

August 1, 2000

Mr. David Wilson
Vice President, Nuclear
IES Utilities, Inc.
Alliant Tower
200 First Street SE
P. O. Box 351
Cedar Rapids, IA 52406-0351

SUBJECT: DUANE ARNOLD INSPECTION REPORT 50-331/2000003(DRP)

Dear Mr. Wilson,

On July 5, 2000, the NRC completed an inspection at your Duane Arnold Energy Center facility. The enclosed report presents the results of that inspection. The results of this inspection were discussed on July 5, 2000, with Mr. R. Anderson and other members of your staff.

This inspection was an examination of activities conducted under your license as they relate to reactor safety, verification of performance indicators, event followup, and compliance with the Commission's rules and regulations and with the conditions of your license. Within these areas, the inspection consisted of a selective examination of procedures and representative records, observations of activities, and interviews with personnel.

Based on the results of this inspection, the NRC identified two issues that were evaluated under the risk significance determination process and were determined to be of very low safety significance (Green). These issues have been entered into your corrective action program and are discussed in the summary of findings and in the body of the enclosed inspection report. Of the two issues identified, one issue was determined to involve a violation of NRC requirements. This violation is being treated as a Non-Cited Violation (NCV), consistent with Section VI.A.1 of the Enforcement Policy. The NCV is described in the subject inspection report. If you contest this non-cited violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with copies to the Regional Administrator, Region III, the Director, Office of Enforcement, United States Nuclear Regulatory Commission, Washington, DC 20555-0001, and the NRC Resident Inspector at the Duane Arnold Energy Center facility.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available **electronically** for public inspection in the NRC Public Document Room **or** from the *Publicly Available Records (PARS) component of NRC's document system (ADAMS)*. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/NRC/ADAMS/index.html> (the Public Electronic Reading Room)."

Sincerely,

/RA/

Melvyn N. Leach, Chief
Reactor Projects Branch 2

Docket No. 50-331
License No. DPR-49

Enclosure: Inspection Report 50-331/2000003(DRP)

cc w/encl: E. Protsch, Executive Vice President -
Energy Delivery, Alliant;
President, IES Utilities, Inc.
Richard L. Anderson, Plant Manager
K. Peveler, Manager, Regulatory Performance
State Liaison Officer
Chairperson, Iowa Utilities Board
The Honorable Charles W. Larson, Jr.
Iowa State Representative

ADAMS Distribution:

DFT
BLM (Project Mgr.)
J. Caldwell, RIII w/encl
B. Clayton, RIII w/encl
SRI Duane Arnold w/encl
DRP w/encl
RIDSRGN3DRS w/encl
RIII_IRTS
JRK1
BAH3

DOCUMENT NAME: G:\duan\dua2000003drp.wpd

To receive a copy of this document, indicate in the box "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RIII	N	RIII	N				
NAME	Rierner		Leach					
DATE	07/31/00		08/01/00					

OFFICIAL RECORD COPY

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-331
License No:	DPR-49
Report No:	50-331/2000003(DRP)
Licensee:	Alliant, IES Utilities Inc. 200 First Street S. E. P. O. Box 351 Cedar Rapids, IA 52406-0351
Facility:	Duane Arnold Energy Center
Location:	Palo, Iowa
Dates:	May 17 through July 5, 2000
Inspectors:	P. Prescott, Senior Resident Inspector M. Kurth, Resident Inspector
Approved by:	Melvyn N. Leach, Chief Reactor Projects Branch 2 Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
<ul style="list-style-type: none">● Initiating Events● Mitigating Systems● Barrier Integrity● Emergency Preparedness	<ul style="list-style-type: none">● Occupational● Public	<ul style="list-style-type: none">● Physical Protection

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: <http://www.nrc.gov/NRR/OVERSIGHT/index.html>.

SUMMARY OF FINDINGS

Duane Arnold Energy Center NRC Inspection Report 50-331/2000003(DRP)

IR 50-331/2000003, on 05/17-07/5; IES Utilities, Inc; Duane Arnold Energy Center, Unit 1, Resident Operations Report.

Cornerstone: Mitigating Systems

- Green. During a walkdown of the reactor building, the inspectors identified that several portable fire extinguishers were missing from their assigned location. The vendor responsible for maintaining the fire extinguishers had an individual onsite that was removing the fire extinguishers for testing without leaving a temporary spare. Due to the short period of time the plant was missing the 12 fire extinguishers, this finding was viewed as being of very low safety significance. (Section 1R05)

Cornerstone: Initiating Events

- Green. The inspectors identified a noncited violation for procedural inadequacies in the licensee's flooding mitigation abnormal operating procedure. The issue was entered in the licensee's corrective action program (Action Request 19711) for resolution. This issue was of low safety significance due to the low probability of occurrence of a design basis flood and the amount of time available to respond to flooding conditions from the time a storm started. (Section 1R06)

Report Details

Summary of Plant Status: The plant operated at or near full power at the beginning of the inspection period. On June 23, 2000, the plant experienced a turbine trip which resulted in an automatic reactor shutdown. The operators commenced a reactor startup on June 25. On June 26, operators synchronized the main generator to the grid. The plant reached full power on June 30 and operated at or near full power for the remainder of the period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R01 Adverse Weather

a. Inspection Scope

The inspectors reviewed the licensee's preparations for hot weather conditions. The inspectors performed walkdowns of the reactor building, pump house, and river water intake structure. Also, the inspectors reviewed the following documents:

- Integrated Plant Operating Instruction 6, "Cold Weather Operations," Attachment 2, "Plant Return to Normal Operation Checklist," Revision 15
- Operating Instruction (OI) 410, "River Water Supply System," Revision 33
- Updated Final Safety Analysis Report (UFSAR), Section 1.8.27, "Safety Guide 27, Ultimate Heat Sink"
- Surveillance Test Procedure (STP) NS540002, "Emergency Service Water Operability Test," Revision 5

b. Issues and Findings

There were no findings identified.

1R04 Equipment Alignment

a. Inspection Scope

The inspectors performed a complete walkdown of accessible portions of the following systems to verify system operability. Documentation reviewed in the performance of the walkdown is listed with the associated system. Portions of systems inside containment were not accessible. The inspectors verified the correct valve position of all the valves in the primary system flowpath using the system piping and instrumentation drawings (P&IDs) and system mechanical checklist and verified breaker alignments using the system electrical checklist. The inspectors observed instrumentation valve configurations and appropriate meter indications. The inspectors verified lubrication and cooling of major components by direct observation of the components. The inspectors periodically observed proper installation of hangers and supports during the walkdown and verified operational status of support systems by direct observation of various parameters. Control room switch positions for the system were observed. The

inspectors also evaluated other conditions such as adequacy of housekeeping, the absence of ignition sources, and proper component labeling. The inspectors performed the walkdowns either while significant maintenance was being performed on the corresponding train or following a surveillance test to ensure the system was properly restored to standby readiness.

- Reactor core isolation cooling (RCIC) system
P&ID: BECH-M124 and BECH-M125
Procedure checklists: OI 150, "Reactor Core Isolation Cooling System," Revision 37
- "B" river water supply system
P&ID: BECH-M129
Procedure checklists: OI 410, "River Water Supply System," Revision 33
- "A" train of the residual heat removal (RHR) system
P&ID: BECH-M120 and BECH-M113
Procedure checklists: OI 149, "Residual Heat Removal system," Revision 69

b. Issues and Findings

There were no findings identified.

1R05 Fire Protection

a. Inspection Scope

The inspectors walked down the following risk significant areas looking for any fire protection degraded conditions. The inspectors reviewed open fire protection impairment requests to prioritize the plant area fire plan (AFP) zones inspected and conducted discussions with the fire protection program engineer. The inspectors placed emphasis on control of transient combustibles and ignition sources; area material condition; operational lineup and operational effectiveness of the fire protection systems, equipment, and features; and the material condition and operational status of fire barriers used to prevent fire damage or fire propagation.

In particular, the inspectors verified that all observed transient combustibles were being controlled in accordance with the licensee's administrative control procedures. In addition, the inspectors observed the physical condition of fire detection devices, such as overhead sprinklers, and verified that any observed deficiencies did not impact the operational effectiveness of the system. The inspectors also observed the physical condition of portable fire fighting equipment, such as portable fire extinguishers. The inspectors verified the equipment was located appropriately and that access to the extinguishers was unobstructed. The inspectors verified that fire hoses were installed at their designated locations and the physical condition of the hoses was satisfactory and access unobstructed. The inspectors observed and verified the physical condition of passive fire protection features such as fire doors, ventilation system fire dampers, fire barriers, and fire zone penetration seals and verified the items were properly installed and in good physical condition. The areas inspected were:

- Standby transformer area using Fire Plan Volume II, "Fire Brigade Organization," AFP-70, Revision 0
- Reactor building, high pressure coolant injection, reactor core isolation cooling and radwaste tank room areas using Fire Plan Volume II, "Fire Brigade Organization," AFP-3, Revision 22
- Torus area using Fire Plan Volume II, "Fire Brigade Organization," AFP-1, Revision 22
- Northwest corner room ("B" train RHR) using Fire Plan Volume II, "Fire Brigade Organization," AFP-1

b. Issues and Findings

The inspectors identified, during a walkdown of the area for AFP-3, that the dry chemical fire extinguishers were not in place and discussed this with the program engineer. The program engineer found that the vendor responsible for maintaining the plant's fire extinguishers had an individual onsite at the time who was removing fire extinguishers for testing but was not putting a temporary spare in place, which was the expected practice. Approximately 12 fire extinguishers were removed before the inspectors identified the problem. The licensee immediately corrected the oversight. The program engineer initiated Action Request (AR) 20291 to track the deficiency. A procedure revision to STP NS13E005, "Portable Fire Extinguishers," Revision 28, was subsequently completed that stated, "Extinguishers may not be removed from their designated location unless an equivalent replacement extinguisher has been provided at the designated location."

The inspectors used the significance determination process (SDP) to evaluate the risk significance of the removed fire extinguishers. The inspectors utilized the Fire Protection SDP to evaluate fire suppression defense-in-depth elements. The lack of a procedural requirement to place temporary fire extinguishers for those being tested was evaluated under the Phase 1 screening methodology. Due to the short period of time the plant was missing several fire extinguishers, the finding was viewed as being of very low safety significance (Green).

1R06 Flood Protection Measures

(Closed) Unresolved Item 50-331/2000002-01: Lack of guidance in the external flood mitigation procedure. As discussed in Inspection Report (IR) 50-331/2000002, Section 1R06, "Flood Protection," the inspectors identified procedural deficiencies for external flood mitigation plans. The most significant concern was the lack of procedural guidance for sealing the emergency service water (ESW) and residual heat removal service water (RHRSW) pump hatches to prevent system inoperability during design basis flood conditions. Two important functions to maintain the plant in a safe shutdown condition could be lost. Without the RHRSW and ESW systems there would be a loss of decay heat removal capability and no cooling water for the emergency diesel generators (station blackout), respectively.

The inspectors and senior reactor analysts (SRAs) screened this finding using the significance determination process (SDP). During the Phase 1 screening, the inspectors determined that a Phase 3 review was required for this issue because it could

affect the operability or function of the ESW and RHRSW systems, and thus impact the functions of mitigating systems.

The inspectors and SRAs performed a Phase 3 analysis and identified that the likelihood of core damage from failing to seal the ESW and RHRSW room hatches during an external design basis flood was low. This was not significant in terms of overall risk to the public. The inspectors' and SRAs' determination was based on: the low probability of occurrence of the design basis flood; sufficient time (6 days) from when the storm begins for the licensee to assess the design basis flooding condition; the capability to complete compensatory measures to prevent flooding in the ESW and RHRSW rooms through the floor hatches; and the capability of the licensee to complete compensatory actions to maintain the reactor in a safe shutdown condition using alternative core cooling options. Based upon this information, the inspectors considered the finding was of very low safety significance and was within the licensee response band (green). As discussed above and in NRC IR 50-331/2000002, Section 1R06, "Flood Protection," the inspectors identified procedural inadequacies that addressed site preparation for external flooding. Criterion V of 10 CFR Part 50, Appendix B, requires, in part, that activities affecting quality shall be prescribed by documented instructions or procedures of a type appropriate to the circumstances. Contrary to the above, Abnormal Operating Procedure 902, "Flood," Revision 13, did not incorporate instructions to seal the ESW and RHRSW pump hatch openings and remove obstructions for stoplog installation for flooding conditions. This violation (50-331/2000003-01(DRP)) is associated with an inspection finding that is characterized by the Significance Determination Process as having very low risk significance (i.e., green) and is being treated as a Non-Cited Violation consistent with Section VI.A.1. of the NRC Enforcement Policy. The licensee initiated Action Request 19711 to resolve the procedural discrepancies and inadequacies.

1R11 Licensed Operator Requalification

a. Inspection Scope

The inspectors observed simulator training for licensed operators. The simulator training scenarios were verified to be primarily high risk licensed operator actions, operator activities associated with the use of the emergency plan, and previous lessons learned items and plant experiences.

In addition, the inspectors compared the simulator board configurations with the actual control board configuration for consistency.

b. Issues and Findings

There were no findings identified.

1R12 Maintenance Rule Implementation

a. Inspection Scope

The inspectors reviewed the licensee implementation of the maintenance rule requirements for the systems or components listed below. Documentation reviewed in performance of the inspection is also listed below. The systems or components were selected based upon recent performance problems and the risk significance classification of the systems in the maintenance rule program. The inspectors independently verified the licensee's implementation of the maintenance rule for these systems by verifying that these systems were properly scoped within the maintenance rule in accordance with 10 CFR 50.65; that all failed SSCs were properly categorized and classified as (a)(1) or (a)(2) in accordance with 10 CFR 50.65; the appropriateness of performance criteria for SSCs classified as (a)(2); and the appropriateness of goals and corrective actions for SSCs classified as (a)(1). The inspectors also verified that identified issues were identified at an appropriate threshold and entered in the corrective action program.

- 1C218A,B hydrogen/oxygen analyzers
- 1K003 and 1K004 control building HVAC/ standby gas treatment instrument air compressors
- Feedwater and condensate system

The following documentation was also reviewed:

- Duane Arnold Energy Center (DAEC) Performance Criteria Document, "Containment Atmosphere Control System (CAS)," Revision 4
- DAEC Performance Criteria Document, "Control Building Heating Ventilation and Air-Conditioning System," Revision 3
- DAEC Performance Criteria Document, "Feedwater and Condensate System," Revision 0

b. Issues and Findings

There were no findings identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation

a. Inspection Scope

The inspectors reviewed the licensee's evaluation of plant risk, scheduling, configuration control, and performance of planned maintenance and emergent work activities. Emergent work activities reviewed were a secondary containment breach caused by a leaking pipe in the standby gas treatment system sump and the main turbine generator electro-hydraulic control system testing. The inspectors also reviewed the risk assessment of scheduled maintenance activities associated with concurrent work on the "A" river water system intake and "D" well pump overhaul, and "B" residual heat removal system valve overhauls. The inspectors verified that scheduled and emergent work activities were adequately managed. In particular, the inspectors reviewed the

licensee's program for conducting maintenance risk safety assessments and verified the licensee's planning, risk management tools, and the assessment and management of online risk. The inspectors also verified that licensee actions to address increased online risk during these periods, such as establishing compensatory actions, minimizing the duration of the activity, obtaining appropriate management approval, and informing appropriate plant staff, were accomplished when online risk was increased due to maintenance on risk-significant SSCs. The inspectors observed portions of the maintenance activities to ensure proper management oversight and return to service of the SSCs in a timely manner.

b. Issues and Findings

There were no findings identified.

1R14 Personnel Performance During Non-routine Plant Evolutions

a. Inspection Scope

The inspectors assessed and reviewed the circumstances surrounding the automatic plant trip that occurred on June 23, 2000. The inspectors conducted a walkdown of the control room panels and observed operator performance during the post-trip recovery actions. The inspectors reviewed the following documents:

- control room strip chart data for reactor level
- Integrated Plant Operating Instructions 5, "Reactor Scram," Revision 24
- Administrative Control Procedure 1410.8, "Post Scram Review," Revision 6
- AR 20519, "Reactor Scram"
- Operation Committee's "Chronological Summary of Investigation and Testing for Cause of Plant Unit Differential Current Relay Actuation on June 23, 2000"
- shift supervisor and operator logs
- plant computer event report data

b. Issues and Findings

There were no findings identified.

1R15 Operability Evaluations

a. Inspection Scope

The inspectors reviewed the technical adequacy of operability evaluations (OEs) to ensure that the system operability was properly justified and the system remained available, such that no unrecognized increase in risk occurred. The inspectors reviewed the following operability evaluations:

- AR 20180, "While Performing Field Calibration per Surveillance Test Procedure 3.3.6.1-34, Reactor Core Isolation Coolant and High Pressure Coolant Injection Room Temperature Sensors/Switch were out of Specification"

- AR 16063, "Prepare Engineering Change Package 1622: Upgrade Instrument [AC] Alternating Current Cabling." A review of physical separation, cabling division, and electrical schemes for safety-related equipment was performed. It was found that certain cables and electrical schemes are not documented as divisional cables and are not routed in divisional trays.

b. Issues and Findings

There were no findings identified.

1R16 Operator Workarounds

a. Inspection Scope

The inspectors reviewed operator workarounds (OWAs) to identify any potential effect on the function of mitigating systems, or the operators' ability to respond to an event and implement abnormal and emergency operating procedures.

The inspectors reviewed the following operator workarounds during the inspection period:

- AR 3975, "Temporary Modification to the Well Water and Emergency Service Water system Lineups Caused by Rising Drywell Temperatures"
- AR 5385, "Evaluate Solutions to not Require Manual Pressurization of the Residual Heat Removal System Prior to Routine Starts"

b. Issues and Findings

There were no findings identified.

1R17 Permanent Plant Modifications

a. Inspection Scope

The inspectors reviewed Engineered Maintenance Action (EMA) A44461, associated with the vendor recommended wiring modification to the 1D25 DC to DC inverter circuit. The modification prevented a short in the bypass regulator from causing a loss of power to the 1D25 inverter. The inspectors reviewed the EMA documentation, including the safety evaluation and drawings, and appropriate sections of the UFSAR. Engineering Change Notice N981256 and the work order associated with the EMA were also reviewed.

b. Issues and Findings

There were no findings identified.

1R19 Post-Maintenance Testing

a. Inspection Scope

The inspectors observed the post maintenance tests and reviewed test data for the following activities:

- Corrective Work Order (CWO) A34631, "Remove "B" Reactor Water Cleanup System Forced Oil Lubrication System"
- CWO A49144, "Replace Failed Main Generator Current Transformer for the Differential Current Relay"
- CWO A49110, "Replace Failed Field Breaker - "A" Motor Generator Reactor Recirculation System"

The inspectors verified that the post maintenance tests observed demonstrated the systems and components were capable of performing its intended safety function. Also the inspectors reviewed the applicable sections of TS requirements and the Updated Final Safety Analysis Report, and the following plant procedures:

- OI 261, "Reactor Water Cleanup System," Revision 39
- OI 264, "Reactor Recirculation System," Revision 62
- Management Directive 24, "Post Maintenance Testing Program," Revision 21

Following the completion of the test, the inspectors verified that the test equipment was removed and that the equipment was returned to a condition in which it could perform its safety function.

b. Issues and Findings

There were no findings identified.

1R22 Surveillance Testing

a. Inspection Scope

The inspectors observed surveillance testing on risk-significant equipment and verified that the SSCs selected were capable of performing their intended safety function. The inspectors verified that the surveillance tests satisfied the requirements contained in TSs, the UFSAR, and licensee procedures. During surveillance testing observations the inspectors verified that the test was adequate to demonstrate operational readiness consistent with the design and licensing basis documents, and that the testing acceptance criteria were clear. The inspectors also verified that the impact of the testing had been properly characterized during the pre-job briefing; the test was performed as written and all testing prerequisites were satisfied; and that the test data was complete, appropriately verified, and met the requirements of the testing procedure. Following the completion of the test, the inspectors verified that the test equipment was removed and that the equipment was returned to a condition in which it could perform its safety function.

The following surveillance testing activities were observed:

- STP 3.5.1-02, "Low Pressure Coolant Injection (LPCI) System Operability Tests," Revision 7
- STP 3.5.3-02, "RCIC System Operability Test," Revision 6
- STP 3.8.7-01, "LPCI Swing Bus AC and DC Undervoltage Transfer Test," Revision 1

b. Issues and Findings

There were no findings identified.

1R23 Temporary Plant Modifications

a. Inspection Scope

The inspectors reviewed the following temporary modification package, safety evaluation, and installation work order associated with the integrity of secondary containment.

- Temporary Modification Permit 00-21, "Seal Gaps at Secondary Containment Doors"

Documents reviewed during the inspection included:

- Corrective work order (CWO) A40115, "Repair Door-225"
- CWO A29251, "Repair Door-128"
- AR 20298, "Secondary Containment Door Seal Design Control"
- AR 20299, "Secondary Containment Door Seal Post Maintenance Testing Requirements"
- AR 19815, "Secondary Containment Door Seal Gap Concerns"
- AR 19187, "Replacement for Door-127 (Reactor Building South Airlock Door) did not have "Bottom Sweep" Resulting in Secondary Containment Breach"

b. Issues and Findings

There were no findings identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification

Cornerstone: Barrier Integrity

.1 Reactor Coolant System Activity

a. Inspection Scope

The inspectors verified the Reactor Coolant System Activity Performance Indicator data reported by the licensee for March 1999 through March 2000. In particular, the inspectors reviewed surveillance test results performed weekly to determine reactor coolant dose equivalent iodine-131 specific activity. The inspectors verified that the Reactor Coolant System Activity Performance Indicator data matched the weekly surveillance test results. The inspectors verified that no problems regarding accuracy and completeness were found. The inspectors reviewed the following documents:

- Technical Specification 3.4.6, "Reactor Coolant System Activity"
- STP 3.4.6-01, "Reactor Coolant Iodine Activity," Revision 0
- Plant Chemistry Procedure (PCP) 2.1, "Plant Chemistry Sampling Program Guidelines," Revision 5
- PCP 2.2, "Collection and Liquid Grab Samples From Sample Stations and Local Sample Points," Revision 0

b. Issues and Findings

There were no findings identified.

.2 Reactor Coolant System Identified Leak Rate

a. Inspection Scope

The inspectors verified the Reactor Coolant System Leak Rate Performance Indicator data reported by the licensee for March 1999 through March 2000. In particular, the inspectors reviewed surveillance test results performed daily to determine reactor coolant identified leakage rates. The inspectors verified that the Reactor Coolant System Identified Leak Rate Performance Indicator data matched the surveillance test results. Also, the inspectors observed operators performing reactor coolant system leakage surveillance testing to verify that procedural requirements were being followed. The inspectors verified that no problems regarding accuracy or completeness were found. The inspectors reviewed the following documents:

- Technical Specification 3.4.4, "Reactor Coolant System Operational Leakage"
- STP 3.0.0-01, "Instrument Checks," Revision 22
- OI 920, "Drywell Sump System," Revision 17

b. Issues and Findings

There were no findings identified.

4OA3 Event Follow-up

a. Inspection Scope

The inspectors assessed and reviewed the circumstances surrounding the automatic plant trip that occurred on June 23, 2000. The inspectors conducted a walkdown of the control room panels and observed operator performance during the post-trip recovery actions. The inspectors reviewed the following documents:

- control room strip chart data for reactor level
- Integrated Plant Operating Instructions 5, "Reactor Scram," Revision 24
- Administrative Control Procedure 1410.8, "Post Scram Review," Revision 6
- AR 20519, "Reactor Scram"
- Operation Committee's "Chronological Summary of Investigation and Testing for Cause of Plant Unit Differential Current Relay Actuation on June 23, 2000"
- shift supervisor and operator logs
- plant computer event report data
- Corrective Work Order A49144, "Replace Current Transformer"

The inspectors observed startup activities and subsequent troubleshooting after the licensee identified the failed current transformer for the differential current phase relay.

b. Issues and Findings

On June 23, 2000, a main generator turbine trip occurred causing an automatic reactor trip. The main generator turbine trip was caused by the Phase 3 plant unit differential current relay trip. Overall plant equipment responded as expected. Initial troubleshooting efforts did not determine the cause of the relay trip; therefore, on June 25, the licensee initiated a reactor start-up. On June 26, the licensee synchronized the main generator to the grid and continued the power ascension. During the power ascension at approximately 44 megawatts electric, electrical maintenance personnel observed spiking on the Phase 3 plant unit differential relay and determined the cause to be a failed current transformer. The licensee initiated repair plans and replaced the failed current transformer. On July 1, the plant reached full power operations.

4OA6 Meetings, Including Exit

Exit Meeting Summary

The inspectors presented the inspection results to Mr. R. Anderson and other members of licensee management at the conclusion of the inspection on July 5, 2000. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

R. Anderson, Plant Manager
J. Bjorseth, Maintenance Superintendent
D. Curtland, Operations Manager
R. Hite, Manager, Radiation Protection
M. McDermott, Manager, Engineering
K. Peveler, Manager, Regulatory Performance
G. Van Middlesworth, Site General Manager
D. Wilson, Vice President Nuclear

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

50-331/2000003-01	NCV	Lack of guidance in the external flood mitigation procedure
-------------------	-----	-------------------------------------------------------------

Closed

50-331/2000002-01	URI	Lack of guidance in the external flood mitigation procedure
50-331/2000003-01	NCV	Lack of guidance in the external flood mitigation procedure

Discussed

None

LIST OF ACRONYMS USED

AFP	Area Fire Plan
AR	Action Request
CFR	Code of Federal Regulations
CWO	Corrective Work Order
DAEC	Duane Arnold Energy Center
DRP	Division of Reactor Projects
EMA	Engineered Maintenance Action
ESW	Emergency service water
IR	Inspection report
LPCI	Low Pressure Coolant Injection
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
OI	Operating Instruction
P&ID	Piping and Instrumentation Drawing
PCP	Plant Chemistry Procedure
RCIC	Reactor Core Isolation Cooling
RHR	Residual Heat Removal
RHRSW	Residual Heat Removal Service Water
SDP	Significance Determination Process
SRA	Senior reactor analyst
SSC	Structure, System, or Component
STP	Surveillance Test Procedure
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item

LIST OF BASELINE INSPECTIONS PERFORMED

The following inspectable-area procedures were used to perform inspections during the report period. Documented findings are contained in the body of the report.

<u>Inspection Procedure</u>		<u>Report Section</u>
<u>Number</u>	<u>Title</u>	
71111-01	Adverse Weather	1R01
71111-04	Equipment Alignment	1R04
71111-05	Fire Protection	1R05
71111-06	Flood Protection Measures	1R06
71111-11	Licensed Operator Requalification	1R11
71111-12	Maintenance Rule Implementation	1R12
71111-13	Maintenance Risk Assessment and Emergent Work Evaluation	1R13
71111-14	Personnel Performance During Non-routine Plant Evolutions	1R14
71111-15	Operability Evaluations	1R15
71111-16	Operator Workarounds	1R16
71111-17	Permanent Plant Modifications	1R17
71111-19	Post Maintenance Testing	1R19
71111-22	Surveillance Testing	1R22
71111-23	Temporary Plant Modifications	1R23
71151	Performance Indicator Verification	40A1
71153	Cross-Cutting Issues	40A4
(none)	Meetings, Including Exit	40A6