b.2) |
| 05000266/2004004-03 | NCV | Non-Code Repair to Valve SW 32C and SW 32F (Section 1R21.2b.3) |
| 05000266/2004004-04<br>05000301/2004004-04 | NCV | Failure to Correctly Translate Condensate Storage Tank Temperature Limits into Procedures and Instructions (Section 1R21.2b.4) |
| 05000266/2004004-05<br>05000301/2004004-05 | NCV | Failure to Periodically Verify Position of Valves in the SW System (Section 1R21.2b.5) |
| 05000266/2004004-07<br>05000301/2004004-07 | NCV | Failure to Translate Original Design Requirements for the 480 Vac System (Section 1R21.3b) |

Opened

| | | |
|---|---|---|
| 05000266/2004004-06<br>05000301/2004004-06 | URI | Additional Information Needed to Determine Adequacy of Piping Anchor Design for SW to CFCs (Section 1R21.2b.6) |

Discussed

None.

## LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection, including documents prepared by others for the licensee. Inclusion on this list does not imply that 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 in this list does not imply NRC acceptance of the document, unless specifically stated in the inspection report.

1R21 Safety System Design and Performance Capability

**Drawings**

| Number | Title | Revision or Date |
|---|---|---|
| P-163 | Service Water Pump Discharge HB-19 | Revision 7 |
| 31 MWSG26903404 | 31 MWSG26903404 16" 150lb Swing Check Valve Disc | Revision 4 |
| P6118-M85-054-1 | 2@ to 16" 150lb Swing Check Valve | January 25, 2000 |
| WM Powell Co. 05860 | 12" - Class 150 Globe Valve Weld End Fig No. 1531 WE | Revision 0 |
| EAPK00000711 | Primary Auxiliary Building Safeguards<br>480 Vac MCC 2B32 | |
| EAPK00000120 | 480 Vac One Line Diagram, Point Beach N.P. Unit 2 | |

EAPK16600308

Primary Auxiliary Building 480 Vac
MCC 1B32

EAPK16600412

Primary Auxiliary Building Safeguards
480 Vac MCC 1B42

EAPK24100302

480 Vac One Line Diagram, Alternate Shutdown SWGR 41F153 (SH.3)

FSAR Figure 8-1

Unit 1&2 Main One Line Diagram

FSAR Figure 8-8

Unit 1&2 480 Vac One Line Diagram

Sheet 1

P&ID Service Water Unit 1

Revision 65

PB02E22303505805

Connection Diagram Rack 2C171B-F CD2-16

Revision 5

PB01E22303506005

Connection Diagram Rack 1C171B-F CD1-16

Revision 5

PB01EAPS00003500

Elementary Wiring Diagram 1B-03 480 Vac Ground Detail Scheme

Revision 00

PB31EAPS03101304

Elementary Wiring Diagram Alternate Supply P-032C/E Breaker B52-57D

Revision 4

PB01MWSK00000365

P&ID Service Water

Revision 65

PB01MWSK00001025

P&ID Service Water

Revision 25

PB02EAPK00000120

480 Vac One Line Diagram Unit 2

Revision 20

PB31EAPK24100302

480 Vac One Line Diagram Alternate Shutdown SWGR 541F153 SH. 3

Revision 02

GLD M-207 Sheet 1

QA Classification Diagram, Service Water

Revision 26

FSAR Figure 8-9

Unit 1&2 480 Vac One Line Diagram

GLD M-207 Sheet 1A

QA Classification Diagram, Service Water

Revision 23

GLD M-207 Sheet 2

QA Classification Diagram, Service Water

Revision 20

GLD M-207 Sheet 3

QA Classification Diagram, Service Water

Revision 30

GLD M-207 Sheet 4

QA Classification Diagram, Service Water

Revision 12

GLD M-2207 Sheet 1

QA Classification Diagram, Service Water

Revision 17

GLD M-2207 Sheet 2

QA Classification Diagram, Service Water

Revision 11

M-82 Sheet 1

Piping and Mechanical, Detail of Containment Piping Penetration Closure

Revision 12

M-82 Sheet 2

Piping and Mechanical, Containment Piping Penetration Closure Details

Revision 4

M-89

Service Water Discharge Piping to Circulating Water Discharge, Area 2 & 4

Revision 2

M-212 Sheet 1

P&ID - Circulating Water System,
Condenser Air Removal & Priming, Unit 1

Revision 61

M-2212

P&ID - Circulating Water System,
Condenser Air Removal & Priming, Unit 2

Revision 59

M-2089

Service Water Discharge Piping to Circulating Water Discharge, Area 3 & 9

Revision 2

P-139 Sheet 1

Service Water from HX-12A, B & C to Circulating Water Discharge Header HB-19, JB-1 & JB-2

Revision 1

P-139 Sheet 2 -2

Service Water from HX-12A, B & C to Circulating Water Discharge Header HB-19, JB-1 & JB

Revision 1

P-313 Sheet 35A

Pipe Hanger / Support Detail, JB-2-S624A

Revision 3

P-313 Sheet 35B

Pipe Hanger / Support Detail, JB-2-S624A

Revision 3

P-415 Sheet 9

Pipe Hanger / Support Detail, HB-19-A1 & A2

Revision 0

P-438 Sheet 12

Pipe Hanger / Support Detail, HB-19-A1 & A4

Revision 0

Flowserve W0125880

8" - 150 LB Butterfly Valve, Wfer Style, Stainless Steel for Limitorque H1BC/SMB-000-2 Actuator, Blind Shaft Hole Design

Revision A

Powell 034954

4" to 18" 150 Pound O.S.Y. Gate Valve

Revision 2

Powell 035104

6" - 150 Pound O.S.Y. Gate Valve, Fig. No. 1523WE, Motor Operated with Rod Indicator

Revision 2

Powell 062427

NPS 6" - Class 150, Converting a 6" Fig. 1503 Hand Operated Valve to a Motor Operated Valve

Revision 1

M-207 Sheet 1

Service Water

Revision 65; dated May 20, 2004

M-207 Sheet 1A

Service Water

Revision 25; dated January 24, 2004

M-207 Sheet 2

Service Water

Revision 45; dated May 16, 2004

M-207 Sheet 3

Service Water

Revision 59; dated May 20, 2004

M-207 Sheet 4

Service Water

Revision 23; dated May 21, 2004

M-208 Sheet 2

Fire Protection Water

Revision 33; dated April 19, 2004

M-212 Sheet 1

Circulating Water System Condenser Air Removal & Priming Unit 1

Revision 60; dated August 23, 2003

M-217 Sheet 1

Auxiliary Feedwater System

Revision 73; dated June 13, 2002

M-217 Sheet 2

Auxiliary Feedwater System

Revision 39; dated January 31, 2004

M-2207 Sheet 1

Service Water

Revision 54; dated June 17, 2000

M-2207 Sheet 2

Service Water

Revision 11; dated June 21, 2004

M-2212

Circulating Water System Condenser Air Removal & Priming Unit 2

Revision 58; dated April10, 2004

Drawing Number D-9643

Component Cooling Water Heat Exchanger; Atlas Industrial Manufacturing Co.

Revision 4 dated September 9, 1985

Drawing Number D-322730

Heat Exchanger Equip. #1 & 2 HX-55A1 & B1; Young Radiator Co.

dated May 3, 1990

**Job Orders, Work Orders and Work Requests**

| | | |
|---|---|---|
| JO No. 38101 | Perform UT thickness measurements of SW 0307 | Nov 18, 2002 |
| JO No. 38101 | Perform UT thickness measurements of SW 0322 | Nov 22, 2002 |
| JO No. 88917 | Perform UT thickness measurements of SW 0360 | Nov 27, 2002 |
| JO No. 38101 | Perform UT thickness measurements of SW 0315 | Nov 18, 2003 |
| MWR No. 901997 | P-32A SW Pump Discharge Check Valve | May 25, 1993 |
| MWR No. 901460 | P-32A SW Pump Discharge Check Valve | April 9, 1990 |
| MWR No. 901998 | P-32B SW Pump Discharge Check Valve | March 16, 1993 |
| MWR No. 901999 | P-32C SW Pump Discharge Check Valve | May 17, 1993 |
| MWR No. 03-017 | P-32F Service Water Pump Discharge Check Valve Disk Repair | April 15, 2003. |
| WO No. 9704458 | P-32A SW Pump Discharge Check Valve | January 30, 1998 |
| WO No. 0309375 | P-32A SW Pump Discharge Check Valve | March 3, 2004. |
| WO No. 9807124 | P-32C SW Pump Discharge Check Valve | July 15, 1998 |
| WO No. 0304633 | P-32C SW Pump Discharge Check Valve | December 3, 2003 |
| WO No. 9938090 | P-32F SW Pump Discharge Check Valve | April 17, 2003. |
| WO No. 9921857 | Open and Inspect Check Valve SW 0135A | February 15, 2004 |
| WO No. 9709004 | SW-0322 Valve Body is Eroded | August 28, 1997 |

WO 9707311

Post installation testing of Compressor aftercooler SA-HX-50A

10/30/97

WO 9707311

Attachment

Post installation testing of Compressor aftercooler SA-HX-50B

10/30/97

WO 9707307

Post installation testing of Compressor aftercooler IA-HX-49A

10/27/98

WO 9707307

Post installation testing of Compressor aftercooler IA-HX-49B

10/27/98

WO 0207548

Replace IA Compressor aftercooler IA-HX-49A HX with floating@ moisture seperator end.

2/21/04

0301141

Bio/Silt Fouling Inspection HX-015A5

April 28, 2004

0301142

Bio/Silt Fouling Inspection HX-015A6

April 28, 2004

0301143

Bio/Silt Fouling Inspection HX-015A7

April 28, 2004

0301144

Bio/Silt Fouling Inspection HX-015A8

April 28, 2004

0301145

Bio/Silt Fouling Inspection HX-015B5

April 15, 2004

0301146

Bio/Silt Fouling Inspection HX-015B6

April 15, 2004

0301147

Bio/Silt Fouling Inspection HX-015B7

April 18, 2004

0301148

Bio/Silt Fouling Inspection HX-015B8

April 15, 2004

0306443

Bio/Silt Fouling Inspection HX-015A1

April 27, 2004

0306444

Bio/Silt Fouling Inspection HX-015A2

April 27, 2004

0306445

Bio/Silt Fouling Inspection HX-015A3

April 27, 2004

0306446

Bio/Silt Fouling Inspection HX-015A4

April 27, 2004

0306449

Bio/Silt Fouling Inspection HX-015B1

April 27, 2004

0306450

Bio/Silt Fouling Inspection HX-015B2

April 23, 2004

0306

Bio/Silt Fouling Inspection HX-015B3

April 23, 2004

0306452

Bio/Silt Fouling Inspection HX-015B4

April 23, 2004

0310177

P-31A Pipe Supports Missing Bolts

November 7, 2003

**Calculations**

| | | |
|---|---|---|
| NB91-038 | 480 Vac Safeguards Motor Protection | Revision 1 |
| N-94-59 | CCW HX-012A-D Service Water Flow versus Temperature Requirement | 1 |
| N-94-064 | VNBI [HX-105A/B] Service Water Flow vs. Temperature Requirement | 3 |
| N-94-064-3-A | Addendum to VNBI [HX-105A/B] Service Water Flow vs. Temperature Requirement | April 22, 2003 |
| 2004-0002 | Engineering Eval - Loss of SW to TDAFWP brg | 0 |
| NB91-039 | Safeguards Transformer Protection, | Revision 0 |
| NB 91-044 | 480 Vac Buses B-08/B-09 Circuit Breaker Settings | Revision 1 |
| NB92-004 | 480 Vac MCC and Power Panel Coordination Analysis, | Revision 3 |
| P-94-004 | MOV Overload Heater Evaluation | Revision 12 |
| 95-0040 | Determination of Voltage Drop in Safety Related MCC Control Circuits | Revision 0 |

| | | |
|---|---|---|
| 97-0250 | Overload Heater Sizing for Motor Protection of AFW MOVs MS-2082 | |
| 2001-0049 | Coordination 480 Vac Switchgear | Revision 0 |
| 2001-0049-00-A | 480 Vac Switchgear Coordination, Effects of B52-56B Setpoint Change | |
| STPT 21.2 | 480 Vac Breaker Overloads, Protective Relay Setpoints | Revision 18 |
| 692301-2.2-004-00-A | AFW Pump Room Loss of HVAC Analysis | Addendum A |
| 96-0059 | Service Water Model Input Deck Updates | Revision 8 |
| 97-0118 | Capability to Achieve Cold Shutdown in Both Units with One CCW Pump and Two CCW Heat Exchangers | Revision 0 & Addenda A and B |
| 97-0126 | Service Water System - LOCA | Revision 5 |
| 98-0051 | Service Water System Heat Exchanger HX-55A/B Flow Requirements | Revision 2 |
| 98-0172 | Containment Fan Cooler Acceptance Criteria | Revision 2 & Addendum A |
| 99-0032 | Application of Uncertainty to Hydraulic Modeling of the Service Water System | Revision 1 |
| 2002-0003 | Service Water System Design Basis | Revision 0 & Addenda A thru D |
| 2003-0007 | Engineering Evaluation: CCW Tube Plugging & Stabilization Criteria | Revision 0 |
| 2003-0008 | CCW HX Plugging Limit | Revision 1 |
| 2004-0014 | Engineering Evaluation: Preliminary Evaluation of Containment Fan Cooler Test Results | Revision 0 |
| FAI/97-60 | Point Beach Containment Fan Cooler Analysis in Response to NRC Generic Letter 96-06 | Revision 5 |
| N-94-059 | CCW, HX-12A-D, Service Water Flow Verses Temperature Requirement | Revision 1 |

| | | |
|---|---|---|
| N-94-082 | Service Water Flow Balance for Hot Shutdown After Appendix R Fires | Revision 2 |
| N-93-040 | Estimation of Leak Rates in Non-Seismic Portions of the Service Water System | Revision 1 |
| P-89-037 | Determination of SW Pump Minimum Submergence | Revision 2 |
| 2002-0003 | Service Water System Design Basis | Revision 0 |
| 2001-0022 | Diesel Generator Service Water Flow Loop Uncertainty Calculation | Revision 0 |
| 98-0051 | Service Water System Heat Exchanger HX-55A/B Flow Requirements | Revision 2 |
| Calculation Book Section 5.3.2 | I&C Calculation Sheet: Service Water Pressure Instrumentation Uncertainty Calculation | 07/12/1996 |
| PBNP-IC-03 | Foxboro Spec 200 Plant Process Computer Point String Drift Calculation | Revision 0 |
| PBNP-IC-07 | Westinghouse 252 Indicator Drift Calculation | Revision 0 |
| PBNP-IC-13 | Foxboro N-E11GM Transmitters Drift Calculation | Revision 0 |
| 96-0265 | Post-LOOP CFC Service Water Void Refill Rate | Revision 0 |
| FAI/97-60 | Point Beach Containment Fan Cooler Analysis in Response to NRC Generic Letter 96-06 | Revision 5 |
| FAI/97-88 | Verification Experiments for Water Hammer Events in Power Plant Service Water Systems | Revision 0 |
| N-93-082-00-A | SW-4478, SW4479 MOV Differential Pressure Calculations | Revision 0 |
| P-94-005 | MOV Stem Thrust Calculation for Gate and Globe Valves | Revision 9 |
| TR00.114 | Flowserve Report: Design, Seismic, and Weak Link Analysis, 3-Inch Class 1630 Stainless Steel Double Disc Gate Valve with SMB-00 Limitorque Motor Actuator | August 14, 2000 |

| | | |
|---|---|---|
| TR01.124 | Flowserve Report: Design, Seismic, and Weak Link Analysis, 8-Inch Class 150 Stainless Steel Wafer Butterfly Valve with H1BC/SMB-000-2 Limitorque Actuator | Revision A |

| | | |
|---|---|---|
| WE-200093 | Piping System Qualification Report; Subsystem: 8"-HB-19; Service Water Return Piping From Containment Penetration 2-P43 to Floor Anchor HB-19-A-2 (HB-19) | Revision 1 |
| WE-200093 | Addendum B Piping System Qualification Report; Subsystem: 8"-HB-19; Service Water Return Piping From Containment Penetration 2-P43 to Floor Anchor HB-19-A-2 (HB-19) | Revision 1 |
| WE-200095 | Piping System Qualification Report; Subsystem: 8" & 2.5-HB-19; Service Water Supply and Return Piping from Anchor HB-19-A4 to Containment Cooler 2HX15D | Revision 2 |
| WE-200095 / Addendum A | Piping System Qualification Report; Subsystem: 8" & 2.5-HB-19; Service Water Supply and Return Piping from Anchor HB-19-A4 to Containment Cooler 2HX15D | Revision 2 |
| WE-300023 / Addendum E | Piping System Qualification Report; Subsystem: 3HB19AA; Service Water Piping; HB-19 Piping from Anchor A-110 to CCW/HX, to Containment Penetrations, to Anchors SW-1-S15, A113 and WEPCO-471 | Revision 0 |
| WE-300023S | Calculation for Support JB2-S624A | Revision 0 |
| WE-300060-02 | Service Water Supply to Spent Fuel Pool Heat Exchangers HX-13A and HX-13B | Revision 2 |
| 96-0246 | Uncertainty of Service Water Pump In-Service Testing (IST) | Revision 4 |
| Calculation 96-0059 | Service Water Model Input Deck Updates | Revision 8 |
| Calculation 99-0032-01-A | Application of Uncertainty to Hydraulic Modeling of the Service Water System | December 26, 2002 |
| Calculation 2003-0014 | MOV Operating Parameters | Revision 0 |
| P-89-037 | Determination of SW Pump Minimum Submergence | Revision 2 |
| P-90-017 | Motor Operated Valve Undervoltage Stem Thrust and Torque Calculation | Revision 18 |
| PBNP -IC-42 | Condensate Storage Tank Water Level | Revision 0 |

| | | |
|---|---|---|
| | Instrument Loop Uncertainty/Setpoint Calculation | |
| WE Calculation No. P94-005 | Attachment A, MOV Stem Thrust Spreadsheet, | December 8, 2003 |
| Calculation P-89-037 | Determination of SW Pump Minimum Submergence | Revision 2 dated April 6, 2001 |
| Calculation N-92-087 | Service Water Computer Model Field-Determined Flow Resistances | Revision 6 dated December 11, 2001 |
| Calculation N-94-056 | Spent Fuel Pool - HX013A/B - Service Water Flow VS Temperature Requirement | Revision 0 dated May 4, 1994 |
| Calculation N-94-059 | CCW, HX-012A-D, Service Water Flow Verses Temperature Requirements | Revision 1 dated July 17, 2003 |
| Calculation N-94-082 | Service Water Flow Balance for Hot Shutdown After Appendix R Fires | Revision 2 dated June 10, 2002 |
| Calculation 96-0246 | Uncertainty of Service Water Pump In-Service Testing (IST) | Revision 4 dated December 23, 2002 |
| Calculation 97-0126 | Service Water System - LOCA | Revision 5 dated June 10, 2002 |
| Calculation 98-0051 | Service Water System Heat Exchanger HX-55 A/B Flow Requirements | Revision 2 dated December 9, 2003 |
| Calculation Note CN-CRA-01-70 | Point Beach SLB and Containment Response at 102% of 1524.5 Mwt with FRV Failure | Revision 0 dated October 18, 2001 |
| Calculation 2002-0003 | Service Water System Design Basis | Revision 0 dated June 13, 2002 |
| Calculation 2002-0003-00-B | Service Water System Design Basis | Revision 0 dated July 9, 2003 |
| Calculation 2002-0003-00-D | Service Water System Design Basis | Revision 0 dated December 30, 2003 |
| Calculation 2003-0037 | Diesel Cooler Lakegrass Fouling Acceptance Criteria | dated September 5, 2003 |

**Condition Reports Generated Due to the Inspection**

| Number | Title | Revision or Date |
|---|---|---|
| OTH014067 | Evaluate enhancing the Flow Check of FW Supply to TDAFW Pumps | July 15, 2004 |
| CAP032559 | NRC SSDPC Identified as Having No Justification Assumption 10 of Calculation N-94-64, Revision 3 (ignoring fan heat load) | July 15, 2004 |
| CAP32563 | Revise Calculation N-94-059 | Revision 1 |
| CAP057708 | Required Update to Service Water DBD-12, Page 3-124, Revision 6 | |
| CAP057786 | CAP Did Not Provide Sufficient Information for Basis for Operability | |
| CAP057845 | Possible Equipment Shortage for AOP-10A | |
| CAP057880 | NRC Questions PBNP=s Categorization of Service Water Valves Within IST Program | July 13, 2004 |
| LL014066 | Difficult to Find/ Interpret Additional Condition for Operating License | July 15, 2004 |
| OPR000110 | CAP [031870] Did Not Provide Sufficient Information for Basis for Operability [Temperature Sensitive Equipment] | July 9, 2004 |
| CAP057902 | QA Scoping Discrepancy between ICP 06-006 and CHAMPS | 07/14/2004 |
| CAP057689 | FSAR description misleading | 07/01/2004 |
| CA 032563 | NRC SSDPC identified that Assumption 1 for Calc N-94-059 Required Clarification | 7/1/04 |
| CAP057665 | Missed Surveillance SR 3.7.8.1 | June 30, 2004 |
| CAP057671 | MSLB Containment Analysis is Non-Conservative with Respect to OI-150 Temp Limits | June 30, 2004 |
| CAP057679 | Inconsistencies Between Inservice Test Procedures | July 1, 2004 |
| CAP057683 | Steps Lack Direction to Lock Service Water Overboard Valves | July 1, 2004 |
| CAP057697 | Service Water Pump Operation Should Be Enhanced in OI-70 | July 1, 2004 |
| CAP057700 | Discrepancies Found During the Review of 1(2)CL-CC- | July 1, 2004 |

**Condition Reports Generated Due to the Inspection**

| Number | Title | Revision or Date |
|---|---|---|
| | 001 Revision 9 (8) CC Checklist | |
| CAP05771 | Missed Surveillances | July 1, 2004 |
| CAP057721 | ARB C01 A 1-6 Needs Updating | July 2, 2004 |
| CAP057765 | Extent of Condition for Service Water System | July 6, 2004 |
| CAP057766 | CCW Valve Redlock Discrepancies | July 6, 2004 |
| CAP057787 | Extent of Condition Findings Related to NRC 2004 SSDI Inspection | July 7, 2004 |
| CAP057882 | Potential Missed Surveillance | July 13, 2004 |
| CAP057895 | DBD-12 Section 4.3.4 Does Not Provide a Complete List of GL 89-10 SW Valves | July 14, 2004 |
| OTH013895 | Remove Caution from AOP-9A Concerning Low SW Pressure | June 30, 2004 |
| OTH013904 | Enhance Various SW Procedures to Use the Installed Larger Flushing Lines | July 2, 2004 |
| OTH013970 | Update FSAR Description of CFC Alignments During ILRT | July 7, 2004 |
| OTH013999 | Procedural Enhancement to OI 70 Involving Main Zurn Strainer Bypass Valves | July 9, 2004 |
| Procedure Feedback Request Number OPS 2004-1214; | AOP-8F Loss of Spent Fuel Pool Cooling; Delete Reference to Using Service Water in Step A18 and Step B18 to Add Makeup Water to SFP | July 1, 2004 |
| Procedure Feedback Request for SEP-3.0 Unit 1 | Change Steps 17 and 42 Check of Service Water Header Pressure from Greater Than 40 psig to Greater Than 50 psig | Revision 19; July 15, 2004 |
| Procedure Feedback Request for SEP-3.0 Unit 2 | Change Steps 17 and 42 Check of Service Water Header Pressure from Greater Than 40 psig to Greater Than 50 psig | Revision 20; July 15, 2004 |

**Condition Reports Generated Due to the Inspection**

| Number | Title | Revision or Date |
|---|---|---|
| CAP 057853 | Non Conservative Service Water System Pressures Used in MOV Analysis | July 9, 2004 |
| CAP 057902 | QA Scoping Discrepancy Between (CP 06-006 and CHAMPS | July 14, 2004 |
| OTH 014040 | Misleading Information in SW DBD | July 14, 2004 |

**Condition Reports Reviewed During the Inspection**

**Number**

**Title**

**Revision or Date**

CAP 031247

GL 89-13 fouling issues with HX-105A&B - PAB Battery Room Coolers

Feburary 20, 2003

CAP 034548

Calculation weaknesses in Calculation N-94-64, Revision 3

August 4, 2003

CAP 032238

SW-0032F Inspection Results

April 15, 2003

CAP 032548

Main Service Water Zurn Strainers Have No Safety Function

April 29, 2003

CAP 034942

Misposition of SW-123A and SW-132A P-38A/B SW Strainer Bypasses

August 18, 2003

CAP 053169

SW Piping Blockage

January 25, 2004

CAP 028771

480 Vac Solution for Breaker Coordination

ACE000835

Improper Traveling Screen Operation

July 29, 2002

ACE001458

High Delta P on Unit 2 Turbine Hall Basket Strainer

September 25, 2003

ACE001543

SW Pump Room Cleanliness and Appearance is Unsatisfactory

January 2, 2004

ACE001562

Improper 2003 Assembly of PAB Battery Room Cooler

January 8, 2004

ACE001568

Tag Series 0 SW SW-2817 Tech Spec Ops Revision 0-1 Not Hung As Required

January 14, 2004

ACE001415

Planned Entry into a TSAC without a Contingency Plan

August 21, 2003

ACE001443

GL 89-13 Related Callups Are Not Identified As NRC Commitments in CHAMPS

September 15, 2003

ACE001589

Service Water Piping Blockage

January 27, 2004

ACE001619

SW-457A, P-41 Flow Switch Bypass Was Found Shut

February 19, 2004

ACE001657

K-3A Service Air Compressor SW Strainer Found Plugged with Grass

March 22, 2004

ACE000856

RMP Had Out of Spec Motor Amp Current for P32A SW Pump

August 12, 2002

ACE000862

SW-2911-BS Reversing Cam Mispositioned During Reassembly

August 16, 2002

ACE000875

Inadvertent Over Pressure of Gauge

August 26, 2002

ACE000921

Near Miss Incident

September 20, 2002

ACE000926

Valve Studs Overtorqued

September 20, 2002

ACE000952

South SW Header Work Not Included in Unit 2 Risk Profile Look-Ahead

September 25, 2002

ACE001105

Less than Adequate Work Documentation for P-32D SW Pump Maintenance

December 6, 2002

ACE001107

SW Valves for 1P-41 and P-41 Vacuum Priming Pumps Found Out of Position

December 10, 2002

ACE001139

Good Catch by CO Identified Valve SW-88 Out of Position

December 27, 2002

ACE001249

SOER 02-04 Evaluation Service Water System Fouling

March 28, 2003

ACE001282

SW-534 Opened Instead of WT-534

April 16, 2003

ACE001341

G-02 Throttle Valve Found Not Locked

June 17, 2003

ACE001354

SPEED 95-053 Does Not Provide Sufficient Documentation for Seismic Qualification

July 10, 2003

ACE001373

Non-Conservative AFW/SW Technical Specifications/ Inappropriate CAP Closure

July 29, 2003

ACE001404

DPI-2843 G-01 Duplex Strainer Found Isolated

August 13, 2003

ACE001414

Misposition of SW-123A and SW-132A SW Strainer Bypass

August 20, 2003

ACE001682

Three Danger Tagged Valves Found Out of Position

April 17, 2004

CA021825

Service Water System Hydraulic Model May Be Non-Conservative

April 27, 1993

CA021826

Service Water System Hydraulic Model May Be Non-Conservative

April 27, 1993

CA021827

Service Water System Hydraulic Model May Be Non-Conservative

April 27, 1993

CA021828

Service Water System Hydraulic Model May Be Non-Conservative

April 27, 1993

CA021829

Service Water System Hydraulic Model May Be Non-Conservative

April 27, 1993

CA028876

Revise Calculations - Current Plant Alignment for AFW Pump Room Heatup

March 31, 2003

CA051874

Evaluate Options for Long-Term AFW Pump Room Heatup Issue

August 28, 2003

CAP027768

Service Water System Hydraulic Model May Be Non-Conservative

March 12, 1993

CAP028850

Improper Traveling Screen System Operation

July 25, 2002

CAP028995

RMP Had Out of Spec Motor Amp Current for P32A SW Pump

August 8, 2002

CAP029010

Basis for VNPAB System=s Non-Safety Related Scope Questioned

August 9, 2002

CAP029043

SW-2911-BS Reversing Cam Mispositioned During Reassembly

August 15, 2002

CAP029132

Inadvertent Over Pressure of Gauge

August 23, 2002

CAP029387

Near Miss Incident

September 18, 2002

CAP029403

Valve Studs Overtorqued

September 18, 2002

CAP029509

South SW Header Work Not Included in Unit 2 Risk Profile Look-Ahead

September 23, 2002

CAP030315

Less Than Adequate Work Documentation for P-32D SW Pump Maintenance

December 4, 2002

CAP030334

SW Valves for 1P-41 and P-41 Vacuum Priming Pumps Found Out of Position

December 7, 2002

CAP030493

Good Catch by CO Identified Valve SW-88 Out of Position

December 19, 2002

CAP031246

Macro-Fouling Expected on Shell Side of SFP HXs Based on SW Flow Data

February 20, 2003

CAP031247

GL 89-13 Fouling Issues with HX-105A&B - PAB Battery Room Coolers

February 20, 2003

CAP031578

Service Water System Fouling

March 12, 2003

CAP031870

Calculation Does Not Reflect Current Plant Alignment for AFW Pump Room Heatup

March 27, 2003

CAP031908

SW Duplex Strainers F-215 and F-222 May Fail When Exposed to Full SW dP

March 28, 2003

CAP032226

SW-534 Opened Instead of WT-534

April 14, 2003

CAP032238

SW-00032F Inspection Results

April 15, 2003

CAP032548

Main Service Water Strainers Have No Safety Function to Strain Water

April 29, 2003

CAP033568

G-02 SW Throttle Valve Found Not Locked

June 15, 2003

CAP033941

SPEED 95-053 Does Not Provide Sufficient Documentation for Seismic Qualification

July 8, 2003

CAP034296

Non-Conservative AFW/SW Technical Specifications/ Inappropriate CAP Closure

July 25, 2003

CAP034758

DPI-2843 G-01 Duplex Strainer Found Isolated

August 12, 2003

CAP034942

Misposition of SW-123A and SW-132A P-38A/B Strainer Bypasses

August 18, 2003

CAP034979

Planned Entry into a TSAC With Out a Contingency Plan

August 19, 2003

CAP050116

GL 89-13 Related Callups Are Not Identified as NRC Commitments in CHAMPS

September 11, 2003

CAP050342

High Delta P on Unit 2 Turbine Hall Basket Strainer

September 23, 2003

CAP052054

SW Pump Room Cleanliness and Appearance is Unsatisfactory

November 29, 2003

CAP052658

Improper 2003 Assembly of HX-105B Battery Room Cooler

January 6, 2004

CAP052765

Tag Series 0 SW SW-2817 Tech Spec Ops Revision 0-1 Not Hung as Required

January 12, 2004

CAP053169

Service Water Piping Blockage

January 25, 2004

CAP053986

SW-457A, P-41 Flow Switch Bypass Was Found Shut

February 18, 2004

CAP054996

K-3A Service Air Compressor SW Strainer Found Plugged with Grass

March 20, 2004

CAP055731

Three Danger Tags Found Out of Position

April 15, 2004

CE007165

Service Water System Hydraulic Model May Be Non-Conservative

March 12, 1993

CR 00-0377

Abandoned Fish Rearing Piping

January 31, 2000

OPR000031

Possible Common Mode Failure of Aux Feed Recirculation Lines

October 29, 2002

OPR000045

Macro-Fouling Expected on Shell Side of SFP HXs Based on SW Flow Data

February 24, 2003

OPR000046

GL 89-13 Fouling Issues with HX-105A&B - PAB Battery Room Coolers

February 24, 2003

OPR000052

SW Duplex Strainers F-215 and F-222 May Fail When Exposed to Full SW dP

March 31, 2003

OPR000058

SW-00032F Inspection Results

April 15, 2003

CAP030227

Service Water (SW) to Auxiliary Feedwater (AFW) Pump Suction Power Supply Issues

11/22/2002

CAP011404

Significant Amount of Silt in Seal and Baseplate Leakage - SW Pumps

January 25, 2000

CAP012032 SI

Valves Not Red Locked - Status Control

May 15, 2000

CAP01203

Valves Not Red Locked As Required

May 18, 2000

CAP025673

Status of Red Locked Valves

July 3, 2000

CAP004443

RH and SI System Valve Positions

August 14, 2000

CAP001125

Intrusion of Some Sort of Lake Grass

October 15, 2001

CAP001861

Diesel Cooler Fouling

January 14, 2002

CAP028437

G-01 Diesel Cooler Zebra Mussel and Lake Weed Fouling

June 11, 2002

CAP029092

G-02 Diesel Cooler Fouling

August 20, 2002

CAP030334

SW Valves for 1P-41 and P-41 Vacuum Priming Pumps Found Out of Position

December 7, 2002

CAP030353

Continuing G0-2 Diesel Cooler Fouling

December 9, 2002

CAP030493

Good Catch by CO Identified Valve SW-88 Out of Position

December 19, 2002

CAP030499

Major G0-1 Diesel Cooler Fouling

December 19, 2002

CAP031246

Macro-Fouling Expected on Shell Side of SFP H/Xs Based on SW Flow Data

February 20, 2003

CAP031247

GL 89-13 Fouling Issues with HX-105A & B - PAB Battery Room Coolers

February 20, 2003

CAP031578

SOER 02-04 Evaluation Service Water System Fouling

March 12, 2003

CAP031908

SW Duplex Strainers F-215 and F-222 May Fail When Exposed to Full SW DP

March 28, 2003

CAP033365

G0-2 Diesel Cooler Fouling

June 6, 2003

CAP033568

G-02 SW Throttle Valve Found Not Locked

June 15, 2003

CAP033890

G0-2 Diesel Cooler Fouling

July 2, 2003

CAP034296

Non-Conservative AFW/SW Technical Specifications/Inappropriate CAP Closure

July 25, 2003

CAP034365

G0-2 Diesel Cooler Fouling

July 28, 2003

CAP034758

DPI-2843 G-01 Duplex Strainer Found Isolated

August 12, 2003

CAP034942

Misposition of SW-123A and SW-132A P-38A/B SW Strainer Bypasses

August 18, 2003

CAP0500040

G0-1 Diesel Cooler Fouling & G0-2 Concerns

September 10, 2003

CAP050119

G0-2 Diesel Cooler Fouling - Post Operability Determination Required

September 11, 2003

CAP051874

Significant G0-2 Diesel Cooler Fouling. Past Operability Determination Required

November 17, 2003

CAP051944

G0-1 Diesel Cooler Fouling

November 20, 2003

CAP052753

G02 EDG H/X-055B-1 & HX-055B-2 Inspection Results

January 12, 2004

CAP053209

Jan 04 G0-1 Diesel Cooler Fouling

January 26, 2004

CAP053569
G0-1 Diesel Cooler Fouling
February 5 2004
CAP053900
Feb 13 G0-1 Diesel Cooler Fouling
February 16, 2004
CAP053986
SW-457A, P-41 Flow Switch Bypass was Found Shut
February 18, 2004
CAP054615
March G0-2 Diesel Cooler Fouling
March 9, 2004
CAP054789
Mar 14 G0-1 Diesel Cooler Fouling
March 15, 2004
CAP054996
K-3A Service Air Compressor SW Strainer Found Plugged With Grass
March 20, 2004
CAP055100
Mar 25 G0-1 Diesel Cooler Fouling
March 25, 2004
CAP055182
Mar 29 G0-2 Diesel Cooler Fouling
March 29, 2004
CAP055905
April 19 G0-1 Diesel Cooler Fouling
April 20, 2004
CAP056354
May 3 G0-2 Diesel Cooler Fouling
May 3, 2004
CAP056853

May 18 G0-1 Diesel Cooler Fouling

May 20, 2004

CAP057186

June 3 G0-2 Diesel Cooler Fouling

June 3, 2004

CR 99-2241

Installed Instrumentation, existing procedures and available data are inadequate

September 23, 1999

CAP 053035

Calculation N-92-004 not being Updated for Breaker Changes

January 21, 2004

CAP 054534

Unanalyzed Load Discovered on G03/G04 Emergency Diesel Generator

March 5, 2004

ACE001107

SW Valves for 1P-41 and P-41 Vacuum Priming Pumps Found Out of Position

December 10, 2002

ACE001139

Good Catch by CO Identified Valve SW-88 Out of Position

December 27, 2002

ACE 001157

Apparent Cause Evaluation of CAP030619 and CAP030640

February 7, 2003

ACE 001249

SOER 02-04 Evaluation Service Water System Fouling

March 28, 2003

ACE001341

G-02 SW Throttle Valve Found Not Locked

June 17, 2003

ACE001373

Non-Conservative AFW/SW Technical Specifications/Inappropriate CAP Closure

July 29, 2003

ACE001404

DPI-2843 G-01 Duplex Strainer Found Isolated

August 13, 2003

ACE001414

Misposition of SW-123A and SW-132A P-38A/B SW Strainer Bypasses

August 20, 2003

ACE001619

SW-457A, P-41 Flow Switch Bypass was Found Shut

February 19, 2004

ACE001657

K-3A Service Air Compressor SW Strainer Found Plugged With Grass

April 21, 2004

**Surveillances (completed)**

**Number**

**Title**

**Date performed**

IT 07A

P-32A Service Water Pump (Quarterly), Revision 14

June 2, 2004

PC 10 PART 3

SW to SFP MOVs and Radwaste System AOVs Leak Check, Revision 4

March 15, 2004

IT 8A

Cold Start of TDAFWP and valve test

September 18, 2003

IT 07B

P-32B Service Water Pump (Quarterly

April 21, 2004

IT 07C

P-32C Service Water Pump (Quarterly)

April 21, 2004

IT 07D

P-32D Service Water Pump (Quarterly)

May 9, 2004

IT 07E

P-32E Service Water Pump (Quarterly)

May 9, 2004

IT 07F

P-32F Service Water Pump (Quarterly)

May 9, 2004

IT 07G

Service Water Valves (Quarterly)

May 9, 2004

IT 08A

Cold Start of Turbine-Driven Auxiliary Feed Pump and Valve Test (Quarterly) Unit 1

March 5, 2004

IT 08A

Cold Start of Turbine-Driven Auxiliary Feed Pump and Valve Test (Quarterly) Unit 1

June 8, 2004

IT 08B

TDAFP Suction From SW MOV Exercise Test (Quarterly) Unit 1

May 4, 2004

IT 09B

TDAFP Suction From SW MOV Exercise Test (Quarterly) Unit 2

May 31, 2004

IT 10C

AF-4009, P-38A MDAFP Suction From SW MOV Exercise Test (Quarterly)

May 28, 2004

IT 10D

AF-4016, P-38B MDAFP Suction From SW MOV Exercise Test (Quarterly)

May 28, 2004

IT 15

Chill Water Pumps and Valves (Quarterly)

March 24, 2004

IT 72

Service Water Valves (Quarterly)

May 13, 2004

IT 270

1SW-2880, Unit 1 Turbine Bldg Service Water Inlet (Cold Shutdown)

April 27, 2004

IT 295

Manual Valve Stroke of AFW Pump Discharge and Service Water Supply Valves (Cold Shutdown), Unit 2

October 25, 2003

Portions of Completed PBF-2032; Daily Log Sheet, Turbine Bldg Log - Unit 1

September 29, 2003 through October 12, 2003

Portions of Completed PBF-2032; Daily Log Sheet, Turbine Bldg Log - Unit 1

April 9, 2004 through April 18, 2004

TS 33

Containment Accident Recirculation Fan-Cooler Units (Monthly) Unit 1

May 28, 2004

TS 34

Containment Accident Recirculation Fan-Cooler Units (Monthly) Unit 2

June 2, 2004

**Procedures**

**Number**

**Title**

**Revision or Date**

SMP 534

Acceptance Testing of M-623

August 31, 1984

SMP 535

Acceptance Testing of M-624

August 31, 1984

0-SOP-SW-100

South Service Water Return Header Isolation and Restoration

Revision 0

0-SOP-SW-101

South Service Water Supply Header Isolation and Restoration

Revision 1

0-SOP-SW-102

North Service Water Return Header Isolation and Restoration

Revision 0

1-SOP-CC-001

Component Cooling System

Revision 11

AOP-9A

Service Water System Malfunction

Revision 19

AOP-18

Electrical System Malfunction

Revision 2

ARP 1C04 1C 4-8

1TR-2000A or B Temperature Monitor Unit 1

Revision 0

ARP 2C04 2C 4-4

2TR-2000A or B Temperature Monitor Unit 2

Revision 4

BG AOP-9A

Background Documents - Service Water System Malfunction

Revision 16

PC 73 Part 6

Periodic Check - AFW Emergency Bearing Cooling (Annual)

Revision 6

ECA-0.0

Loss of All AC Power

Revision 36

ECA-0.1

Loss of All AC Power Recovery Without SI Required

Revision 18

ECA-0.2

Loss of All AC Power Recovery With SI Required

Revision 22

ECA-2.1

Uncontrolled Depressurization of Both Steam Generators

Revision 33

IT 07G

Service Water Valves (Quarterly)

Revision 3

IT 08B

TDAFP Suction from SW MOV Exercise Test (Quarterly) Unit 1

Revision 5

IT 09B

TDAFP Suction from SW MOV Exercise Test (Quarterly) Unit 2

Revision 5

IT 10C

AF-4009, P-38A MDAFP Suction from SW MOV Exercise Test (Quarterly)

Revision 2

IT 10D

AF-4016, P-38B MDAFP Suction from SW MOV Exercise Test (Quarterly)

Revision 2

IT 72

Service Water Valves (Quarterly)

Revision 25

IT 270

1SW-2880, Unit 1 Turbine Bldg Service Water Inlet (Cold Shutdown)

Revision 10

IT 275

2SW-2880, Unit 2 Turbine Bldg Service Water Inlet (Cold Shutdown)

Revision 9

IT 290

Manual Valve Stroke of AFW Pump Discharge and Service Water Supply Valves (Cold Shutdown), Unit 1

Revision 37

IT 295

Manual Valve Stroke of AFW Pump Discharge and Service Water Supply Valves (Cold Shutdown), Unit 2

Revision 33

OI 70

Service Water System Operation

Revision 49

OI 130

Performance Test of 1HX-15D1-D8 Containment Fan Cooler Unit 1

Revision 6

OI 131

Performance Test of 2HX-15D1-D8 Containment Fan Cooler Unit 2

Revision 7

OM 3.7

AOP and EOP Procedure Sets Use and Adherence

Revision 12

OM 4.3.2

EOP/AOP Verification/ Validation Process

Revision 9

OP 7A

Placing Residual Heat Removal System in Operation

Revision 43

PC 43, PART 5

Service Water to Auxiliary Feedwater Pump Line Flush Monthly

Revision 10

OI 70

Service Water System Operation

Revision 49

ICP 06.006

Service Water System Non-Outage Instruments Calibrations

Revision 4

ICP 06.059

Service Water Header Pressure Transmitter Calibrations

Revision 3

1ICP 06.050-2

Spec 200 Cabinet 1C-171 Rack Instrument Calibrations

Revision 2

ORT 3A

Safety Injection Actuation with Loss of Engineered Safeguards AC (Train A) Unit 1

Revision 37

ORT 3B

Safety Injection Actuation with Loss of Engineered Safeguards AC (Train B) Unit 1

Revision 34

AOP-10A

Safe Shutdown-Local Control

Revision 37

AOP-13A

Abnormal Operating Procedure

Revision 15

ARB C01A4-5

Traveling Screen Differential Level High

Revision 7

ARPI-PPCS-006

Priority Alarm Forebay/Pumpbay Level Unit 1

Revision 0

0I 35

480 Vac Electrical Equipment Operation

Revision 3

0I 70

Service Water Operation

Revision 49

ICP 06.042

Lake Water Intake Surge Chamber Level Channels

Revision 1

ICP 06.003

Meteorological and Circulating Water System Calibration

Revision 4

ICP 06.006

Service Water System non-outage Instruments Calibrations

Revision 4

ICP 6.15

Auxiliary Coolant System (Non-Outage)

Revision 29

TRM 3.7.7

Service Water (SW) System

Revision 5

OI 38

Circulating Water System Operation

Revision 34; dated May 6, 2004

OI 70

Service Water System Operation

Revision 49; dated May 24, 2004

OI 150

Condensate Storage Tank Operations;

Revision 6; dated April 26, 2004

CL 1B

Containment Barrier Checklist Unit 1

Revision 49; dated June 28, 2004

CL 2C

Mode 5 to Mode 4 Checklist

Revision 5; dated April1, 2004

CL 10B

Service Water Safeguards Lineup

Revision 54; dated September 22, 2003

CL 10C

Service Water Turbine Building Valve Lineup Unit 1

Revision 21; dated October 24, 2002

CL 10C

Service Water Turbine Building Valve Lineup Unit 2

Revision 17; dated March 4, 2002

CL 10J

Safeguards Service Water System Checklist Unit 1

Revision 22; dated May 6, 2004

CL 10J

Safeguards Service Water System Checklist Unit 2

Revision 21; dated April 26, 2004

CL 13E Part 1

Auxiliary Feedwater Valve Lineup Turbine-Driven Unit 1

Revision 35; dated June 7, 2004

CL 13E Part 1

Auxiliary Feedwater Valve Lineup Turbine-Driven Unit 2

Revision 19; dated December 15, 2003

CL 13E Part 2

Auxiliary Feedwater Valve Lineup Motor-Driven

Revision 37; dated December 15, 2003

0-TS-SW-001

Service Water Flow Path Valve Position Verification (Monthly)

Revision 0; dated November 20, 2001

1-TS-AF-001

Documentation of AFW Flow Path Alignment

Revision 0; September 10, 2001

2-TS-AF-001;

Documentation of AFW Flow Path Alignment

Revision 0; dated September 10, 2001

0-TS-AFW-002

Auxiliary Feedwater System Valve and Lock Checklist (Monthly)

Revision 2; dated July 17, 2003

NP 2.1.3

Administrative Control of Red Locks, Lead Seal Wires, and Padlocks on Plant Equipment (Valves, Switches, Etc)

Revision 4; dated February 18, 2004

AOP-8F

Loss of Spent Fuel Pool Cooling

Revision 10; dated September 23, 2002

AOP-9A

Service Water System Malfunction

Revision 19; dated May 27, 2004

BG AOP-9A

Background Documents Service Water System Malfunction

Revision 16; dated January 15, 2004

AOP-10A

Safe Shutdown - Local Control

Revision 37; dated January 5, 2004

BG AOP-10A

Background Documents Safe Shutdown - Local Control

Revision 5; dated January 5, 2004

AOP-13A

Circulating Water System Malfunction

Revision 15; dated January 9, 2003

BG AOP-13A

Background Documents Circulating Water System Malfunction

Revision 14; dated September 23, 2002

AOP-13C

Severe Weather Conditions; Revision 14

June 30, 2003

BG AOP-13C

Background Documents Severe Weather Conditions

Revision 13; dated June 30, 2003

AOP-18A Unit 1

Train AA@ Equipment Operation

Revision 8; June 12, 2003

AOP-18A Unit 2

Train AA@ Equipment Operation

Revision 8; June 12, 2003

AOP-22 Unit 1

EDG Load Management

Revision 2; dated April 14, 2003

AOP-23 Unit 1

Establishing Alternate AFW Suction Supply

Revision 4; dated
January 4, 2004

BG AOP-23

Background Documents Establishing Alternate AFW Suction Supply

Revision 2; dated January 5, 2004

EOP-1.3 Unit 1

Transfer to Containment Sump Recirculation - Low Head Injection

Revision 32; dated October 3, 2003

EOP-1.4 Unit 1

Transfer to Containment Sump Recirculation - High Head Injection

Revision 13; dated January 22, 2004

ECA 0.0 Unit 1

Loss of All AC Power

Revision 36; dated October 3, 2003

SEP-2.1 Unit 1

Shutdown LOCA with RHR Aligned for Low Head

Revision 11; dated October 3, 2003

SEP-2.1 Unit 2

Shutdown LOCA with RHR Aligned for Low Head

Revision 11; dated October 3, 2003

SEP-3.0 Unit 1

Loss of All AC Power to a Shutdown Unit

Revision 19; dated January 5, 2004

SEP-3.0 Unit 2

Loss of All AC Power to a Shutdown Unit

Revision 20;January 5, 2004

ARB C01 A 1-5

Service Water Strainers ΔP High

Revision 6; dated August 25, 2003

ARB C01 A 1-6

Unit 1 or 2 Turbine Bldg Zurn Strainer ΔP High

Revision 4; dated December 7, 1993

ARB C01 A 2-5

North or South Service Water Header Strainers

Revision 4; dated March 27, 1997

ARB C01 A 4-5
Traveling Screen Differential Level High

Revision 7; dated
October 14, 2002

ARB C02 D 3-6

G-01 Emerg Diesel Cooler Low Flow

Revision 5; dated November 8, 2001

ARB C02 F 3-1

G-02 Emerg Diesel Cooler Flow Low

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OM 4.3.2

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OP 7A

Placing Residual Heat Removal System in Operation

Revision 43; dated April 22, 2004

OP 7B

Removing Residual Heat Removal System from Operation

Revision 35; dated June 24, 2004

OP 13A

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Revision 63; dated March 25, 2004

OP 13B

Secondary Systems Shutdown

Revision 20; dated April 19, 2004

ORT 9

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1-PT-SW-1

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PBF-2031

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Revision 71

PBF-2032

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PBF-2033

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0-SOP-SW-100

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0-SOP-SW-102

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1-SOP-CC-001

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PC 10 Part 3

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PC 43 Part 3

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PC 43 Part 7

G01/G02 Diesel Generator Heat Exchanger Flush

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PC 73 Part 5

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PC 73 Part 6

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HX-01

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HX-01

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HX-01

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AM 3 -19

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**Number**

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**Revision or Date**

EWR 96-041

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DG-CO2

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Revision 5

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3.7.8

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7.5.4

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9.6

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Auxiliary Feedwater (AFW) System and associated Bases B 3.7.5

Unit 1 - Amendment No. 201; Unit 2 - Amendment No. 206

Point Beach Technical Specification 3.7.6

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Unit 1 - Amendment No. 201; Unit 2 - Amendment No. 206

Point Beach Technical Specification 3.7.7

Component Cooling Water (CC) System and associated Bases B 3.7.7

Unit 1 - Amendment No. 201; Unit 2 - Amendment No. 206

Point Beach Technical Specification 3.7.8

Service Water (SW) System and associated Bases B 3.7.8

Unit 1 - Amendment No. 201; Unit 2 - Amendment No. 206

Point Beach Technical Specification 3.8.1

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Revision 4; dated March 19, 2004

DBD-10

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Revision 3; dated March 19, 2004

DBD-12

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Revision 6; dated May 26, 2004

DBD-16

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Revision 4; dated April 30, 2004

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Revision 2; dated June 11, 2004

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Revision 1; dated April 15, 2004

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Program Health Status

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4th Quarter 2003 Service Water System Maintenance Rule Summary

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GL 89-13 Program

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Response to Generic Letter 89-13 Safety Related Service Water Problem Point Beach Nuclear Plant

January 12, 1990

**Design Change Packages**

| Number | Title | Revision or Date |
|---|---|---|
| MR 93-005 | Replace Air Compressor Aftercooler Heat Exchangers | 11/4/96 |
| MR 88-012 | Circulating Water System Chlorination/ Dechlorination Systems | August 17, 1988 |
| MR 98-024*HU0 | Add Motor Operator to Service Water WT Isolation Valve - Manual Only | June 16, 1999 |
| MR 98-024*U | Modify SI Logic for Non-Essential Service Water Load Isolation Valves | July 13, 1999 |
| MR 02-017 | Top Hat and Stay Bushing Modification for the Service Water Motors P-32A-M thru P-32F-M | April 19, 2002 |
| SPEED | 2003-093 Steady Bushings for Service Water Pumps P-032A-F | August 18, 2003 |
| Modification Number 97-081 *A | U0 Add Motor Operators to SW to SFP Cooling HX Isolation Valves | March 16, 1999 |
| Modification Number 97-081*C | U2 Spent Fuel Pool Heat Exchanger Redundant MOVs - Unit 2 Safeguards Rack Work | October 2, 1998 |
| Modification Number 98-024 *O | Install Copper Ion Generator | March 5, 2001 |
| Modification Number 00-102 | Service Water Upgrades to Emergency Diesel Generator G01 | November 13, 2000 |
| Modification Number 00-103 | Service Water Upgrades to Emergency Diesel Generator G02 | December 8, 2000 |

## LIST OF ACRONYMS USED

| | |
|---|---|
| ADAMS | Agencywide Documents Access and Management System |
| AFW | Auxiliary Feedwater |
| ASME | American Society of Mechanical Engineers |
| ASTM | American Society for Testing & Materials |
| CAL | Confirmatory Action Letter |
| CAP | Corrective Action Program |
| CFC | Containment Fan Cooler |
| CFR | Code of Federal Regulations |
| CS | Containment Spray |
| CST | Condensate Storage Tank |
| DBD | Design Basis Document |
| DRS | Division of Reactor Safety |
| EOP | Emergency Operating Procedure |
| FP | Fire Protection |
| IMC | Inspection Manual Chapter |
| ISI | Inservice Inspection |
| LOCA | Loss of Coolant Accident |
| LOOP | Loss of Offsite Power |
| MSLB | Main Steam Line Break |
| NCV | Non-Cited Violation |
| NPS | Nominal Pipe Size |
| NPSH | Net Positive Suction Head |
| NRC | Nuclear Regulatory Commission |
| NRR | Nuclear Reactor Regulation |
| OD | Operability Determination |
| OI | Operating Instruction |
| PARS | Publicly Available Records |
| RWST | Refueling Water Storage Tank |
| SDP | Significance Determination Process |
| SG | Steam Generator |
| SR | Surveillance Requirement |
| SW | Service Water |
| TS | Technical Specifications |
| UFSAR | Updated Final Safety Analysis Report |
| USAB | United States Activities Board |
| Vac | Volts - alternating current |