

## Duane Arnold 3Q/2003 Plant Inspection Findings

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### Initiating Events

**Significance:**  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

#### **No Procedure To Implement Examination Of Welds Subject To Crevice Corrosion**

Green. The inspectors identified a finding of very low safety significance regarding failure to issue a procedure to examine Code Class 1 welds subject to crevice corrosion.

This finding was more than minor because if left uncorrected, it could have resulted in failure to examine Code Class 1 welds subject to crevice corrosion and consequently could have allowed flawed Code components to go undetected. Undetected flaws in these areas could lead to failure of Class 1 piping components and result in an increased frequency for a loss of coolant accident. This finding was of very low safety significance because the inspectors identified this issue prior to the first scheduled inspection of components susceptible to crevice corrosion. This finding was determined to be a Non-Cited Violation of 10 CFR 50 Appendix B, Criterion V (Section 1R08).

Inspection Report# : [2003004\(pdf\)](#)

**Significance:**  Feb 01, 2003

Identified By: Self Disclosing

Item Type: FIN Finding

#### **INADEQUATE EVALUATION ON CONTINUED OPERATION OF THE 5B DUMP VALVE RESULTED IN A MANUAL REACTOR SCRAM**

A finding of very low safety significance was identified through a self revealing event when the licensee failed to adequately evaluate the operation of the 5B low pressure feedwater heater dump valve. The continuous operation of the dump valve resulted in a failure of the deflector plate, which caused a condenser tube leak, and a subsequent reactor scram.

The finding was more than minor, since it had an actual impact on safety and resulted in a reactor scram. This finding was determined to be of very low safety significance, since it did not impact any mitigating systems capability. No violation of USNRC requirements occurred.

Inspection Report# : [2003003\(pdf\)](#)

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### Mitigating Systems

**Significance:**  Sep 13, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY DEMONSTRATE THE PERFORMANCE OR CONDITION OF THE REACTOR BUILDING CRANE.**

A finding of very low safety significance was identified by the inspectors for the licensee's failure to demonstrate that the performance of the reactor building crane was being effectively controlled through appropriate maintenance. Once identified, the licensee placed the reactor building crane in (a)(1) status and developed a performance improvement plan to return the crane to (a)(2) status.

Inspection Report# : [2003005\(pdf\)](#)

**Significance:**  Jul 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO ADEQUATELY DESIGN THE CHROMOLAX TIS CIRCUIT.**

A finding of very low safety significance was self-revealed during temperature indicating switch failures. An inadequate design resulted in failures of temperature indicating switches due to a power surge from the HFA relays. Once identified, the licensee redesigned the circuit to place the surge suppressor in line with the HFA relays and also to place a metal oxide varistor across the relay coil to eliminate any effects from the power surge.

Inspection Report# : [2003005\(pdf\)](#)

**Significance:**  Jun 30, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**Inadequate Procedure For Surface Examination of Code Components**

Green. The inspectors identified a finding of very low safety significance regarding inadequate qualification of a procedure used to conduct surface examination of safety-related piping system welds. Specifically, the licensee had not demonstrated that the dye penetrant materials used would identify flaws in safety-related welds at the expanded temperature ranges allowed in this procedure.

This finding was more than minor because if left uncorrected, it could have adversely affected the licensee's ability to perform an adequate inspection of safety-related piping welds. This finding was of very low safety significance because the licensee confirmed that this procedure had not been used on piping welds at the lower temperature ranges where it would not have adequately detected flaws. This finding was determined to be a Non-Cited Violation of 10 CFR Part 50.55a(g)4. (Section 1R08)

Inspection Report# : [2003004\(pdf\)](#)

**Significance:**  Jun 18, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**FAILURE TO FOLLOW THE TEMPORARY MODIFICATION PROCEDURE FOR ID15 (SECTION 1R23).**

A finding of very low safety significance was identified through a self-revealing event when the licensee failed to follow procedures during plant equipment manipulations on the 1D15 120 VAC instrument inverter. The failure to follow procedures resulted in a blown fuse, thereby rendering the 1D15 inverter unavailable. The primary cause of this issue was related to the cross-cutting area of Human performance.

The issue was more than minor because the failure to follow procedures resulted in a blown fuse that made the 1D15 120 VAC instrument inverter unavailable. The issue was determined to be of very low safety significance, since the 1Y1A regulating transformer supplied power to the division one instrument bus after the 1D15 inverter was made unavailable. An NCV of 10 CFR 50, Appendix B, Criterion V, related to the failure to follow procedures during plant

equipment manipulations was identified through a self-revealing event.

Inspection Report# : [2003004\(pdf\)](#)

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**Significance:** Apr 19, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE PROCEDURE TO PERFORM PRIMARY CONTAINMENT CLOSEOUT.**

A finding of very low safety significance was identified by the inspectors when the licensee failed to have an adequate procedure for the primary containment closeout. The procedure did not adequately address the evaluation of debris left inside containment to ensure that the Emergency Core Cooling Systems (ECCS) strainers were not impacted.

The issue was more than minor because if left uncorrected, it could become a more significant safety concern since the failure to perform an evaluation could result in exceeding the assumptions utilized in the ECCS strainer design calculations, thereby potentially degrading the ECCS strainers and affecting the plants mitigating systems. The issue was determined to be of very low safety significance, since the amount of debris left in the primary containment did not exceed the assumptions in the design criteria for the ECCS strainers. An NCV of 10 CFR 50, Appendix B, Criterion V, related to an inadequate procedure to closeout primary containment was identified by the inspectors.

Inspection Report# : [2003004\(pdf\)](#)

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**Significance:** Apr 18, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**INADEQUATE PROCEDURE FOR POST MAINTENANCE TESTING OF PSV 4405 (SECTION 1R19).**

A finding of very low safety significance was identified through a self-revealing event when the licensee failed to adequately test the pilot solenoid valve replacement on Pressure Setpoint Valve (PSV) 4405 of the Automatic Depressurization System (ADS), during post maintenance testing. The inadequate testing procedure resulted in exceeding the required technical specification condition with the valve being inoperable. The valve was inoperable due to a wiring error during the installation of the pilot solenoid valve. The primary cause of this issue was related to the cross-cutting area of human performance. The licensee failed to adequately ensure that the PSV-4405 was operable prior to entering conditions that it required.

The issue was more than minor because PSV-4405 was rendered inoperable for the ADS function. The issue was determined to be of very low safety significance, since the other ADS and Low Level Set (LLS) valves were available to perform the relief function. An NCV of 10 CFR 50, Appendix B, Criterion V, related to an inadequate test procedure for post maintenance testing of the ADS system pilot valve replacement was identified through a self-revealing event.

Inspection Report# : [2003004\(pdf\)](#)

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**Significance:** Mar 28, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

**THE LICENSEE FAILED TO VERIFY DESIGN PUMP SEAL FAILURE MECHANISMS IN A 10 CFR 50.59 EVALUATION TO ELIMINATE THE NEED FOR RHR PUMP COOLING.**

A finding of very low safety significance was identified by the inspectors when the licensee failed to properly check the design adequacy in a safety evaluation that justified elimination of Residual Heat Removal (RHR) pump mechanical seal cooling. The licensee had not evaluated appropriate seal failure mechanisms.

The finding was more than minor, since if left uncorrected, the lack of a program to monitor and clean the RHR

mechanical seal heat exchangers could have resulted in the failure of the heat exchanger to provide cool water to the seals. This could have resulted in the failure of the seals during an accident. A failure of the mechanical seals would have resulted in a failure of the RHR pump. A NCV of 10CFR50, Appendix B, Criterion III, "Design Control," was identified for the failure to properly review the removal of the RHR mechanical seal cooling for design adequacy by the inspectors.

Inspection Report# : [2003003\(pdf\)](#)

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**Significance:** Mar 07, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Lack of Demonstrated Reactor Water Level Instrumentation**

The inspectors identified that the licensee failed to demonstrate that instrumentation for reactor water level, required to support safe shutdown for a fire in Fire Area RB-1, would be free from fire damage. The failure to ensure that a means to monitor reactor water level would be free of fire damage is a violation of 10 CFR Part 50, Appendix R, Section III.G.2.

This issue was greater than minor because instrumentation necessary to provide information to operators for safe shutdown was affected. The finding was determined to be of very low safety significance, i.e., Green, because site emergency operating procedures would have directed operators to operate equipment necessary to achieve safe shutdown conditions. Because the finding was of very low safety significance, and the finding was captured in the licensee's corrective action system, this finding is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 1R05.3.b(1)).

Inspection Report# : [2003002\(pdf\)](#)

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**Significance:** Mar 01, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE CORRECTIVE ACTIONS FOR SOUTH EAST CORNER ROOMS DRAINS.**

A finding of very low safety significance was identified by the inspectors when the licensee's corrective actions failed to adequately address the degraded drains in the southeast corner room. The southeast corner room contains the "A" and "B" Residual Heat Removal Pumps and "A" Core Spray Pump. The corrective actions failed to address the debris that was on the room floor, which was sufficient to clog the drains.

The finding was more than minor, since there was potential that the drain system would be clogged by the floor debris, which would result in the drain system being unable to remove water from the room, thereby potentially affecting the safety-related pumps in the room. The finding was determined to be of very low safety significance, since the licensee has portable pumps available to remove water from the room. A Non-Cited Violation (NCV) of 10CFR50, Appendix B, Criterion XVI, related to inadequate corrective actions was identified by the inspectors.

Inspection Report# : [2003003\(pdf\)](#)

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**Significance:** Feb 14, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Circuit Breaker Coordination for Instrument Power Supply**

Green. The inspectors identified that the licensee failed to demonstrate that process monitoring instrumentation, required to support safe shutdown for a fire in Fire Area RB-1, would be free of fire damage. Specifically, the licensee failed to ensure that there was adequate circuit breaker coordination for an instrument power supply. The failure to

ensure that a train of process monitoring would be free of fire damage is a violation of 10 CFR Part 50, Appendix R, Section III.G.2.

This issue was greater than minor because instrumentation necessary to provide information to operators for safe shutdown was affected. The finding was determined to be of very low safety significance, i.e. Green, because the licensee had proceduralized steps to restore power to the affected instrumentation bus. Because the finding was of very low safety significance, and the finding was captured in the licensee's corrective action system, this finding is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 1R05.3.b(2)).

Inspection Report# : [2003002\(pdf\)](#)



**Significance:** Feb 14, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **Inadequate Corrective Action for Potential for Smoke to Enter Control Room**

Green. The inspectors identified that the licensee failed to adequately correct a previously identified condition adverse to quality relating to the potential for smoke to enter the control room due to fire outside the control room. The failure to take adequate corrective action is a violation of 10 CFR Part 50, Appendix B, Criterion XVI.

This issue was greater than minor because the potential for smoke in the control room could affect operators ability to operate the plant. The finding was determined to be of very low safety significance, i.e. Green, because the plant could initially be maintained in hot shutdown due to the automatic actions of available equipment. Because the finding was of very low safety significance, and the finding was captured in the licensee's corrective action system, this finding is being treated as an NCV consistent with Section VI.A.1 of the NRC Enforcement Policy (Section 4OA2.b).

Inspection Report# : [2003002\(pdf\)](#)



**Significance:** Feb 02, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE DESIGN CONTROL ON DRYWELL FLOOR DRAIN SUMP SYSTEM.**

A finding of very low safety significance was identified by the inspectors when the licensee failed to evaluate the effect of the filter socks on the design of the drywell floor drain sump system during normal plant operation. The filter socks became clogged in three of the six drains.

The finding was more than minor, since there was potential that the remaining three drains could be clogged by debris, which would result in a significantly increased period of time for accumulated water from inside the drywell to overflow into the equipment sump and be measured as leakage. The finding was determined to be of very low safety significance, since other means remained available to detect an increase in unidentified leakage. A NCV of 10 CFR 50, Appendix B, Criterion III, "Design Control," was identified by the inspectors for the failure to properly review the suitability of the drywell floor drain sump cover socks resulting in the delay of measured leakage from the drywell.

Inspection Report# : [2003003\(pdf\)](#)



**Significance:** Jan 04, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

### **INADEQUATELY PERFORMED CALIBRATION ON THE RCIC TURBINE GOVERNOR**

A finding of very low safety significance was identified through a self-revealing event when the licensee failed to have an adequate procedure to perform the calibration of the Reactor Core Isolation Cooling (RCIC) turbine governor. The



inadequate procedure resulted in an improper adjustment to the RCIC turbine governor gain and stability potentiometers which resulted in RCIC flow being below the Technical Specifications (TS) limit.

The finding was more than minor since the finding resulted in increased unavailability of the RCIC system. The finding was determined to be of very low safety significance, since the licensee did not exceed the Allowable Outage Time (AOT) and High Pressure Coolant Injection (HPCI) was always available. A NCV of 10 CFR 50, Appendix B, Criterion V, related to the inadequate procedure for performing the RCIC turbine governor calibration was identified through a self-revealing event.

Inspection Report# : [2003003\(pdf\)](#)



**Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate Seismic Evaluation on 1D1 Cell #53 Battery Jumper**

A finding of very low safety significance was identified by the inspectors when the licensee failed to follow Administrative Control Procedure (ACP) 1203.01 "Design Verification" procedure and adequately evaluate the seismic qualification of the jumper cable around cell #53 of the "1D1" 125 Volts Direct Current (Vdc) battery.

The inspectors concluded that the issue was more than minor since the finding had greater safety significance than a similar issue described in IMC 0612, Appendix E, Section 4.a. The finding was determined to be of very low safety significance, since the licensee was able to show operability of the 1D1 battery. A Non-Cited Violation (NCV) of 10 CFR 50, Appendix B, Criterion V, related to the failure to adequately perform ACP 1203.01 "Design Verification" procedure when evaluating the seismic qualification of the jumper cable around cell #53 of the 1D1 battery was identified by the inspectors.

Inspection Report# : [2002007\(pdf\)](#)



**Significance:** Dec 28, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **Inadequate RCIC Troubleshooting Procedure**

A finding of very low safety significance was identified by the inspectors when the licensee failed to adequately plan the procedure for filling and venting the Reactor Core Isolation Cooling (RCIC) lubricating oil system.

The finding was more than minor since the finding resulted in increased unavailability of the RCIC system. The finding was determined to be of very low safety significance, since the licensee did not exceed the Allowable Outage Time (AOT) and High Pressure Coolant Injection (HPCI) was always available. A NCV of 10 CFR 50, Appendix B, Criterion V, related to inadequate procedure for filling and venting the RCIC lubricating oil system was identified by the inspectors. (Section 1R19)

Inspection Report# : [2002007\(pdf\)](#)



**Significance:** Oct 30, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO MEET THE REQUIREMENTS OF 10 CFR 55.46 WITH REGARD TO ASSURING MAINTENANCE OF PLANT REFERENCED SIMULATOR FIDELITY.**

The inspectors identified a finding of very low safety significance and an associated Non-Cited Violation (NCV) of 10

CFR 55.46(d)(1), "Continued Assurance of Simulator Fidelity." The inspectors identified that the facility licensee failed to conduct two particular performance tests in accordance with the committed testing requirements of ANSI/ANS 3.5 - 1985, "Nuclear Power Plant Simulators for Use in Operator Training." In addition, the licensee failed to adequately conduct performance testing following the November 2001 power uprate. The simulator was tested using the old thermal power rating of 1658 MWth (megawatts thermal) rather than the plant's actual thermal power of 1790 MWth (total authorized thermal power rating for the actual plant was 1912 MWth; however, thermal power was limited to 1790 MW due to plant equipment).

Inspection Report# : [2003005\(pdf\)](#)

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## Barrier Integrity



**Significance:** Feb 15, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

### **INADEQUATE FUEL POOL COOLING SYSTEM PROCEDURE.**

A finding of very low safety significance was identified by the inspectors when the licensee failed to have an adequate procedure for operating the fuel pool cooling system. The procedure failed to incorporate the new temperature limit associated with the installed Holtec fuel racks in the fuel pool, thereby allowing the licensing limit to be violated.

The finding was more than minor since there was potential for criticality to occur in the fuel pool. The finding was determined to be of very low safety significance, since actual fuel pool temperature never reached 39.2 F, which would have violated the licensing limit bases. A NCV of 10CFR50, Appendix B, Criterion V, related to inadequate procedure for operating the fuel pool cooling system was identified by the inspectors.

Inspection Report# : [2003003\(pdf\)](#)

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## Emergency Preparedness



**Significance:** Nov 08, 2002

Identified By: NRC

Item Type: NCV NonCited Violation

### **Failure to provide vision correction for respirator users**

A Non-Cited Violation of 10 CFR 20.1703 (e) was identified for failing to provide for vision correction, when personnel used respiratory protective equipment. This was related to the emergency planning standards of 10 CFR 50.47(b) (10). The deficiency concerned a failure to implement a regulatory requirement (i.e. to provide equipment necessary to protect personnel or emergency workers). The licensee provided self-contained breathing apparatus (SCBA) equipment for all personnel who would be expected to respond in the event of an emergency. However, the licensee failed to provide vision correction lenses for some eyeglass wearing (i.e. non-soft contact wearing) emergency responders. Their ability to perform emergency response functions would have been impaired or hampered, due to inadequate vision correction while wearing SCBAs. Proper vision is required to ensure the capability of all emergency responders to provide emergency services under accident conditions, as required by the Duane Arnold Energy Center Emergency Plan. The finding was determined to be of very low safety significance because the majority of emergency response personnel that wore eyeglasses (i.e. non-soft contact wearing), had been issued vision correction lenses by the licensee. Additionally, an adequate number of SCBA qualified plant personnel/staff, which were designated emergency

responders, (i.e. with no vision correction needed, wearers of soft contacts, or personnel with vision correction lenses) would have been available to respond in the event of an actual emergency. Therefore, the issue did not result in the failure to meet a planning standard  
Inspection Report# : [2002007\(pdf\)](#)

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## Occupational Radiation Safety

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### Public Radiation Safety

**Significance:**  Aug 21, 2003

Identified By: NRC

Item Type: NCV NonCited Violation

#### **FAILURE TO FOLLOW PCP 2.8 PROCEDURE FOR RETURNING KAMAN 8 TO SERVICE.**

A finding of very low safety significance was identified through a self-revealing event related to the failure to follow the procedure for sampling gaseous effluent systems. The primary cause of this violation was related to the cross-cutting area of Human Performance, since the licensee failed to reopen a sample inlet valve, in accordance with procedures, after a leak check for a Reactor Building Gaseous Effluent Monitor. This resulted in the monitor being inoperable. Once identified, the licensee opened the sample inlet valve to restore operability. In addition, the licensee placed verification steps in the associated chemistry procedures to ensure proper equipment lineups.  
Inspection Report# : [2003005\(pdf\)](#)

**Significance:**  Feb 26, 2003

Identified By: Self Disclosing

Item Type: NCV NonCited Violation

#### **Licensee failed to maintain control of licensed radioactive material in an unrestricted area and that was not in storage.**

The licensee identified a self-revealing violation of 10 CFR 20.1802, when the licensee failed to maintain control of licensed radioactive material in an unrestricted area that was not in storage (i.e., eddy current test equipment with a measurable amount of licensed radioactive material [.3 nCi of Co-60 and lesser quantities of Mn-54] which was found upon subsequent evaluation and survey at Point Beach station [the next location of use of this equipment]).

The finding was more than minor because it was associated with the "Program and Process" and "Human Performance" attributes of the Public Radiation Safety Cornerstone and affected the cornerstone objective in ensuring adequate protection of public health and safety from exposure to radioactive materials released into the public domain. This event was caused by human error on the part of the Radiation Protection Manager. This error involved reaching a non-conservative conclusion during an incomplete evaluation of the presence of radioactive material on the item. However, this finding, associated with the licensee's radioactive material control program, was of very low safety significance in that public radiation exposure was not greater than 0.005 rem and the licensee did not have more than five radioactive material control occurrences (in the previous eight quarters). Thus, this finding will be documented as a Non-Cited Violation (NCV) of 10 CFR 20.1802, where the licensee failed to maintain control of licensed radioactive material in an unrestricted area that was not in storage.

Inspection Report# : [2003004\(pdf\)](#)



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## Physical Protection

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## Miscellaneous

Last modified : December 01, 2003