

IOEB Analysis Team Study on Recent Operating Experience Ineffective Use of Vendor Technical Recommendations (public version)

Summary:

The Operating Experience Branch (IOEB), DIRS/NRR, recently conducted a review of operating experience (OpE) for the calendar years (CY) 2006-2010. This review focused on inspection findings that resulted from ineffective use of vendor technical recommendations by licensees of U.S. commercial nuclear power plants. One aspect of this study was to identify performance deficiencies that were attributed, in whole or in part, to licensees' failure to effectively use vendor technical recommendations. The study was further focused on those issues that led to unplanned reactor trips, transients, and/or equipment failures.

Prior to initiation of this study, IOEB had tasked Oak Ridge National Laboratory (ORNL) under contract to conduct a review of CY2006-2010 OpE related to the Auxiliary Feedwater (AFW) system in pressurized water reactors (PWRs). A recurring theme in ORNL's analysis and their report was ineffective use of vendor recommendations both in maintenance and operations of the AFW system, particularly for turbine-driven AFW pump failures involving turbine trip throttle valve failures. The study also identified several sub-themes, including deficiencies in knowledge management and corrective action programs and their implementation. IOEB then conducted a search of available information from a wider selection of inspection reports to better ascertain if further effort was warranted.

Based upon IOEB's expanded search, the staff look at all inspection findings between 2006 and 2010, with each finding being reviewed and further investigated to identify the root and contributing causes (if stated in the reports), the cross-cutting aspect, safety consequences, and how the finding was documented as a performance deficiency. The results (2008-2010) are included in the attached appendix to this study.

Discussion:

Since 1980, the staff and other industry groups (INPO) have issued a large number of guidance documents (over 100 NRC generic communications alone) highlighting the importance of licensee attention to vendor recommendations. The 1983 Salem Anticipated Transient without Scram (ATWS) was a "watershed" type event where the problems and root causes with the reactor trip breakers were identified in [NUREG-1000, "Generic Implications of ATWS Events at the Salem Nuclear Power Plant,"](#) as inadequate attention to the importance of vendor-supplied information, absence of an adequate preventive maintenance program, and an inadequate supply, control, and verification of information by the vendor. This event resulted in the staff issuing [Generic Letter \(GL\) 83-28](#), which directed the industry to establish formal vendor interface programs with an inferred wide scope covering nearly all safety-related equipment. The staff position was revised (and relaxed) with the issuance of [GL 90-03](#), "Relaxation of Staff Position in GL 83-28." Item 2.2 Part 2 of GL 90-03, "Vendor Interface for Safety-Related Components," conveyed that it may be impractical for licensees to include every safety-related component within formal vendor interface programs. However, the staff (through GL 90-03) still retained the position that licensees should have programs in place to interface with vendors and that there are certain expectations contained within these programs.

Briefly, these expectations include:

1. those provisions which ensure that licensees receive all such vendor issued information pertinent to its safety-related equipment,
2. implementing a vendor interface program that, in good faith, documents efforts to periodically contact the vendors of key, safety-related components (such as auxiliary feedwater pumps, batteries, inverters, battery chargers, cooling water pumps, and valve operators), not already included in the Vendor Equipment Technical Information Program (VETIP), as described in the 1984 Nuclear Utility Task Action Committee (NUTAC) Report, and,
3. a reasonable and prudent review of operating experience, availability of vendor information, and component safety significance using insights obtained from generic or plant specific probabilistic risk analyses will yield a set of component vendors that will make up each licensee's vendor interface program. In the event that vendors have gone out of business, cannot be identified, or will not supply information, the licensee or applicant should implement or continue to maintain a program that will assure sufficient attention is paid to equipment maintenance, replacement, and repair to compensate for the lack of vendor backup such that equipment reliability commensurate with its safety function is assured.

To further illustrate the prevalence of this issue, on December 2, 2010, the staff issued [Information Notice 2010-26, "Submerged Electrical Cables,"](#) to inform the industry of recent events involving prolonged cable submergence in water. The IN contains nine recent events where cables were found for extended period of time submerged in water. The IN states that cable vendors do not typically design or qualify cables for submergence in water, and extended use of such cables would require a qualification test report or certification from the cable vendor.

The attached appendix is a table containing vendor-related findings for CY2008-2010. Results from CY2006 and 2007 were also considered in this analysis, but the raw data is not included in the appendix.

Summary of data insights gained from the study are as follows:

- There were nine white inspection findings related to this issue over CY2008-2010.
- For CY2008-2010, this issue caused or contributed to over 40 safety system failures or inoperabilities, 15 scrams, 5 plant transients, and 2 emergency declarations.
- Inspection findings were coupled with violations of 10 CFR Part 50, Appendix B, Criteria III, V, and XVI, or violations of Technical Specification (TS) 5.4.1 (Standard TS) for inadequate or failure to follow procedures.

Additionally, three of the nine events highlighted by a 2010 Institute of Nuclear Power Operations (INPO) Significant Operating Experience Report had causes that were linked to a failure to effectively implement vendor technical recommendations. These include **H.B Robinson** - Complicated Trip and Alert, **Calvert Cliffs** - Dual Unit Trip, and the **Peach Bottom** - Multiple Slow Control Rods with Adverse Scram Pilot Solenoid Valve Diaphragms. INPO found that for all nine events discussed in the SOER, the underlying causes involved all levels of the organizations and include an inadequate recognition of risk, weaknesses in the application of significant operating experience, and a significant drift in standards. The aspects

of these events that relate to the ineffective use of vendor technical recommendations are as follows:

- At **Robinson**, the root cause of the complicated trip which led to an Alert in March, 2010, was the licensee's failure to follow the cable vendor recommendations and a self-imposed administrative requirement/standard for the installation of non safety-related 4kV cables. As a result, cables with design features inappropriate for the application had been installed, leading to a fire and a reactor trip. [IR 261/2010-004](#)
- At **Calvert Cliffs**, during plant safety system response to a dual-unit trip with complications in February, 2010, the 2B EDG tripped offline and was unable to energize its designated bus. This safety system failure was attributed to the failure of a time delay relay which did not allow the EDG to build up sufficient oil pressure before causing it to trip on low oil pressure. The T3A relay, which timed out early, had been in service for approximately 13.5 years, 3.5 years beyond its vendor recommended 10-year service life. [IR 2010006](#)
- At **Peach Bottom**, the licensee failed to identify and correct a condition adverse to quality (CAQ) related to control rod drive scram solenoid pilot valve diaphragms. This issue was described in vendor documents as well as a NRC generic communication. However, the licensee did not develop the necessary/appropriate performance monitoring and trending programs described by the vendor, which was a likely root cause for the identification of 21 slow control rods during scram time testing in January 2010 and a subsequent violation of Tech Specs. [IR2010002](#)

In August 2010 the staff issued OpE Smart Sample [2010-01 on Recent Inspection Experience for Components Installed beyond Vendor Recommended Service Life](#) that addresses a recent increasing trend in inspection findings where the root causes or contributing causes involved exceeding the vendor recommended service life of components, where no justification for run-to-failure, or extended service life had been performed. The essence of this smart sample was incorporated in the 2011 revision of [Inspection Procedure \(IP\) 71111.21, Component Design Bases Inspection \(CDBI\)](#).

Observations and Insights:

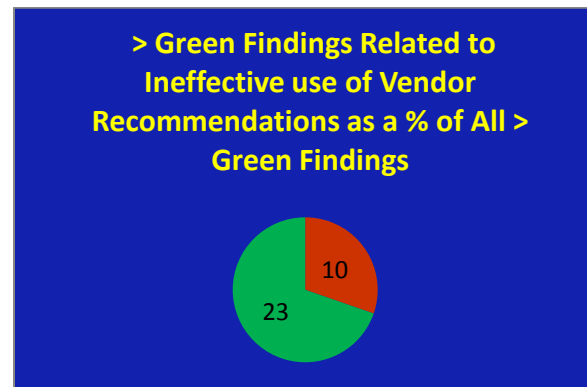
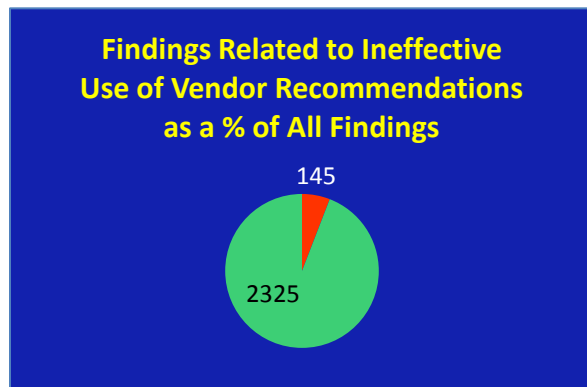
Analysis of the data contained in the attached appendix indicates that the number of inspection findings associated with ineffective use of vendor technical information over any given calendar year is relatively consistent at approximately 45-50 findings per year. This works out to approximately six percent of all inspections findings in a given year. Additionally, for the calendar years 2008-2010, there were 33 greater than green inspection findings within the reactor safety arena, with 10 of those findings related to this issue. This results in approximately 30 percent of all risk significant findings. While there appears to be no distinguishable upward trend, the consistent number of findings year to year, combined with the number of significant events related to ineffective use of vendor recommendations, indicates a real opportunity for licensees to improve their programs and reduce their vulnerability to such events.

Another aspect of this issue is the documentation of inspection findings. Ineffective use of vendor recommendations can be revealed through maintenance activities, design, test, and procedural controls, and ineffective corrective actions. Because inspectors have various ways

to document performance issues based regulatory requirements that are not directly related to ineffective use of vendor recommendations, this issue is difficult to quantify and assess.

In an effort to categorize and trend the performance deficiencies and related findings that were considered, the staff observed the following characteristics of failures from the inspection data:

- Ineffective use of vendor recommendations has caused or contributed to the complexity of reactor trips/transients and failures in safety-related components,
- Their numbers appear to be relatively consistent in frequency and in severity,
- They are not limited to any particular component, system, or reactor type,
- They are typically accompanied by a cross cutting aspect,
- They have caused or contributed to performance indicators crossing the green-white performance threshold, and
- They have occurred at plants with good over performance.



There have been over 100 generic communications since issuance of [Generic Letter 83-28](#). This indicates that despite significant communication of the need to address this type of causal factor in events, and that most of these events involving ineffective use of vendor recommendations are preventable, licensees continue to experience such events. Based on the body of operating experience within this study, it appears that ineffective use of vendor recommendations will likely continue at the existing rate.

Several of the significant events that have been the focus of NRC reactive inspections and INPO evaluations during the past year (2010) involved aspects related to licensees' ineffective use of vendor technical recommendations. The staff also identified other safety significant events and conditions related to this issue. Additionally, in October of 2010, IOEB was represented at the [2010 "Joint Meeting to Exchange Information on Recent Events in NPPs and Annual Meeting of the IRS National Co-Ordinators,"](#) held in Vienna, Austria (IAEA-J8-TM-39522, Rev 1). The meeting included a presentation and discussion on 31 significant international events. Although the meeting did not specifically identify that ineffective use of vendor recommendations was a summary cause category, three of the 31 significant international events appear to be directly related to ineffective use of vendor recommendations. See the attachment and the end of this study for a discussion of the three events involving ineffective use of vendor recommendations.

Although this study was focused on ineffective use of vendor technical recommendations for safety-related and other equipment that typically lie within a licensee's ongoing preventive maintenance program, it was not intended to imply that issues coming out of this study impact how licensees manage the (long term) aging effects for structures or components that fall within the scope of license renewal programs. Readers of this report need to be mindful that "generic plant aging issues" under scope of license renewal, and as stated in [NUREG 1801, Generic Aging Lessons Learned \(GALL Report, Rev 2\)](#), have their own scoping and review requirements. For further information, please visit the NRC's [License Renewal Guidance Documents](#) on the public website.

Although guidance has been issued to the industry in the past in the form of generic communications for ineffective use of vendor recommendations, IOEB will continue to assess the need to issue appropriate additional generic guidance, as warranted.

Potential for Regulatory Impact:

Ineffective use of vendor recommendations can allow latent failures to exist undetected and be an underlying cause of risk-significant initiating events. Further, licensees that routinely ineffectively use vendor technical recommendations that result in component failures can impact common cause factors (CCFs) in such areas as design control, maintenance practices, testing, and procedures. [NUREG/CR 6268, Rev. 1, Common-Cause Failure Database and Analysis system: Event Data Collection, Classification, and Coding](#), discusses three methods of defense against a CCF: (1) defend against the failure proximate cause (readily identifiable), (2) defend against the CCF coupling factor (a characteristic of a group of components or piece-parts that identifies them as susceptible to the same causal mechanisms), or (3) defend against both items 1 and 2. A defense strategy against proximate causes typically includes effective design control programs, use of qualified equipment, effective testing and preventive maintenance programs, procedure review, personnel training, quality control, redundancy, diversity, and barriers. When an acceptable defense strategy is developed using protection against a proximate cause as a basis, the number of individual failures may decrease.

Finally, the number of inspection findings covering a variety of oversight activities and regulations suggests that the Reactor Oversight Process (ROP) has been effective in identifying these performance issues. However, we note that the visibility of this success in this area is subtle, as this issue cuts across disciplines and organizational functional areas and tends to be a contributor to performance issues and significant events, rather than the sole root cause. Nevertheless, we believe that licensees with strong organizational practices and effective corrective action programs can reduce and prevent many of these events.

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|---|-------------|---|---|
| 11/08/2010 | Integrated | Maint. procedures for overhaul of 480/4160V safety related circuit breakers were inadequate. Vendor recommended 10-yr max refurbishment periodicity. Licensee had no evaluation or additional PMs in place to justify extending overhauls to > 10 years. | P.2(b) - did not effectively incorporate industry OpE into PM program | None | The inspectors identified a Green non-cited violation of Technical Specification 5.8.1(a) for inadequate procedures associated with 4160 V and 480 V safety-related breaker maintenance procedures. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 11/03/2010 | Integrated | Mobil/Vaspar concrete coating was applied to wrong specifications during construction, which could result increased debris loading in containment sump during design basis accident. | Not reflective of current performance | | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 10/29/2010 | Integrated | Rosemount transmitters were found with plastic shipping plugs still installed in unused cable/conduit connection points. Vendor guidance says replace with stainless steel plugs once the transmitter is installed. Housing covers on several transmitters were also not torqued to manufacturer specifications. | H.2(c) - Procedures/ work packages | | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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| 09/24/2010 | 95002 | Licensee previously had SIT and followup inspection related to high vibrations on EDG from degraded rubber coupling. 95002 evaluated lic RCA, which showed poor use of vendor information as a contributing factor. In addition, the Preventive Maintenance process implementation was not well defined with regard to using vendor recommendations and operating experience (OE) which lead to missed opportunities for identification. | None | Safety System (EDG) inoperable | No findings, observations are as follows: Between 1988 and 2009, the licensee failed to implement site procedures to develop preventive maintenance schedules that specify replacement of electrolytic capacitors, which are parts that have been identified as having a specific lifetime, for Unit 2 EDG LOCA/LOSP timer cards and power supplies. The plant failed to establish a periodic replacement strategy for electrolytic capacitors used in safety related and single point vulnerability (SPV) components. These represented prior opportunities to identify the issue. In addition, the Preventive Maintenance process implementation was not well defined with regard to using vendor recommendations and operating experience (OE) which lead to missed opportunities for identification. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 09/14/2010 | Integrated | Safety related static inverter No. 31 unavail for 5 days due to fuse failure caused by commutating capacitor failure. Capacitor had been installed for 13 years, vendor recommends no longer than 9 years. | P.1(c) - Failure of licensee's corrective action program. | Safety System unavailable | A self-revealing, non-cited violation (NCV) of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because Entergy personnel did not adequately identify and correct a condition adverse to quality to ensure the continued availability of the safety-related 31 static inverter. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |

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| 08/12/2010 | SIT | Air in the TDAFW control oil system slowed the response of the gov vlv during operability test. Design change in 2001 failed to incorporate vendor guidance regarding ensuring adequate venting of ctrl oil lines. | H.1(b) - Failure to use conservative assumptions | Safety System (TDAFW) inoperable | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 07/30/2010 | Integrated | Safety related electrical cables were discovered to be submerged in standing water. Review of vendor specifications did not show that the cables were certified for full submersion. | P.1(b) - Design Control | None | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 07/16/2010 | Integrated | Improper torquing of Condenser Manway bolts resulted in inadequate gasket crush, contrary to vendor guidance. Flooding of condenser bay let to reactor scram and loss of normal heat sink. | P.1(c) - Failure to thoroughly evaluate problems associated w/previous manway gasket leaks. | Manual Scram w/ loss of normal heat sink. | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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| 06/15/2010 | PI&R | Bolts for RHR CB closing spring motor backed out of their holes during pump operation. Breaker would not have shut following loss of power (LOOP, etc). Licensee did not follow vendor recommendation for checking bolt tightness. | H.2(c) - Resources/ Work Instructions | | Non-cited violation of TS 5.4.1 for licensee's failure to have adequate preventive maintenance procedures for Siemens Horizontal Vacuum Circuit Breakers. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 06/10/2010 | CDBI | Licensee design basis calculations did not assure that adequate voltages would be available to safety related ECCS equipment. HPCS 230Vac MOV brake vendor req'd 207 Vac minimum, licensee's calculation only showed 194Vac would be available | None - not reflective of current licensee performance . | None | | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 05/28/2010 | Integrated | Following lightning strikes and temporary loss of CCW flow, RCP bearing temperature increased to >195 F. Procedure requires immediate trip of pump. Operators didn't trip for 10 minutes. Vendor guidance warns of possible high vibration/seal failure if operated at high temps for too long. | H.1(c) – Decision making. RO did not communicate loss of CCW to SRO | Exceeded RCP Motor Bearing high temp. limit. | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 05/24/2010 | CDBI | Green - 37 examples of vendor technical manuals where associated vendor had not been contacted in > 3 years. Licensee's Vendor Manual Control procedure requires contact with vendors for safety related components every 3 years consistent with GL 90-03. | P.1(c) - Failure of licensee's corrective action program. | | | Failure to comply with a commitment to maintain periodic vendor interface in accordance with GL 90-03. |

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| 05/12/2010 | Integrated | Green - Licensee failed to establish a PM program for 125VDC switchyard distribution panels. This was overlooked by an external review but recommended by the vendor. | P.2(b) - Implementation of OpE | None | A self-revealing finding of very low safety significance (Green) was identified because Constellation did not establish an appropriate PM program for 125 VDC switchyard distribution panels in accordance with MN-1, "Maintenance Program." | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 05/12/2010 | SIT | Green - Inadequate Vendor Procedures for rinsing liquid dye penetrate and for ensuring sufficient camera overlap and coverage of the weld area. | H.4(c) - Work Practices | | | blank |
| 05/11/2010 | Integrated | Green - Riggers lifted a 300-lb boron recovery pump motor using choked configuration rather than the lifting eyebolts. The load slipped and fell 15 feet, damaging CCW pump motor casing and junction box (CCW declared inop) | H.1(a) - HP/Decision making. | Safety System component inoperable. | Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 05/01/2010 | Integrated | Green - (Self-revealing) - Operators failed to perform channel-flushing of the traveling screens as directed by vendor manual and procedure. Traveling screens tripped due to large amount of debris. Unable to restart screens. | | Transient - Rapid down power due to Lowering condenser vacuum. | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |

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| 04/16/2010 | Integrated | An IRM failed to indicate on scale during rod withdrawal on Rx S/U. Resulted in 1/2 scram, re-initiation of S/U, then more instrument abnormalities and a manual scram. Licensee did not follow GE SIL recommendations from 2003 recommending circuit testing for any NI's prior to S/U if work was recently performed under vessel. | H.1(b) - Human Performance Decision making | 1/2 Scram and Manual Scram | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 04/05/2010 | PI&R | Green - Licensee's design basis documents called for operators to manually close TDAFW pump steam admission valve in certain scenarios. Consultation with vendor revealed that force req'd to shut valve exceeded that which an operator is expected to exert. | P.1(a) - | Safety System inoperable | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 04/02/2010 | CDBI | Loose wooden spacer blocks at end of battery racks for DDAFW pump. Vendor assumed batteries would remain rigid to satisfy seismic analysis. Carryover issue from 2004, not properly addressed, not reflective of current performance. | | | The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety significance for the licensee's failure to restore the Diesel Driven Auxiliary Feedwater (DDAFW) battery racks to their design basis qualification, Seismic Category I. | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 03/28/2010 | Integrated/AIT | Licensee failed to follow cable vendor rec and self-imposed admin req'ts for cable installation. Failure of 4Kv cable (installed 20 yrs ago) initiated Complicated Trip/Fire/Alert. NRC AIT | None (not indicative of current perf.) | Reactor trip, Alert, 2 Fires | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |

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| 03/18/2010 | Integrated | Green - Licensee switched breaker vendors without accounting for differences in design/ function. Lower trip coil voltage on replacement resulted in inadvertent CCW pump trip. | None | Safety System breakers (CCW) declared inoperable. | | Failure to adequately evaluate acceptability of vendor guidance before incorporating or using the guidance. |
| 03/07/2010 | Integrated | Catastrophic failure of 13.8Kv bus due to water intrusion. Improperly installed ducting from 2007 allowed water intrusion. Workers relied on skill of the craft, and did not include vendor drawings in the work package which would have demonstrated how to restore ducting to weather tight configuration | H.2(b) - Resources/ Training. | Failure of 13.8 Kv bus | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 03/03/2010 | CDBI | Vendor guidance provided a range of settings for inputs that affect torque, thrust, and operation of certain safety related MOVs. In some cases, licensee implemented the least conservative values allowed by vendor, bringing into question whether MOVs would function as designed under all conditions. | None | None | | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |

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| 02/23/2010 | Integrated | Green - Revised vendor requirements for AFW pump coupling gap were introduced by the vendor in January 2010 but were not incorporated into licensee's procedure. | H.2.(c) - Procedures | Safety System failure (excessive AFW axial vibrations. | 10 CFR 50, Appendix B, Part V, requires in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances, and shall include appropriate quantitative acceptance criteria for determining that important activities have been satisfactorily accomplished. Contrary to this requirement, 0-PMP-411-BFP, "Turbine Driven Auxiliary Boiler Feed Pump Overhaul/inspection," contained a coupling gap measurement approximately 0.125 inches larger than required by the coupling vendor. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 02/19/2010 | CDBI | Green - Non-conservative data used for calculating high pressure injection, decay heat, and containment spray motor loads under accident conditions | H.2(b) | None | A Non-Cited Violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to evaluate worst case motor loads for emergency diesel generator and AC power system loading under postulated accident conditions. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 02/18/2010 | SIT | White - 2B EDG failed to run following demand signal during a dual unit trip. Failure due to failed T3A Agastat relay which timed out early. Relay was left in place for 13.5 years, vendor recommended service life was 10 years. | H.2(a) - Human Performance / Resources | Safety System Failure | The NRC identified an apparent violation of Technical Specification 5.4.1 for the failure of Constellation to establish, implement, and maintain preventive maintenance requirements associated with safety related relays. The team identified that Constellation did not implement a performance monitoring program specified by the licensee in Engineering Service Package (ES2001 00067) in lieu of a previously established (in 1987) 1 O-year service life replacement PM requirement for the 2B EDG T3A time delay relay. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |

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| 02/12/2010 | Integrated | White - Age related failure of electrolytic capacitor caused failure of the Unit 2 EDG LOCA/LOSP timer circuit cards left in place beyond vendor recommended life; same program deficiency and aged capacitors resulting in a turbine and reactor trip | P.2(b) | Reactor Trip | A self-revealing apparent violation (AV) of TS 5.4, Procedures, was identified for failure to establish and perform preventive maintenance activities to replace electrolytic capacitors prior to their failure, specifically related to the electrolytic capacitors for the Unit 2 EDG LOCA/LOSP timer cards and their associated power supplies. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 02/09/2010 | Integrated | Green - Siren test failure due to vendor instructions not included in procedure and technicians performing procedure from memory | H.4(c) | Siren Failure | A self-revealing NCV of very low safety significance (Green) of 10 CFR 50.47(b)(5) was identified because Entergy personnel did not ensure the alert and notification system (ANS) sirens remained available for notification of the populace within the plume exposure pathway emergency planning zone (EPZ). | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 02/09/2010 | Integrated | Green - Failure to incorporate vendor recommended maintenance practices results in reactor trip | H.4(c) | Reactor Trip | A self-revealing finding (FIN) of very low safety significance (Green) was identified because Entergy personnel did not conduct maintenance in accordance with maintenance procedures and processes on the 31 and 32 main boiler feedwater pumps (MBFP). The inadequate maintenance resulted in an unexpected down power and subsequent reactor trip. Because the performance deficiency was related to non-safety related equipment, processes and procedures, it did not involve a violation of regulatory requirements. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

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| 02/09/2010 | Integrated | Green - Failure to justify operation of MCCB beyond vendor recommended life | P.1(c) | None | An NRC-identified NCV of very low safety significance (Green) of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," was identified because Entergy personnel did not promptly identify and correct a condition adverse to quality regarding molded-case circuit breaker (MCCB) non-conformance. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 02/09/2010 | Integrated | Green - Failure of a CCW heat exchanger service water valve due to failure to follow vendor maintenance recommendations | H.2(c) | Degradation of Safety Function | A self-revealing Green NCV of TS 6.8.1, "Procedures and Programs," was identified because bolting between the valve body and actuator for the 22 CCHX SW isolation valve broke causing the valve to partially close. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 02/08/2010 | Integrated | Green - Failure to evaluate extent of condition on same-type safety-related circuit breakers following a failure of non-safety related circuit breakers | H.4(b) | None | The inspectors an NCV of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the failure to promptly identify and correct deficiencies resulting in 4160-Volt alternating current breaker failures that, if corrected, may have prevented subsequent similar failures. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 02/05/2010 | Integrated | Green - Failure to update procedure with vendor recommendations for RCP heat exchanger to pump gasket type and compression | P.2(b) | None | A self-revealing Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, was identified for the licensee's failure to prescribe an activity affecting quality by documented instructions, procedures, or drawings appropriate to the circumstance. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 02/03/2010 | Integrated | Green - Previous failure of safety related equipment due to not following vendor recommendations not reported as maintenance preventable functional failure | None | Loss of Safety Function | The inspectors identified a very low safety significant (Green), non-cited violation (NCV) of 10 CFR 50.65, paragraph (a)(2), in that Ginna did not demonstrate that the performance of the diesel-driven service air compressor was being effectively controlled through preventive maintenance. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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|-------------|----------------------------|---|---|---|---|--|
| 02/01/2010 | Integrated | Green - Improperly assembled contactor led to loss of recirc pump during attempt to shift from fast to slow speed | H.4(a) | Manual reactor scram | A Green finding (FIN) of very low safety significance was self-revealed when one of two reactor recirculation pumps failed to shift to slow speed while operators were downshifting both pumps. No violation of regulatory requirements occurred because the reactor recirculation system is not a safety-related system. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/30/2010 | Integrated | Green - Licensee did not correct an issue related to control rod drive scram solenoid pilot valve diaphragms that had been previously described in vendor documents and NRC GC. | P.1(c) - Failure of licensee's corrective action program. | Safety System failed its surveillance | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/28/2010 | Integrated | URI - Cabling associated with emergency DC bus station batteries does not appear to meet vendor installation requirements | N/A | None | URI (still open) | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 01/28/2010 | Integrated | Green - Failure to include all fuel vendor guidance as acceptance criteria causes core load misalignment and damage to fuel assembly | P.2(b) | Fuel Assembly Damage | A self-revealing NCV of Technical Specification (TS) 5.4.1 was identified for failure to maintain procedure PT/0/A/0775/015, "Core Alignment Verification," which resulted in damage to three Unit 1 fuel assemblies. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 01/28/2010 | Integrated | Green - Inadequate procedure failed to correctly describe steps for restoration, causing a false input to cold overpressure mitigation system, requiring 1 train of a PZR PORV to be isolated | P.2(b) | Inoperability of 1 train of safety system | The inspectors reviewed a self-revealing noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for an inadequate maintenance procedure that failed to describe the steps for correctly restoring auxiliary process cabinet D1. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/28/2010 | Integrated | Green - MCR isolation damper inoperable due to failure to follow vendor recommended overhaul schedule | H.2(a) | Inoperable safety-related component | A self-revealing Green NCV of 10 CFR 50 Appendix B, Criterion XVI, was identified for the failure to correct a condition adverse to quality which led to main control room isolation damper 1-VS-MOD-103D being inoperable for approximately 19 hours. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|-------------------------------------|---|--|---|---|--|
| 01/21/2010 | Integrated | Green - Procedure differed from vendor technical manual for installation verification, leading to high pump vibrations and forced outage | H.2(c) | Forced Outage | The inspectors identified a Green non-cited violation of Technical Specification (TS) 6.8.1.a and Regulatory Guide 1.33, for an inadequate safety-related maintenance procedure. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/21/2010 | Integrated | Electrical lead for sump pump discharge isol valve was found improperly terminated on the valve's torque switch, contrary to vendor recommendations. | H.4(b) - Work Practices, Procedural Compliance. | None | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/20/2010 | Plant Modifications | Green - Design basis requirements and vendor tolerances not incorporated into design drawings and procedures for time delay relays calibrations | P.2(b) | None | The inspectors identified a finding of very low safety-significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," in that the licensee had not assured the correct design basis for safety-related (SR) Agastat Time Delay Relays (TDR) were translated into design drawings, procedures, and test instructions. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/14/2010 | Integrated | Green - Licensee did not follow vendor manual recommendations to wait min of 72 hours to take specific gravity readings after replacing battery cells. Inspectors later discovered electrolyte level in all replaced cells above the high level mark. | P.2(a) - Failure to evaluate external OpE and vendor recommendations | Safety System - Alert level of electrolyte in one battery cell. | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 01/09/2010 | Integrated | Catastrophic failure of vital area supply fan due to low oil level. Licensee procedures did not incorporate vendor guidance for setting oil bubbler. | H.2(c) - Resources/ Work Instructions | Resulted in a Fire and UE Declaration | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|--------------------------|--|--------|-------------|---|--|
| 01/06/2010 | CDBI | Green - Failure to assure that minimum voltage available at safety-related solenoid valve is in conformance with vendor requirements | None | None | The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," having very low safety-significance for the failure to adequately evaluate circuit loads in determining design limits in electrical calculations. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 01/06/2010 | CDBI | Green - Failure to verify safety related equipment would remain functional at less than vendor specified voltages | None | None | The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," having very low safety-significance for the failure to have adequate testing for safety-related equipment to monitor component degradation. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 11/30/2009 | Followup | White - Corrosion of the MOV actuator of an RHR containment isolation valve prevented the valve from opening. Licensee procedures concerning actuator environmental qualifications contradicted vendor recommended environment | P.1(a) | | Apparent violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to prevent water from entering the motor operated valve actuator for valve 1SI8811B that resulted in corrosion of the torque switch. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 11/19/2009 | CDBI | Green - Contrary to commitments made pertaining to GL83-28, the licensee failed to update vendor manuals for reactor trip breakers | P.2(a) | None | The team identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," with programmatic implications for the licensee's failure to incorporate updated vendor information for the reactor trip breakers. | Failure to comply with a commitment to maintain periodic vendor interface in accordance with GL 90-03. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|---|---|--|---|---|---|
| 11/15/2009 | Integrated | Maint had re-assembled the Hydrogen Seal Oil filter without during April RFO w/o the required split ring. They saw the groove for the split ring, but did not consult the vendor manual or ask supervision what its purpose was. Absence of the split ring caused the handle to eject when being rotated by an operator. 10,000 gal of oil spilled, reactor trip. | H.3(a) - Work control/ classification | Reactor Trip (potential for major fire if sprayed on swyd cables in vicinity) | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 11/06/2009 | Operability Evaluation Inspection | White - Failure to follow work order procedure results in extended battery inoperability | H.4(a) | Inoperability of a safety-related train | The licensee identified a preliminary white violation of Technical Specification 6.8.1.a for the failure to follow plant procedures during corrective maintenance on the safety-related battery. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 11/05/2009 | Integrated | Green - Improper o-rings installed in Main Stop Valve fast-acting solenoid was the wrong GE part number. This resulted in leakage of EHC oil from the reservoir. | P.2(b) - Licensee did not apply prior industry OpE | Turbine Trip due to profuse oil leak | | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |
| 11/05/2009 | SIT | Green - Licensee failed to consider alternative failure mechanisms when extending time delay relay lifetimes beyond vendor recommended life | None | Failure of safety related component | The team identified a violation of 10 CFR 50, Appendix B, Criterion III, "Design Control," which occurred when the licensee inappropriately extended the service life of 322 safety-related Tyco/Agastat series E7000 time-delay relays without having an adequate technical basis. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|--------------------------|--|--|
| 11/04/2009 | Integrated | Green - Failure of shutdown cooling valve twice due to improper alignment of position feedback arm, contrary to vendor instructions | P.1(d) | Loss of shutdown cooling | A finding of very low safety significance (Green) and an associated NCV of TS 5.4.1, Procedures, was identified by the inspectors for the failure to implement procedures to properly align the positioner feedback arm for the shutdown cooling (SDC) flow control valve CV-3006 during 1R20 refueling outage. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 11/04/2009 | Integrated | Green - Authorization to perform procedure steps out of order bypassed vendor-recommended guidance resulting in reactor trip | H.2(c) | Reactor Trip | A finding of very low safety significance (Green) was self-revealed on June 21, 2009, for the failure to adequately implement the requirements of NOP-WM-4300, Order Execute Process. The performance deficiency did not involve a violation of regulatory requirements. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 11/03/2009 | Integrated | Green - Inappropriate classification of certain safety-related circuit breakers as run-to-failure resulted in failure to adhere to vendor recommended maintenance | None | None | The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for failure to establish a test program for all safety-related 480 volt motor control unit circuit breakers to assure that necessary testing was performed to demonstrate that they would perform the safety-related function in service. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 10/30/2009 | Integrated | LIV - Failure to take measures per industry OpE and vendor recommendations to ensure MSRV stem thread defect was corrected; failed to lift and reseal properly during surveillance | N/A | None | 10 CFR 50, Appendix B, Criterion XVI, Corrective Action, required, in part, that measures shall be established to assure that conditions adverse to quality, such as defective equipment, were promptly corrected. Contrary to this, the licensee determined that it had failed to take adequate measures consistent with industry operating experience and vendor recommendations to assure that an identified equipment defect associated with MSRV stem thread degradation was corrected. | Failure to update vendor manuals or guidance, when new guidance is readily available. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|---|--|--|---|
| 10/30/2009 | Integrated | Green - Failure to follow vendor installation instructions resulted in loosening of hex nuts on EDG jacket water heat exchanger expansion joints | None | None | 10 CFR Part 50, Appendix B, Criterion III, "Design Control," requires, in part, measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions. Contrary to the above, since a change was made to the expansion joint installation procedure, the licensee failed to establish an adequate procedure for the installation of the control units on the emergency diesel generator jacket water heat exchanger inlet and outlet expansion joints. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 10/30/2009 | Integrated | Green - Maintenance procedure failed to include vendor recommended torque value leading to failure of FRV and reactor trip | H.2(c) | Reactor Trip | A Green self-revealing finding was identified for an inadequate maintenance procedure as specified by site standard MMDP-1, revision 14, Maintenance Management System, which was used to perform a rebuild of the Unit 1 Loop 1 main feedwater regulating valve (FRV) actuator. The performance deficiency did not involve a violation of regulatory requirements. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 09/25/2009 | PI&R | Green - Failure to adequately evaluate extending service life of safety-related molded case circuit breakers | P.2(b) | None | The inspectors identified a Non-Cited Violation (NCV) of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Actions," for the failure to promptly correct a condition adverse to quality regarding the expired qualification of safety-related molded case circuit breakers. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 09/24/2009 | Integrated | Following failed N-38 (NI) alignment, operators declared SR and IR portions operable and PR inoperable. Inspector questioning and subsequent contact with system vendor confirmed one power supply feeds all 3 instruments and impacts all ranges. | H.1(a) - HP/Decision making. Did not fully incorporate vendor input into evaluation | Safety system (source range NI req'd by App R) | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|-------------------------------------|--|--------|-----------------------------|--|--|
| 09/15/2009 | Fire Protection | Enforcement Discretion - Inadequate procedural guidance for tripping RCPs in safe shutdown scenario | N/A | None | License Condition 2.C.5 requires that FENOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Updated Final Safety Analysis Report. BVPS Unit 1 UFSAR Rev. 24 Section 9.10.1 states that the fire protection plan that satisfies General Design Criterion 3 of Appendix A to 10 CFR 50 is described in BVPS Administrative Procedures. 1/2 ADM-1900, Fire Protection Program, Rev. 19 step 7.17.4 requires operating procedures be maintained to implement the actions required to achieve safe shutdown. Contrary to the above, FENOC did not meet this requirement and failed to maintain safe shutdown procedure 1OM-56B.4.I, Safe Shutdown Following a Serious Fire in the Service Building, Rev. 11, and ensure that the RCPs were tripped and remain tripped prior to securing RCP seal cooling. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 08/28/2009 | Plant Modifications | White - Failure of EDG 2 bolt flange due to use of wrong gasket causes EDG inoperability | P.1(c) | Safety system failure (EDG) | A self-revealing apparent violation (AV) of 10 CFR 50, Appendix B, Criterion III, Design Control was identified following a review of the identified causes for the failure of the B EDG jacket water cooling system on February 25, 2009. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 08/12/2009 | Integrated | Green - Installation not in accordance with vendor recommendations leads to MFP failure and reactor trip | None | Reactor Trip | A self-revealing Green finding was identified because Entergy personnel did not establish adequate instructions in a design change package which resulted in incorrectly installed tubing in the 21 main boiler feed water pump (MBFP) hydraulic control system that subsequently failed due to fatigue. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|----------------------------------|--|--|
| 08/12/2009 | Integrated | Green - Failure to implement vendor-recommended preventive maintenance to replace governor oil of TDAFW pump governor | None | Inoperability of TDAFW pump | A self-revealing finding of very low safety significance (Green) was identified because PSEG did not implement adequate preventive maintenance for the turbine driven auxiliary feedwater (AFW) pump speed governor. The performance deficiency did not involve a violation of a regulatory requirement. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 08/11/2009 | Integrated | LIV - Software defect identified by vendor and reported to licensee; corrective action not implement resulting in underreported activity on filter shipment | N/A | None | The shipping supervisor discovered that the activity for a shipment of CFS filters to Studsvik was underreported by a factor of over 500, in violation of Title 10, Code of Federal Regulations, Part 71.5. This error occurred due to a flaw in the software package used to prepare the shipping manifest. | Failure to update vendor manuals or guidance, when new guidance is readily available. |
| 08/10/2009 | Integrated | Green - Failure to incorporate industry and vendor recommendations to maintenance procedure resulted in test failures of safety-related MOVs | P.1(c) | Safety-related MOV Inoperability | A Green, self-revealing NCV of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified. Specifically, Exelon's MOV Program procedures lacked specific instructions to prescribe an acceptable frequency for performing valve stem lubrication, which resulted in test failures of safety-related MOVs and affected the reliability of the MOVs' safety functions. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 08/05/2009 | Integrated | Green - Main feed pump trip from EMI, noise hardening of cabinets per vendor recommendation had not been performed | P.1(c) | Reactor Transient | The inspectors documented a Green self-revealing finding associated with the trip of main feed pump P-1B on April 9, 2009. The licensee's failure to properly implement a modification to noise harden the main feed pump control cabinets was a performance deficiency. This pump was not safety related, therefore, no violation of NRC requirements occurred. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|---|---|--|
| 08/05/2009 | Integrated | Green - Failure to update S/G tube inspection procedure with vendor reference information per NRC commitments | H.2(c) | None | The inspectors identified a finding of very low safety significance (Green) for the licensee's failure to update procedures as required by NRC commitments. The issue was not a violation of NRC requirements, but a failure to manage commitments in accordance with industry guidance. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 08/05/2009 | Integrated | LIV - Inadequate installation procedure results in high component cooling water pump vibrations | N/A | Failure of safety related component | 10 CFR Part 50, Appendix B, Criterion V, requires, in part, that activities affecting quality be prescribed by instructions, procedures, and drawings appropriate to the circumstance. Contrary to the above, on May 22, 2009, the licensee determined that work instructions used to install the 21 CC pump bearings were not appropriate to the circumstance. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 08/05/2009 | Integrated | Green - Failure to incorporate previously used vendor guidance on thermography into preventive maintenance procedure results in reactor trip | P.2(b) | Reactor Trip | A self-revealing finding was identified for an inadequate thermography maintenance procedure that resulted in a reactor trip due to a loss of power to a main feed regulating valve controller. No violation occurred because the thermography of nontechnical specification or nonquality-related equipment is not an NRC requirement. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 07/30/2009 | Integrated | Green - Instrument air transient caused by installation of air dryer not in accordance with vendor recommendation and failure to adequately evaluate moisture intrusion into the air dryer | P.1(c) | Instrument air transient and inoperability (not safety-related) | A self-revealing Green finding occurred when Exelon did not adequately evaluate the impact of water which had entered the service air system in December 2008, and resulted in an accumulation of failed desiccant and corrosion products in the 'C&D' instrument air dryer purge valve. The 'C & D' air dryer inlet valve is not a safety related component, and therefore no violation of regulatory requirements occurred. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|---|---|--------|--|--|---|
| 06/01/2009 | Integrated (focused baseline) | Green - Use of incorrect gasket on EDG two bolt flange leads to jacket water leakage and EDG inoperability | None | Loss of safety function (EDG inoperable) | 10 CFR 50, Appendix B, Criterion III, "Design Control," requires, in part, that measures be established for the selection and review for suitability of application of materials and parts that are essential to the safety related functions of structures, systems, and components. Contrary to the above, the licensee failed to ensure the suitability of repair parts essential to the safety-related function of emergency diesel generator Train B. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 05/21/2009 | PI&R | Green - Failure to follow vendor recommendation to replace safety-related molded case circuit breakers after 20 years of life | H.1(b) | None | A finding of very low safety significance and associated non-cited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," was identified by the inspectors for the failure to identify unqualified safety-related molded case circuit breakers as a condition adverse to quality and to promptly correct it. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 05/14/2009 | Integrated | Green - Failure to promptly replace degraded components or take compensatory actions following notification by the vendor of defects in secondary containment isolation valve | P.1(c) | Failure of safety related component | The inspectors identified a NCV of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action", of very low safety significance (Green) for the failure to correct a degraded actuator solenoid valve in the 2-5741B reactor building ventilation secondary containment isolation valve (SCIV) in a timely manner. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 05/13/2009 | Integrated | Green - Failure to incorporate vendor recommended solution prior to failure of containment isolation valve | P.1(c) | Failure of a safety related component | The inspectors identified a Green noncited violation of 10 CFR 50.65 (Maintenance Rule) for failure to demonstrate that the performance of a containment isolation valve was effectively controlled through the performance of preventive maintenance such that the valve remained capable of performing its intended function. | Failure to update vendor manuals or guidance, when new guidance is readily available. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|--------------|--|---|
| 05/08/2009 | PI&R | Green - Failure to update procedures with information from vendor and internal operating experience following previous Mechanism Operated Control Switch failures | P.1(c) | None | The Inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low safety significance (Green) for the failure to ensure preventive maintenance procedures were appropriate for maintenance and inspection of safety-related MOC switches. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 05/08/2009 | PI&R | Green - Failure to incorporate vendor recommended lifetime into electrolytic capacitor maintenance procedure | P.2(b) | None | The inspectors identified an NCV of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," having very low safety significance (Green) involving the licensee's failure to have appropriate maintenance procedures and work instructions in place for safety-related inverters. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 05/06/2009 | Integrated | Green - Failure to torque gasket on service air compressor to vendor recommended value causes loss of cooling to CRDM and manual reactor trip | None | Reactor Trip | A self-revealing finding associated with a manual reactor trip occurred because control rod drive mechanism cooling was lost when the head gasket on Service Air Compressor C-3A failed. The failure of the head gasket was caused by applied torque values lower than the torque values recommended by the vendors applied on the head gasket bolts during maintenance. The failure to properly understand the basis for the head gasket torque values before changing those values was a performance deficiency. Since the service air compressor was not safety related, no violation of NRC requirements was identified. | Failure to follow or deviate from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|--|--|--|
| 05/05/2009 | Integrated | Green - Uncontrolled addition of sodium hypochlorite to essential spray pond due to failure of work orders to incorporate vendor recommendations or reference vendor manual | H.1(c) | None | The inspectors identified a Green finding for the failure of engineering and maintenance personnel to adequately implement timely corrective actions for deficiencies associated with the essential spray pond sodium hypochlorite chemical addition system. The performance deficiency did not involve a violation of regulatory requirements. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 05/04/2009 | Integrated | White - Failure to follow vendor recommended maintenance practices causes TDAFW pump failure | H.3(b) | Loss of safety function (TDAFW) | The inspectors identified an apparent violation (AV) of TS 5.4.1.a, "Procedures," for a failure of Ginna to implement an effective PM program for the TDAFW pump governor linkages in accordance with Ginna procedures. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 04/30/2009 | Integrated | Green - Inadequate maintenance procedure led to freezing in air lines and inoperability of control room emergency ventilation system | H.2(c) | Inoperability of safety related system | TS 5.4.1, Procedures, requires that written procedures shall be implemented covering applicable procedures recommended in Regulatory Guide 1.33, Appendix A, November 1972 (Safety Guide 33, November 1972). Regulatory Guide 1.33, section I (Safety Guide 33, November 1972) requires written procedures for maintenance that can affect the performance of safety-related equipment. Contrary to the above, maintenance instructions did not contain adequate guidance for maintaining the control room AC and CREV instrument air dryer. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 04/30/2009 | CDBI | Green - Failure to develop and implement adequate testing programs for class 1E molded-case circuit breakers and for the voltage/frequency response of standby diesel generators | P.3(a) | None | The team identified a noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for failure to implement a molded-case circuit breaker preventive maintenance and testing program current with industry and NRC operating experience thus ensuring that the installed safety related and important-to-safety molded-case circuit breakers did not degrade and would perform satisfactorily in service. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|-------------------------------------|--|---|
| 04/28/2009 | Integrated | Green - Failure to translate design basis for service water valve from vendor construction drawings to maintenance procedure | None | Safety system functional failure | A self-revealing Green non-cited violation of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified for the failure to translate the design basis for the KC heat exchanger RN outlet control valve and the vendor's construction drawings into maintenance procedures to ensure the valve would remain operable over the design lifetime of the component. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 03/20/2009 | PI&R | Green - Failure to incorporate industry and vendor recommended maintenance to prevent age-related degradation of safety-related inverters | P.2(b) | Failure of safety related component | The inspectors identified a Green noncited violation of 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," for the licensee's failure to promptly identify and correct a condition adverse to quality. Specifically, the licensee failed to incorporate industry and vendor recommended preventive maintenance requirements to prevent the age-related degradation of safety-related inverter components. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 03/16/2009 | PI&R | Green - Inadequate operability determinations of EDG made due to failure to ensure that EDG surveillance test procedures incorporated vendor guidance for appropriate acceptance criteria | None | None | The inspectors identified a Green NCV of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," for PSEG's failure to ensure that EDG ST procedures had appropriate acceptance criteria that incorporated the limits from applicable design documents. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 02/11/2009 | Integrated | Green - Failure to follow site procedures during an overhaul of the Division 1 emergency diesel engine. The licensee did not follow the vendor manual recommendation of replacing the lubricating oil filter until identified by the inspectors. | P.1(c) | non-conformance condition | The inspectors identified a noncited violation (NCV) of Technical Specification 5.4.1.a (Procedures) for Energy Northwest's failure to follow site procedures during an overhaul of the Division 1 emergency diesel engine in 2003. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|--|---|--|
| 02/09/2009 | Integrated | Green - Failure provide complete, accurate and up-to-date procedures and work packages to ensure proper alignment of the flexible hose replacements up to the February 13, 2008, lubricating oil leak. | H.2(c) | EDG inoperable | Title 10 of the Code of Federal Regulations Part 50, Appendix B, Criterion XVI, "Corrective Actions," requires, in part, that measures shall be established to assure conditions adverse to quality are promptly identified and corrected. Contrary to this requirement, from 2002 to 2008, the licensee failed to establish measures to assure that diesel generator 2 lubricating oil discharge piping misalignments that led to oil leakage were promptly identified and corrected. The performance deficiency is the licensee's failure to establish measures to assure that long standing diesel generator 2 lubricating oil discharge piping misalignments leading to oil leakage were promptly identified and corrected. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 02/09/2009 | Integrated | Green - Failure to comply with the requirements of the Material Safety Data Sheets for two hazardous chemicals stored in the protected area. | H.4(c) | none | The inspectors identified a Green finding regarding the licensee's failure to comply with the requirements of the Material Safety Data Sheets for two hazardous chemicals stored in the protected area. Specifically, licensee personnel stored a 55 gallon barrel of hydrogen peroxide in the same location as a 140 pound barrel of muriatic acid. No violation of NRC requirements. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 02/05/2009 | Integrated | Green - A technical evaluation did not incorporate the manufacturer recommended torque values for the pillow block bearings into the applicable maintenance procedures. | P.1(c) | Failure of 34 control building exhaust fan | A self-revealing, non-cited violation of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings" was identified, because Entergy did not establish the appropriate torque requirements and lubricant specifications in plant instructions and procedures during replacement and maintenance of bearings for the 34 control building (CB) exhaust fan. Entergy did not specify the appropriate torque requirements and lubricant in maintenance procedure 3-FAN-011-CBF, "Inspection, Cleaning, and Repair of Control Building Exhaust Fans and Louvers L-319 and L-320," for replacing and maintaining the bearings for the 34 control building (CB) exhaust fan. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|---------------------------|---|--|
| 02/04/2009 | Integrated | Green - The use of EPDM o-rings in the feedwater system's Pump B was implemented in July 1999 without performing an engineering material equivalency evaluation to determine if the o-rings were compatible in the main feedwater pump lube oil system. | none | manual reactor trip | The inspectors identified a self-revealing finding for failure of the engineering department to perform a material equivalency evaluation to ensure replacement components do not adversely affect plant operations. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 02/03/2009 | Integrated | Green - Failure to establish the appropriate torque requirements and lubricant specifications in plant instructions and procedures during replacement and maintenance of bearings for the 34 control building (CB) exhaust fan. | P.1(c) | none | A Green, self-revealing, non-cited violation (NCV) of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," was identified, because Entergy did not establish appropriate torque values in maintenance procedures used for bearing replacements for the 34 Control Building (CB) exhaust fan. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 01/30/2009 | Integrated | Green - failure to test and/or inspect the Division 1 and 2 NIAS CAC 6 Enclosure aftercoolers in accordance with GL 89-13 commitments. The inspectors reviewed the vendor technical manual for the aftercoolers which recommended a yearly inspection of the aftercooler tube bundle because the baffling arrangement in the shell would have a tendency to settle out debris in the circulating water. The inspectors concluded that the licensee did not properly evaluate the change in periodicity of the aftercooler cleaning PM to once every ten years considering the history of aftercooler fouling and the vendor recommendations. Furthermore, the inspectors concluded that a frequency of once every 10 to 12 years was not "frequent" and was, therefore, not in accordance with the licensee's GL 89-13 commitments. | none | non-conformance condition | The inspectors determined that the failure to test and/or inspect the Division 1 and 2 NIAS CAC aftercoolers in accordance with GL 89-13 commitments was a performance deficiency. No violation of NRC requirements. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--|----------------------------|---|--|
| 01/30/2009 | ML0903005 16 | Green - the licensee did not adequately review and validate the information provided by the vendor that was within its capability to do so, as outlined in PI-AA-HU-ENG-1011 (Rev. 2), "Human Performance Tools for Engineering." | H.4(a) | turbine/reactor trip | A Green self-revealing Finding was identified for failure to provide adequate vendor oversight for non-safety related work, which led to the incorrect installation of balance weights on the Unit 1 main turbine. As a result, the turbine experienced high vibrations during startup on April 20, 2008, which required the insertion of a manual turbine and reactor trip. The cause of the finding is related to the cross-cutting element of human performance work practices. Human error prevention techniques such as peer checks were not invoked by the licensee (H.4(a)). | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 01/29/2009 | Integrated | Green - failure to ensure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled. In addition, the evaluation did not adequately address the long term reliability of the system because it did not address the specific recommendation for rigid supports in the vendor guidance intended to improve the reliability and availability of the system and it incorrectly concluded that the design configuration would be maintained without the supports. | H.2(c) | non-conforming condition | The inspectors determined that the failure to ensure that appropriate quality standards are specified and included in design documents and that deviations from such standards are controlled was a performance deficiency. The inspectors determined that this finding had a cross-cutting aspect in the area of human performance because the design documents, procedures, and work packages used during the maintenance activities in September and October 2008, were not sufficiently complete to ensure design standards were implemented. (H.2(c)) | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 01/29/2009 | PI&R | Inadequate instrument air flow capacity to the Rx Bldg torus vacuum breaker trip valve. Licensee did not incorporate vendor recommendations for supply pressure req'ts. Replaced valve twice without considering supply air req'ts. | P.1(c) - Failure to thoroughly evaluate condition adverse to quality | Impacted Barrier Integrity | | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|------------------------------|---|--------|---------------------------------|--|--|
| 01/21/2009 | Supplemental | White - contributing causes included (1) operating experience pertaining to vendor status on the Approved Supplier List was not thoroughly evaluated, and (2) the failure modes and effects analysis was not executed with sufficient rigor in that a manufacturing defect was not included in the failure mode matrix. Also, operating experience from vendors was not evaluated thoroughly, and the station's controls for verifying vendor status on the approved supplier list were poor. The licensee concluded that the lack of a robust operating experience program allowed for the use of an essential component that had inadequate quality assurance controls. | none | EDG failure | This supplemental was conducted in response to (3) findings. They were (1) inoperability of the Emergency Diesel Generator 2 in January 2007 due to a failed voltage regulator card, (2) two inadequate post-fire safe shutdown procedures, and (3) inoperability of the Emergency Diesel Generator 2 in January 2008 due to an improperly made-up electrical connection. These performance issues were previously characterized as having low to moderate safety significance (White) in NRC Inspection Reports 05000298/2007007, 05000298/2008008, 05000298/2008002, respectively. | Failure to evaluate OpE pertaining to vendor status on approved supplier (procurement) lists. |
| 12/16/2008 | SIT | Green - The licensee failed to develop and perform a preventive maintenance task to replace elastomers in the HPCI SV-1 valve within the 10 year periodicity specified in the EPRI SOV Preventive Maintenance Basis Guideline. | H.4(c) | Failure of HPCI turbine to trip | A self-revealed finding of very low safety significance and an associated NCV of Technical Specification (TS) 5.4.1 was identified for an inadequate maintenance procedure after the HPCI turbine failed to trip on a valid high reactor water level signal. The licensee failed to develop and perform a preventive maintenance task to replace elastomers in the HPCI SV-1 valve within the 10 year periodicity specified in the EPRI SOV Preventive Maintenance Basis Guideline. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|--------------------------------|---|---|
| 12/15/2008 | CDBI | Green - App B, Criterion III, Design Control violation concerning availability of offsite power during postulated events, LOCA. | P.1(c) | non-conforming condition | The team identified a finding of very low safety significance (Green) involving a non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control, in that Constellation did not verify the adequacy of design with respect to ensuring the availability of offsite power during postulated events such as a loss-of-coolant accident (LOCA) or a unit trip. The issue had a crosscutting aspect in the area of Problem Identification and Resolution – Corrective Action, because Constellation had not thoroughly evaluated similar non-conservative issues with the associated calculation raised in a December 2007 vendor letter and again in a subsequent condition report. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |
| 12/15/2008 | CDBI | Green - The finding had a cross-cutting aspect in the area of Problem Identification and Resolution, Corrective Action, because the licensee had not thoroughly evaluated similar concerns with the Unit 2 EC-151 calculation being non-conservative with respect to safeguards bus voltage and degraded voltage protection. This had been identified in a vendor letter in December 2007 and again in a subsequent condition report CR-NM-2008-4602. | P.1(c) | non-conforming condition | A non-cited violation of 10 CFR 50, Appendix B, Criterion III, Design Control. The licensee did not verify the adequacy of design with respect to ensuring the availability of offsite power during postulated events such as a loss-of-coolant accident (LOCA) or a unit trip. NCV 05000410/2008008-03, Inadequate Design Control Regarding Adequacy of Safety Bus Allowable Degraded Voltage Relay Reset Setpoint and Impact on Offsite Power Supply) | Failure to adequately evaluate acceptability of vendor guidance before incorporating or using the guidance. |
| 11/13/2008 | Integrated | Green - Due to inadequate PM, the 2B SAC discharge check valve runtime had exceeded the vendor recommendation of 16,000 hours for replacement. The two-year minor overhaul was later changed to a four-year frequency in fall 2007 without any bases. Therefore, the 2B SAC was overdue for its PM. | H.2(a) | Trip of station air compressor | A finding of very low safety significance was self-revealed when the Unit 2 Train B (2B) station air compressor (SAC) tripped on two separate occasions due to inadequate preventive maintenance (PM). This finding was determined not to be a violation of NRC requirements. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|-----------------------------|--|--|
| 11/10/2008 | Integrated | Green - The inspectors also noted that previous events occurred in which the licensee did not use internal lessons learned. The extent of condition did not extend past the actual equipment failure or identify that another issue occurred three months prior to that event in which a mechanical maintenance procedure for the Fairbanks Morse EDG inspections did not contain vendor-recommended torque values. | P.2(b) | Failure of SRW pump breaker | A Green, self-revealing NCV of TS 5.4.1.a, "Procedures," occurred because the licensee did not establish and maintain adequate electrical maintenance procedures for the 4 kV circuit breakers. Specifically, Constellation did not have torque values or verification steps in the breaker overhaul and inspection procedures to tighten the setscrew for the trip armature bolt. As a result, the 13 SRW pump breaker (152-1111) failed to open during a surveillance test. This finding has a cross-cutting aspect in the area of problem identification and resolution because the licensee did not implement and institutionalize OE, including internal and external OE to change station processes, procedures, and training programs when similar internal and external events occurred on 4 kV circuit breakers that involved inadequate maintenance procedures | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|-----------------------|---|--|
| 11/07/2008 | Integrated | Green -Upon finding this information, the inspectors questioned operations personnel to determine whether the load sequencers were operable based upon the more restrictive information contained in the vendor manual. The inspectors questioned engineering personnel to determine when the load sequencer test procedures would be revised to include the vendor manual information. Initially, the inspectors were informed that the procedures could not be revised. In addition, the failure to revise the SPs would allow load sequencer testing with non-conservative acceptance criteria. Following these discussions, the licensee immediately revised all of the load sequencer SPs to include the vendor manual information. | H.1(b) | procedural deficiency | The inspectors identified a finding of very low safety significance and associated NCV of 10 CFR 50, Appendix B, Criterion V for the failure to ensure that the surveillance procedures used to test the safety-related load sequencers included appropriate qualitative acceptance criteria. Specifically, the acceptance criteria specified in the procedure conflicted with vendor manual information and was less conservative. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 11/07/2008 | Integrated | Green - An approximate 10-15 gpm leak was identified on the EDG B lubricating oil heat exchanger cover plate. A water hammer caused part of the cover plate gasket to be ejected from the heat exchanger and created the leak. Inspectors found that the work order to assemble the heat exchanger was inadequate. The licensee's evaluations did not identify that vendor manual steps were not incorporated into the installation work order which led to loose cover plate nuts that caused the leak. | H.2(c) | Failure of EDG | A noncited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," due to an approximately 10-15 gpm leak on the Emergency Diesel Generator B lubricating oil heat exchanger cover plate. The licensee did not ensure that Work Order 08-305289-000 was adequate to ensure nuclear safety by including vendor instructions or acceptance criteria for both emergency diesel generator lube oil heat exchanger cover plates. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|--------------------------|--|--|
| 10/27/2008 | CDBI | Green - The licensee failed to develop and implement adequate testing programs for 4-kV circuit breakers, Class 1E molded-case circuit breakers, and the emergency diesel generators that met design or vendor requirements and recommendations. | none | non-conforming condition | A noncited violation of 10 CFR Part 50, Appendix B, Criterion XI, "Test Control," was identified with three examples. Specifically, the team identified that the licensee failed to develop and implement adequate testing programs for 4-kV circuit breakers, Class 1E molded-case circuit breakers, and the emergency diesel generators that met design or vendor requirements and recommendations. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 10/27/2008 | CDBI | Green - failed to ensure that the intercell resistance limits specified in the maintenance procedure and administrative limits for safety related 125Vdc batteries, were correctly incorporated from vendor specified design requirements. | none | non-conforming condition | The CDBI team identified a sixth example of the Green NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control." The licensee failed to ensure that the intercell resistance limits specified in the maintenance procedure and administrative limits for safety related 125Vdc batteries, were correctly incorporated from vendor specified design requirements. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 08/14/2008 | Integrated | Green -The inspectors concluded that the failure to take corrective action to have a procedure to torque the screws from the fuel oil header to the fuel pump to a value specified by the vendor was within the licensee's ability to foresee and correct and is therefore a performance deficiency. | P.2(a) | non-conforming condition | 10 CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed and accomplished by procedures appropriate to the circumstances. Maintenance Procedure EPS-M-14, Diesel Generator Periodic Maintenance a quality procedure used for safety-related equipment, is the procedure used to perform maintenance on the EDG and return it to an operable state. Contrary to this, the licensee failed to prescribe the appropriate torque value for screws from the mechanical joint between the fuel rail and the low pressure fuel line on the 1R cylinder. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|-----------------------------|---|--|
| 08/14/2008 | Integrated | Green - Inspectors noted that the procedures for the disassembly and reassembly of the main steam hanger did not contain instructions specific to the installation of associated load yoke washers, and instead relied upon knowledge and skill of maintenance personnel. The Vendor Technical Document gives instructions for installation and inspection of these constant support spring hangers that had not been incorporated into maint. procedures and WOs. | H.2(c) | Procedural deficiency | Technical Specification 5.4.1.a requires that written procedures be established, implemented, and maintained covering the activities specified in Regulatory Guide 1.33, Revision 2, Appendix A, dated February 1978. Regulatory Guide 1.33, Appendix A, Section 9(a), requires that maintenance that can affect the performance of safety-related equipment should be performed in accordance with written procedures. Contrary to the above, on May 14, 2008, the licensee failed to establish and implement adequate maintenance procedures for replacement of the constant support spring hanger for SG 2 resulting in the failure to install required washers. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 08/13/2008 | Integrated | Green - self-revealing NCV, Appendix B, Criterion V, was identified in that the licensee failed to incorporate sufficient assembly detail (later obtained from the vendor) into the maintenance procedure for the governor linkage on the Turbine-Driven Auxiliary Feedwater (TDAFW) pump. | H.2(c) | Inoperability of TDAFW pump | 10CFR 50, Appendix B, Criterion V, requires, in part, that activities affecting quality shall be prescribed by documented instructions, and shall be accomplished in accordance with these instructions. Contrary to this requirement, in April 2008, FENOC failed to prescribe the required assembly directions to ensure the governor linkage would remain sufficiently tightened on the TDAFW pump turbine. This resulted in a degraded speed control for the TDAFW pump turbine. The cause of this finding is related to the cross-cutting area of human performance, in that the licensee did not maintain a complete, accurate, and up-to-date governor overhaul procedure in regards to actuator reassembly, which resulted in speed control degradation to the TDAFW [H.2.(c)]. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|--------------------------------|--|---|
| 08/07/2008 | Integrated | The inspectors concluded that these issues constituted two examples where inadequate preventive maintenance activities resulted in emergency light failures. The failure of the 15 emergency light batteries is a performance deficiency since the batteries should have been replaced, at a minimum, before the vendor's replacement frequency. Similarly, the failure of 75 emergency light lamps is a performance deficiency since the lamps should have been replaced on a fixed replacement schedule prior to their expected end of life. | H.3(b) | Emergency light failures | Title 10 CFR Part 50, Appendix R, Section III.J states, in part, that emergency lighting units with at least 8 hour battery power shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. Contrary to the above, prior to May 16, 2008, the licensee failed to provide emergency lighting units in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. Specifically, the licensee failed to maintain the emergency lighting units in working condition by allowing 90 emergency lighting units to operate with batteries and lamps that exceeded their design life. The inspectors determined that this finding had a crosscutting aspect of Human Performance in that the licensee failed to appropriately plan work activities to support long-term equipment reliability. Specifically, the maintenance scheduling was more reactive than preventive. [H.3(b)] | |
| 08/07/2008 | Integrated | The work orders and procedures guiding and directing this activity did not prescribe any special precautions or directions to install the valve, given that it was installed in a manner not specifically prescribe by the vendor. | None | LPCI pump failure | ANO Unit 2 TS 6.4.1.a states, in part, "Written procedures shall be established, implemented, and maintained covering . . . the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978." Contrary to the above, during the Unit 2 Refueling Outage 2RF18, Fall 2006, the licensee failed to provide adequate maintenance procedures to ensure proper installation of the LPSI Discharge Check Valve 2SI-4A. | |
| 08/07/2008 | Integrated | Green - Failure to adhere to the Wolf Creek design controlled, fuel transfer system vendor Document M-716-00787, "Instruction Manual for Transfer Machine Operations Manual." | P.1(c) | Degradation of Safety Function | The inspectors identified a violation of TS 5.4.1.a, where the licensee did not implement design control Procedure AP 05-005 which controls modifications to the fuel transfer system and the controlled vendor technical documentation. | Failure to adequately evaluate acceptability of vendor guidance before incorporating or using the guidance. |

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|--|--|---|
| 08/05/2008 | Integrated | Green - 10 CFR Part 50, Appendix B, Criterion III, Design Control, for the failure to completely verify the adequacy of design information provided by a vendor. | H.4(c) | A design deficiency that was confirmed by the inspectors not to result in loss of operability. | A self-revealed finding of very low significance was identified involving a NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," for the failure to completely verify the adequacy of design information provided by a vendor. In particular, errors were made by the fuel vendor in the hot shutdown boron concentration values used in emergency operating procedures. The deficiency existed between August 23, 2006, and December 22, 2006. | Failure to adequately evaluate acceptability of vendor guidance before incorporating or using the guidance. |
| 08/01/2008 | Rad Team | Green - A noncited violation of 10 CFR 20.1501(b) for failure to ensure that ARMs used for quantitative measurements were calibrated. The licensee's acceptance criterion was much less restrictive than the vendor recommendation or the industry standard. | P.2(b) | non-conformance condition | A noncited violation of 10 CFR 20.1501(b) for failure to ensure that area radiation monitors used for quantitative measurements were calibrated. This finding had a crosscutting aspect in the area of problem identification and resolution related to the component of operating experience because the licensee did not implement and institutionalize operating experience, including vendor recommendations, through changes to station processes and procedures to support plant safety. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 7/31/2008 | Integrated | Green - Failure to accurately measure the speed of a pump while performing the functional test which resulted in the pump being declared inoperable and unavailable for greater than three weeks. The inspectors noted that the licensee's training program does not verify operators are qualified or understand how to use a stroboscope and they found no record of a vendor manual on site to provide guidance on use of the stroboscope. | H.2(b) | Inoperability of diesel-driven fire pump | A self revealing finding occurred when the licensee did not properly implement a functional test procedure for the '1-1' diesel driven fire pump on November 7, 2007. Specifically, operations personnel did not accurately measure the speed of the pump while performing the functional test, which resulted in the pump being declared inoperable and unavailable for greater than three weeks during troubleshooting by licensee personnel. This finding was of very low safety significance and determined to be a non-cited violation (NCV) of technical specification 6.8, "Procedures and Programs." | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|-------|--------------------------|---|---|
| 07/30/2008 | Integrated | Green - Failure to properly evaluate vendor fire test results that did not satisfy the acceptance criteria in Generic Letter 86-10, Supplement 1 prior to changing the existing fire wrap with 3M Interam fire wrap as required by the approved Fire Protection Program was a performance deficiency. | none | Non-conforming condition | A noncited violation of License Condition 2.C(41), "Fire Protection Program," was identified because the licensee failed to evaluate vendor fire test results to ensure that deviations from the acceptance criteria did not result in a reduction in the effectiveness of the approved Fire Protection Program. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 07/30/2008 | CDBI | Green - A failure to comply with a commitment to maintain periodic vendor interface program in response to Generic Letter 90-03. This failure resulted in identifying at least two items in the vendor manual that were either out of date or obsolete, succeeded by a more recent technical bulletin from the vendor. | none | Procedural deficiency | The inspectors identified a finding of very low safety significance involving a failure to comply with a commitment to maintain periodic vendor interface program in response to Generic Letter 90-03. This failure resulted in identifying at least two items in the vendor manual that were either out of date or obsolete, succeeded by a more recent technical bulletin from the vendor. | Failure to comply with a commitment to maintain periodic vendor interface in accordance with GL 90-03. |
| 07/30/2008 | CDBI | Green - Failure to follow Procedures for Processing of Vendor Maintenance and Instruction Manuals, Revision 4," and this failure resulted in 3 of 4 reactor trip breakers exceeding their service life. In addition, the inspectors identified several discrepancies between the vendor manual and the procedures that had not been properly evaluated. | P2(b) | non-conforming condition | The inspectors identified a NCV of TS 6.8.1, Procedures and Programs, for failure to follow procedure, ES-507, Review and Processing of Vendor Maintenance and Instruction Manuals, Revision 4, which requires performance of impact reviews of plant procedures due to vendor manual changes and technical updates. The failure resulted in 3 of 4 reactor trip breakers exceeding their service life. The cause of this finding was related to the cross-cutting area of operating experience, specifically with respect to including vendor recommendations in procedures to support plant safety. (P.2.b) | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |

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| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|--|--------|--------------------------|--|--|
| 07/30/2008 | CDBIP | The failure to follow procedures and update procedures due to vendor guidance changes resulted in 3 of 4 reactor trip breakers exceeding their service life. In addition, the inspectors identified several discrepancies between the vendor manual and the procedures that had not been properly evaluated. | P.2(b) | non-conforming condition | The inspectors identified a NCV of TS 6.8.1, Procedures and Programs, for failure to follow procedure, ES-507, Review and Processing of Vendor Maintenance and Instruction Manuals, Revision 4, which requires performance of impact reviews of plant procedures due to vendor manual changes and technical updates. | |
| 07/29/2008 | Integrated | Green - The Root Cause Analysis identified two other causal factors for the FRV malfunction including: 1) the scope of a previous Root Cause Analysis 05-03640 (for similar "C" FRV positioner malfunctions noted in September 2005) was too narrowly focused to identify root causes and corrective actions to prevent recurrence; and, 2) the design of the FRV control system (i.e., instrument air) did not meet vendor recommendations for air quality at the positioner. | P.1(d) | manual reactor trip | A Green self-revealing finding was identified for the failure to implement effective and timely corrective actions to prevent malfunction of "C" FRV IFV00498 that resulted in a manual reactor trip. The inspectors determined that the failure to conduct adequate root cause analysis and implement adequate and timely actions to prevent recurrence of a reactor trip by a known FRV degradation previously identified in the licensee's CAP database with CAPRs via CR-04-00884 and CR-05-03640 was a performance deficiency. No violation of NRC requirements was identified. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 07/16/2008 | Reactive | White - Inadequate Work Instructions Did Not Adequately Provide The Vendor's Installation Instructions Led To The Failure Of The 1B Emergency Diesel Generator (EDG) Exhaust Header And Inoperability Of The EDG | none | EDG failure | A self-revealing apparent violation (AV) of Technical Specification 5.4.1 was identified for inadequate work instructions which resulted in the 1B Emergency Diesel Generator (EDG) exhaust header not being installed in accordance with the vendor's instructions. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |

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|-------------|----------------------------|---|--------|---------------------------|---|--|
| 07/06/2008 | PI&R | Green - Following the "C" IAC trips in 2002 and 2003, Ginna's planned corrective actions included an upgrade of the master control panel based on the vendor's recommendations. However, Ginna subsequently canceled the upgrade due to funding considerations. On December 20, 2006, the "C" IAC tripped on high blowoff air pressure and was declared inoperable. The standby IACs auto-started and were placed in service as the lead air compressors. The vendor again recommended upgrading the master controller and recommended replacing the discharge check valve due to excessive back leakage. | P.1(b) | non-conformance condition | The performance deficiency associated with this finding is that Ginna did not adequately address deficiencies associated with repetitive failures of the "C" IAC in a timely manner. There were no violations of NRC requirements. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 05/20/2008 | Integrated | Green - Failure to ensure all relevant information was reviewed for operability when it was determined that vendor recommended preventive maintenance tasks were not being performed on the Class 1E 125 VDC system. | H.1(b) | Non-conforming condition | A non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the Class 1E 125 Vdc system were reviewed for operability. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

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|-------------|----------------------------|---|--------|---|---|---|
| 05/20/2008 | Integrated | Green - This finding has a crosscutting aspect in the area of problem identification and resolution associated with operating experience because the licensee failed to use available operating experience, including vendor recommendations, to implement and institutionalize operating experience through changes to station processes, procedures, equipment, and training programs [P.2(b)]. | P.2(b) | Increased unavailability & unreliability of Unit 1 Train A, Unit 2 Train B, and Unit 3 Train B EDG. | The inspectors identified a non-cited violation of Technical Specification 5.4.1.a for the failure of operations and engineering personnel to establish and implement maintenance procedures for inspection and replacement of items that have a specific lifetime. Specifically, between February 12, 2007 and March 7, 2008, operations and engineering personnel failed to inspect or replace the emergency diesel generators fuel oil injection pump upper O-rings prior to the end of their service life resulting in fuel leakage and increased unavailability and unreliability of Unit 1 Train A, Unit 2 Train B, and Unit 3 Train B emergency diesel generators. | |
| 05/20/2008 | Integrated | Green - The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the Class 1E 125 Vdc system were reviewed for operability. | P.2(b) | non-conforming condition | The inspectors identified a non-cited violation of 10 CFR Part 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings," for the failure of engineering personnel to ensure that potentially nonconforming conditions associated with the Class 1E 125 Vdc system were reviewed for operability. Specifically, between September 29, 2007 and March 7, 2008, engineering personnel failed to ensure all relevant information was reviewed for operability when it was determined that vendor recommended preventive maintenance tasks were not being performed on the Class 1E 125 Vdc system. | Failure to incorporate operating experience, including vendor recommendations for the replacement of equipment that have a specific lifetime. |

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|-------------|----------------------------|---|--------|---|--|--|
| 05/13/2008 | Integrated | Green - The licensee did not complete the required actions that would properly secure the Unit 1 transformer to protect windings from moisture intrusion when heat was not applied to the transformer as specified by the work instructions and the vendor manual. This resulted in moisture intrusion as indicated by high Doble test power factor results causing a 24 hour delay in the restoration of the safety-related 1A 4 KV engineering safeguards (ES) bus. The system outage for this electrical bus contained common safety-related loads which increased the risk of both Unit 1 and Unit 2. | H.3(a) | Increased unavailability of a 4 KV safety-related bus | A self-revealing, Green NCV was identified for failure to accomplish work in accordance with the appropriate instructions as required by 10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings." Specifically, PPL did not complete the required actions that would properly protect the Unit 1 transformer 1X210 windings from moisture intrusion when heat was not applied to the transformer as specified by the work instructions and original equipment vendor manual. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 05/13/2008 | Integrated | Green - The apparent cause (CR-WF3-2008-00350) of the ACCW pump failure was determined to be a low bearing oil level, as a result of an incorrect operator aid. The low level mark on the operator aid was 5/16 of an inch lower than the lowest oil level recommended by the pump vendor. | H.2(c) | ACCW pump failure | 10 CFR Part 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to the above, in 1990, the licensee had identified that instructions for maintaining oil level on the ACCW pump bearing reservoirs were inadequate (a condition adverse to quality) but failed to promptly correct the condition. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 05/09/2008 | Integrated | Green - Failure to properly repair condensate Demineralizer 1E tank liner prior to returning it to service. | H.2(c) | Unexpected plant transient | A Green, noncited violation of Technical Specification 5.4.1.a was identified for an inadequate procedure for securing a reactor feedwater pump. As a result, a reactor recirculation flow control valve (FCV) runback occurred when a reactor feedwater pump was secured. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|-----------------------------|--|----------|----------------|--|--|
| 05/08/2008 | Integrated | Green - The procedure did not contain guidance, referenced in the Bailey vendor manual, that the product of rate and reset settings should be < 1.0. Without this guidance, licensee personnel could improperly tune the system. As a result, inappropriate changes were made to the RCIC flow controller in January 2006. The failure to include the vendor manual precaution associated with rate and reset settings resulted in the inappropriate tuning of the flow controller in January 2006 from a required over damped to an over reactive response setting for flow changes. | P.2(b) | RCIC pump trip | A finding of very low safety significance and an NCV of 10 CFR Part 50, Appendix B, Criterion V, "Procedures," was self-revealed during the reactor scram and subsequent RCIC actuation on November 28, 2007. The RCIC pump started in response to the actuation signal, but then tripped on a low suction pressure signal. The cause was determined to be an improperly tuned flow controller. | Failure to incorporate vendor recommendations into plant procedures or programs where appropriate. |
| 05/06/2008 | ML081270639 | In the first example of this performance deficiency, the inspectors determined that the licensee's procedures for performing periodic DG electrical examinations were inadequate in that they did not include engine-mounted components. In the second example of this performance deficiency, the licensee determined that the maintenance procedures used on December 29, 2000 did not contain adequate guidance to ensure that thread locking compounds or other measures would be utilized to ensure that the DG amphenol connections did not become unthreaded during engine operation. | (P.1(d)) | EDG inoperable | Two examples of a self-revealing apparent violation of Technical Specification 5.4.1.a were identified regarding the licensee's failure to establish procedural controls for maintenance of electrical connections on essential equipment. In the second example, the licensee failed to incorporate internal operating experience into work control procedures to ensure that diesel generator-mounted amphenol connections were solidly attached following maintenance. These failures to establish adequate procedural controls led to the trip of Diesel Generator 2 during testing on January 15, 2008. | |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|----------------------------|---|--------|--|---|--|
| 04/30/2008 | Integrated | Green Finding/White PI - The installation of a 4160 volt breaker not meeting vendor or station acceptance criteria challenged the reliability of the 1C CCW pump. | H.4(b) | EDG Trip | Green NCV of 10 CFR 50 Appendix B, Criterion XV for failing to properly control nonconforming components resulting in the installation of a 4160 volt breaker for the Unit 1 1C CCW pump with a stop bolt gap dimension not meeting vendor and station maintenance acceptance criteria. Failure to control components not conforming to requirements in order to prevent their inadvertent use or installation in safety-related applications is a performance deficiency. A human performance cross-cutting aspect was identified regarding effectively communicating expectations for procedural compliance and personnel following procedures (H4(b)). | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 04/24/2008 | CDBI | Green - Did not incorporate vendor requirement in as-found testing PMs for 90VDC and 70VDC for proper operation of the breaker close and open coils respectively. The licensee breaker PM program verified every 4 years, that the breaker open and close and open coils would operate at 70VDC, but this testing was performed after breaker maintenance had been completed and no as-found testing was conducted. | none | Reasonable doubt on the operability of the essential 4160VAC circuit breakers. | A finding of very low safety significance (Green) and associated NCV of 10 CFR Part 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to assure and verify that adequate control voltage was available for the close and open coils of the 4160VAC safety-related breakers. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|-------------------------------------|---|--------|--|---|---|
| 04/21/2008 | CDBI | Green -The inspectors reviewed the results of the calculation, and determined that the critical submergence based on the McDuffie correlation was less conservative than the critical submergence based on the vendor (B&W) correlation by approximately five inches of submergence for the flow rate of 3500 gallons per minute (gpm) applicable during mid-loop operation. The inspectors concluded there was no justification established for use of the less conservative McDuffie vortex critical height values as design basis values and that based on the information provided in the calculation, the B&W values were appropriate for use as guidelines for pump protection. | P.1(c) | Non-conforming condition with a procedure used for shutdown operations | NCV 05000410/2008008-03, Inadequate Design Control Regarding Adequacy of Safety Bus Allowable Degraded Voltage Relay Reset Setpoint and Impact on Offsite Power Supply). The licensee failed to verify the applicability of design basis information, related to critical vortex height to assure adequate low pressure injection (LPI) pump suction conditions, before translating that information into the shutdown operations procedure for draining the reactor coolant system. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 04/09/2008 | PI & R biannual | Green - Failure to take adequate corrective actions to resolve safety related MSIV failures due to a known design deficiency. This conclusion was based on the licensee's history of MSIV failures; the maintenance history of the MSIVs; the previously instituted corrective actions; the lack of any formalized plan or schedule to correct the MSIV design deficiency; and the availability of applicable industry and vendor experience. | P.1(d) | MSIV failures | 10 CFR Part 50, Appendix B, Criterion XVI, requires that measures shall be established to assure that conditions adverse to quality, such as failures and deficiencies, are promptly identified and corrected. Contrary to this requirement, the licensee continued to experience MSIV LLRT failures as a consequence of a known design deficiency, as exhibited during the last three Unit 2 outages and the last Unit 1 outage, but has failed to correct this persistent condition adverse to quality. | Failure to update vendor manuals or guidance, when new guidance is readily available. |

Appendix – Matrix of Ineffective Use of Vendor Information Resulting in Inspection Findings

March 10, 2011

| Report Date | Inspection Type | Color - Brief Description | CCA | Consequence | Performance Deficiency | Vendor Deficiency |
|-------------|---|--|--------|--|---|---|
| 03/31/2008 | Triennial Fire Protection | Green - The Mecatiss MTS-3 fire wrap installed around the cables for valve DHV-42 (suction from the reactor building sump to the Train A decay heat pump) was not installed in accordance with the vendor's tested configuration. | none | Nonconforming fire barrier configuration | The team identified a non-cited violation of 10 CFR 50, Appendix R, Section III.G.2., for failure to protect cables from fire damage for components required for safe shutdown. Specifically, the Mecatiss MTS-3 fire wrap installed around the cables for valve DHV-42 (suction from the reactor building sump to the Train A decay heat pump) was not installed in accordance with the vendor's tested configuration. | Failure to adhere to vendor acceptance criteria or guidelines without adequate justification. |
| 01/25/2008 | CDBI | Green - The team also found the licensee's operability determination associated with Condition Report CNS-2007-06386, lacked detail and failed to consider the as-found nonconforming condition with Motor-Operated Valve HPCI-MOV-MO16 and the potential impact on its ability to close under accident conditions without the valve gears having been lubricated in accordance with the vendor instructions. Specifically, the lack of lubrication would result in changes to the performance characteristics of the valve. | P.1(c) | non-conforming condition | Criterion XVI of Appendix B, to 10 CFR Part 50, states, "Measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition. Contrary to the above, the licensee failed to adequately evaluate the extent of equipment failures resulting from workmanship issues and to determine the causes for this significant condition adverse to quality to prevent recurrence. | Failure to follow or deviation from vendor recommended guidance without an adequate justification. |
| 01/07/2008 | CDBI | Green - Failure to ensure that systems that respond to initiating events were identified in Procedure EMP-135.004, Reactor Trip Breaker Testing, Revision 2. The licensee routinely failed to evaluate differences between vendor recommendations and the procedure. The failure resulted in 3 of 4 reactor trip breakers exceeding their service life. | P.2(b) | Failure of RTBs | The inspectors identified a NCV of TS 6.8.1, Procedures and Programs, for failure to follow procedure, ES-507, Review and Processing of Vendor Maintenance and Instruction Manuals, Revision 4, which requires performance of impact reviews of plant procedures due to vendor manual changes and technical updates. | Failure to adequately evaluate acceptability of vendor guidance before incorporating or using the guidance. |

Excerpt from the 2010 JOINT MEETING TO EXCHANGE INFORMATION ON RECENT EVENTS IN NPPs AND ANNUAL MEETING OF THE IRS NATIONAL CO-ORDINATORS REPORT OF THE MEETING JOINTLY ORGANIZED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY AND THE NUCLEAR ENERGY AGENCY OF THE OECD AND HELD IN VIENNA, 19-22 OCTOBER 2010

23. Russian Federation, Novovoronezh 3; MANUAL REACTOR SCRAM CAUSED BY TRIPPING OF A GROUP OF BUSBARS IN 220 kV OPEN SWITCHYARD AND LOSS OF STANDBY POWER DUE TO CURRENT TRANSFORMER DESTRUCTION AND FIRE.

On 4 April 2010 Unit 3 was operating at 54% power with TG 9 in service and TG10 out for maintenance. Unit 3 was being supplied by the busbars of the 2nd kV division which has two groups of busbars. The 1st group was in service and the second group was in maintenance. The open switchyard components were operating in conditions of abnormally high temperatures and air fumigation caused by many forest fires that were occurring in the area. The busbars in the switchyard tripped by the action of the busbar differential protection, in turn TG9 and 30T standby transformer also tripped. Due to the loss of auxiliary power deenergizing of RCP's 1 and 2 a (APS) train 1 occurred. Diesel generators 7 and 8 started feeding power to the bus followed by operation of the load sequencing system for consumers of APS train 1. The reactor was then scrammed and an in situ examination revealed the destruction of current transformers in the transmission line and evidence of oil spillage and ignition. The fire brigade arrived and extinguished the fire. The direct cause was identified as due to degraded insulation resistance of the current transformers. Other contributing factors included failure to perform timely replacement of components beyond their active life and deficiencies in manufacturer's documentation.

• Remarks from NEA National Coordinators.

Mr Maqua, Chairman, commented that the working group on operational experience was preparing a report on transformer fires but it was often difficult to accurately assess the causes. It was identified that the plant has its own on site fire brigade operated by trained staff that are trained.

Mr Thorp from the US confirmed that the USA has smart sample process for inspections of equipment and components which are beyond manufacturers recommended life. This was established because of several failures in this area.

26. Spain, Vandellós II; DROP OF FOUR CONTROL RODS AND SAFETY INJECTION ACTUATION.

In December 2007 during periodic verification of control rod operability, full insertion of four control rods occurred. As a consequence the reactor decreased power and SI was activated by the low pressure signal on SG steam line and the emergency plan was initiated. Three other dropped rod events have occurred at Vandellós II however these other events did not activate SI and were managed by either manual reactor trip or load reduction. All these events have been identified as being caused by an intermittent DC fault of the regulating card to the drive coils although this was not identified until the last event in March 2010. In each event all systems responded as designed.

• Remarks from NEA National Coordinators.

Mr. Maqua, Chairman, noted that each event individually was not of great importance but the failure to discover the cause earlier led to repeat events. Mr. Napke from Canada identified that they had experienced problems with spurious activation of control rods which had been identified as a fault in the design of the logic module. Mr. Shah from Pakistan asked if preventive maintenance and replacement of the regulating cards was performed even if they do not fail. It was identified that the manufacturers indicate a life of 15 years. The plant had identified aging as an issue however there was no specific evidence supporting this.

28. Ukraine, Rovno3; PRESSURIZER MAIN SAFETY RELIEF VALVE FAILED TO CLOSE DURING ROUTINE PRESSURE BUILDUP TESTING.

On 22 September 2009 unit 3 was being prepared for start-up after a refueling outage. Testing of pressurizer pilot operated safety valves (POS RV) was in progress. Testing of the POS RV actuation is through pressure build-up. During testing of the master POS RV via actual pressure build-up in the reactor coolant system (RCS), the main safety relief valve failed to close due to slide valve wedging in the guide bushing after opening of one out of two pilot valves due to the tolerances for the slide valve diameter in the NPO Energy drawings being inconsistent with the Sempell drawings and the material properties of the metal being inconsistent between NPO Energy and Sempell. Borated water poured on the dividing bellows and the reactor main flange studs as a result of spray pump actuation. There was no release of radioactivity and protection systems functioned as required. The root causes were identified as problems with design documentation which did not

thoroughly consider the characteristics of steel in NPO Energy drawings and Sempell drawings. Tolerances and dimensions were not accurately identified and detailed drawings indicating precise spec sizes were unavailable at the plant.

- Remarks from NEA National Coordinators.

Mr. Coetzee from South Africa asked if this was a problem with cloned parts. It was identified that regardless of manufacturer the issue was with non-compliance with technical documentation. Russia had similar problems with this valve not closing and distortion of the slide valve this was due to failure to comply with manufacturer's documentation. Mr. Vlahov from Bulgaria identified that information on this had been received from WANO asking plants to review conditions for testing. In Bulgaria differences in testing procedures were identified, they no longer test at full pressure but at the end of the cycle. Germany had also noted similar problems with this type of valves but this was due to cloned spares not supplied by the original manufacturer.

Mr. Maqua, Chairman, commented that other events with similar problems had been noted and the difficulty can be when the original manufacturer is no longer there. Mr. Van Iddekinge from the Netherlands commented that testing of the valve prior to installation would be better than when it is in situ but plants would need to be very careful with the specification of the valve and the spares.

Mr. Thorp from the USA asked if the suppliers of this valve have a list of all the customers it has supplied, this was not known. Ms Jackson from NEA asked if the plant documentation and policy documents had been amended to take account of the change from the original manufacturer, this was unclear at this time.