November 29, 2001

Mr. Gary Van Middlesworth
Site Vice-President
Duane Arnold Energy Center
Nuclear Management Company, LLC
3277 DAEC Road
Palo, IA 52324

SUBJECT: DUANE ARNOLD ENERGY CENTER
NRC INSPECTION REPORT 50-331/01-08(DRP)

Dear Mr. Van Middlesworth:

On November 14, 2001, the NRC completed an inspection at your Duane Arnold Energy Center. The enclosed report documents the inspection findings which were discussed on November 14, 2001, with Mr. R. Anderson and other members of your staff.

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

No findings of significance were identified.

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 by Geoffrey Wright Acting for/

Bruce L. Burgess, Chief
Branch 2
Division of Reactor Projects

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

Enclosure: Inspection Report 50-331/01-08(DRP)

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President, IES Utilities, Inc.
Robert G. Anderson, Plant Manager
State Liaison Officer
Chairperson, Iowa Utilities Board
The Honorable Charles W. Larson, Jr.
Iowa State Representative

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REGION III

Docket No:	50-331
License No:	DPR-49
Report No:	50-331/01-08(DRP)
Licensee:	Alliant, IES Utilities Inc.
Facility:	Duane Arnold Energy Center
Location:	3277 DAEC Road Palo, Iowa 52324-9785
Dates:	October 1 through November 14, 2001
Inspectors:	P. Prescott, Senior Resident Inspector M. Kurth, Resident Inspector R. Jickling, Emergency Preparedness Specialist G. O'Dwyer, Reactor Engineer R. Landsman, Regional Dry Cask Coordinator
Approved by:	Bruce L. Burgess, Chief Branch 2 Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000331-01-08(DRP), on 10/01-11/14/2001, IES Utilities, Inc., Duane Arnold Energy Center. Routine safety inspection.

This report covers a 6-week routine inspection. The inspection was conducted by resident inspectors, a region-based emergency preparedness specialist, and a reactor engineer. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using IMC 0609 "Significance Determination Process" (SDP). The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described at its Reactor Oversight Process website at **http://www.nrc.gov/NRC/OVERSIGHT/index.html.** Findings for which the SDP does not apply are indicated by "No Color" or by the severity level of the applicable violations.

A. Inspector Identified Findings

No findings of significance were identified.

B. Licensee Identified Findings

No findings of significance were identified.

Report Details

Summary of Plant Status

From October 1 until October 17, 2001, the plant was operated at or near full power conditions. On October 17, 2001, at 6:10 a.m., a manual reactor scram was inserted due to a loss of 120 volt alternating current from instrument control power bus 1Y11. On October 22, 2001, at 8:24 a.m., a reactor startup was commenced and full power conditions were reached at 5:56 a.m. on October 26, 2001. On November 6, 2001, the NRC issued a license amendment allowing an increase in rated thermal power to 1912 megawatts thermal (MWt). However, the licensee will operate the plant at 1790 MWt until future plant modifications are completed that would permit operation at the new licensed full power. On November 9 at 4:15 p.m., reactor power was reduced to 60 percent for a control rod sequence exchange and to begin power ascension testing. Power ascension testing was performed up to 86 percent power. On November 14, 2001, at 3:20 p.m., reactor power was reduced to 60 percent to repair a steam leak on the "A" moisture separator reheater extraction steam line flow orifice.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity

1R04 Equipment Alignment (71111.04)

a. Inspection Scope

The inspectors performed a partial walkdown of accessible portions of the systems listed below to verify system operability. Items reviewed in the inspectors' walkdown included the following: verification of the correct valve position of valves in the primary system flowpath using the system piping and instrumentation drawings (P&IDs) and system mechanical checklist; verification of breaker alignments using the system electrical checklist; observation of instrumentation valve configurations and appropriate meter indications; verification of lubrication and cooling of major components by direct observation of the components; observation of proper installation of hangers and supports during the walkdown; and verification of operational status of support systems by direct observation of various parameters. Control room switch positions for the system were also observed. The inspectors also evaluated other conditions such as adequacy of housekeeping, the absence of ignition sources, and proper component labeling. The walkdowns were performed while maintenance was being conducted on the corresponding train.

- "B" Core Spray System
- "B" Residual Heat Removal System

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

a. Inspection Scope

The inspectors walked down risk significant areas looking for any fire protection degraded conditions. Open fire protection impairment requests were reviewed to prioritize the inspection of plant area fire plan (AFP) zones in addition to discussions with the fire protection program engineer. During the walkdowns, emphasis was placed on the following items: control of transient combustibles and ignition sources; area material condition; operational lineup and 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 physical condition of fire detection devices were observed, including overhead sprinklers, to verify that any observed deficiencies did not impact the operational effectiveness of the system. Included in the observations were the following items: the physical condition of portable fire fighting equipment, such as fire extinguishers, to verify that the equipment was located appropriately and that access to the extinguishers was unobstructed; verification that fire hoses were installed at their designated locations and that the physical condition of the hoses were satisfactory and access unobstructed; and verification of the physical condition of passive fire protection features such as fire doors, ventilation system fire dampers, fire barriers, and fire zone penetration seals to ensure that the items were properly installed and in good physical condition. Using the Fire Plan Volume II, "Fire Brigade Organization," the following areas were inspected:

- AFP- 7, "Reactor Building Laydown Area, Corridor and Waste Tank Area, and Spent Resin Tank Room," Revision 22
- AFP-8, "Reactor Building Standby Gas Treatment System and Motor Generator Set Rooms," Revision 22
- AFP-9, "Reactor Building Closed Cooling Water Heat Exchanger Area, Equipment Hatch Area and Jungle Room," Revision 23

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07)

.1 Biennial Review of Heat Sink Performance

a. Inspection Scope

The inspector reviewed documents associated with testing, inspection, cleaning, and performance trending of the Diesel Jacket Cooling Water Heat Exchanger (1E053A3) and "A" RHR Heat Exchanger. These heat exchangers were chosen based upon their importance in supporting required safety functions as well as relatively high risk achievement worths in the plant specific risk assessment. The "A" RHR Heat Exchanger was also selected to evaluate the licensee's thermal performance testing methods. During the inspection, the inspector reviewed completed surveillance tests and associated calculations, and performed independent calculations to verify that these activities adequately ensured proper heat transfer. The inspector reviewed the documentation to confirm that the test or inspection methodology was consistent with accepted industry and scientific practices, based on review of heat transfer texts and electrical power research institute standards (EPRI NP-7552, Heat Exchanger Performance Monitoring Guidelines, December 1991 and EPRI TR-107397, Service Water Heat Exchanger Testing Guidelines, March 1998).

The inspector reviewed condition reports concerning heat exchanger and ultimate heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues and entering them in the corrective action program. The inspector also evaluated the effectiveness of the corrective actions for identified issues, including the engineering justification for operability, if applicable.

The documents that were reviewed are included at the end of the report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11)

a. Inspection Scope

The inspectors observed the licensed operator evaluation conducted in accordance with examination scenario guide, "ESG 46," Revision 1. The exercise was conducted on November 1, 2001.

The exercise scenario challenged operators to respond to a loss of one residual heat removal service water system pump, a general service water pipe rupture, turbine runback due to stator cooling high temperatures, an electrical anticipated transient without a scram, and power level control for the protection of containment integrity. During the course of the scenario, emergency operating procedure entries were made and event classification and report opportunities occurred.

The inspectors observed communications, procedural adherence, and implementation of emergency operating procedures. In addition, event classification and reporting actions were observed. The classifications were included as part of the performance indicator data for this scenario.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule Implementation (71111.12)

a. Inspection Scope

The inspectors reviewed the licensee's implementation of the maintenance rule requirements for the systems or components 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 structures, systems, or components (SSCs) were properly categorized and classified as (a)(1) or (a)(2) in accordance with 10 CFR 50.65; that the performance criteria for SSCs classified as (a)(2) were appropriate; and that the goals and corrective actions for SSCs classified as (a)(1) were acceptable. The inspectors also verified that issues were identified at an appropriate threshold and entered in the corrective action program. The following systems were reviewed:

- Residual Heat Removal Service Water System
- Standby Gas Treatment System

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessment and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors reviewed the licensee's scheduling, configuration control, and performance of planned maintenance and emergent work activities. Specifically, the inspectors reviewed the risk assessment of scheduled maintenance activities associated with work weeks 42 and 44. Work week 42 included planned work on the high pressure coolant injection system, a 345 kilovolt switchyard power line, and a 120 volt instrument alternating current power supply. Work week 44 including work on the "A" residual heat removal system, "A" residual heat removal service water system, and emergent work on the high pressure coolant injection system.

The inspectors verified that scheduled and emergent work activities were adequately managed. This included observation of the licensee's programs for conducting maintenance risk safety assessments and the assessment and management of online risk, and verification of the licensee's planning and risk management tools. Licensee actions to address increased online risk were verified during these periods, including establishing compensatory actions, minimizing the duration of the activity, obtaining appropriate management approval, and informing appropriate plant staff. These actions were accomplished when online risk was increased due to maintenance on risk-significant

SSCs. Finally, portions of the maintenance activities were observed to ensure proper management oversight and return to service of the SSCs in a timely manner.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

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

- Action Request (AR) 27834, "Radiography Performed on Elbows and Piping Downstream of High Pressure Coolant Injection Steam Supply Drain Trap Show Wall Thinning"

The initial technical adequacy was properly justified for the piping replacement to occur within two weeks of identification. However, a work scope change delayed the piping replacement. The operability determination was not revised to reflect the change. The inspectors held further discussions with the engineering staff and determined that, although the operability determination was not revised, the engineering staff had performed a revised analysis that determined that the pipe wall thickness was sufficient until some time after the revised piping replacement date of December 17, 2001. The licensee revised the original operability evaluation after discussions with the inspectors.

b. Findings

No findings of significance were identified.

1R17 Permanent Plant Modifications (71111.17)

a. Inspection Scope

The inspectors reviewed Engineered Maintenance Action (EMA) A45566 associated with the modification to high pressure coolant injection flow sensing lines. The inspectors reviewed the EMA documentation, including the appropriate sections of the Updated Final Safety Analysis Report (UFSAR). The work orders associated with the EMA were reviewed. Post maintenance test data was reviewed following the modification. Portions of the modification installation were observed.

b. Findings

No findings of significance were identified.

1R19 Post-Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors observed selected post-maintenance tests and reviewed test data. The inspectors verified that the post-maintenance tests observed demonstrated that the systems and components were capable of performing their intended safety function. Included in the review were the applicable sections of Technical Specifications (TS) requirements, the Updated Final Safety Analysis Report (UFSAR), and appropriate plant procedures. Following the completion of the tests, 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. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors observed surveillance testing on risk-significant equipment, verified that the SSCs selected were capable of performing their intended safety function and verified that the surveillance tests satisfied the requirements contained in TS, the UFSAR, and licensee procedures. During surveillance testing observations, the inspectors verified the following items: the test was adequate to demonstrate operational readiness consistent with the design and licensing basis documents; the testing acceptance criteria were clear; 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 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.

b. Findings

No findings of significance were identified.

1R23 Temporary Plant Modifications (71111.23)

a. Inspection Scope

The inspectors reviewed one temporary modification package, safety evaluation, and installation work order. The inspectors verified revisions made to drawings and procedures and the installation of the temporary modification. The temporary modification was discussed with the system engineer.

b. Findings

No findings of significance were identified.

Emergency Preparedness

1EP2 Alert and Notification System (ANS) Testing (71114.02)

a. Inspection Scope

The inspectors discussed with Emergency Preparedness (EP) staff the design, equipment, and periodic testing of the public ANS for the Duane Arnold reactor facility emergency planning zone to verify that the system was properly tested and maintained. The inspectors also reviewed procedures and records for an 18-month period ending September 2001, related to ANS testing, annual preventive maintenance, and non-scheduled maintenance. The inspectors reviewed the licensee's criteria for determining whether each model of siren installed in the emergency planning zone would perform as expected if fully activated. Records used to document and trend component failures for each model of installed siren were also reviewed to ensure that corrective actions were taken for test failures or system anomalies.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization (ERO) Augmentation Testing (71114.03)

a. Inspection Scope

The inspectors reviewed the licensee's ERO augmentation testing to verify that the licensee maintained and tested its ability to staff the ERO during an emergency in a timely manner. Specifically, the inspectors reviewed semi-annual, off-hours staff augmentation drill procedures, related September 12 and 26, 2000, April 10, 2001, and August 28, 2001 drill records, primary and backup provisions for off-hours notification of the Duane Arnold reactor facility emergency responders, and the current ERO rosters for Duane Arnold. The inspectors reviewed and discussed with the EP staff the facility's provisions for maintaining ERO call out lists.

b. Findings

No findings of significance were identified.

1EP4 Emergency Action Level and Emergency Plan Changes (71114.04)

a. Inspection Scope

The inspectors reviewed Revision 22 to Section B and Revision 21 to Section F of the emergency plan to determine whether these revisions reduced the effectiveness of the licensee's emergency planning, pending onsite inspection of the implementation of these revisions.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspectors reviewed the Nuclear Oversight staff's 2000 and 2001 audits to ensure that these audits complied with the requirements of 10 CFR 50.54(t) and that the licensee adequately identified and corrected deficiencies. The inspectors also reviewed the EP staff's self-assessments and critiques to evaluate the EP staff's efforts to identify and correct weaknesses and deficiencies. Additionally, the inspectors reviewed action requests related to the facility's EP program to determine whether corrective actions were completed.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors evaluated the conduct of the October 24, 2001, emergency preparedness training drill and the November 1, 2001, licensed operator evaluated simulator exercise ESG-46, Revision 1. The inspectors observed the licensee critique of the classification, notification, and protective action recommendations that occurred during both the training evolution and the licensed operator evaluated exercise. The inspectors verified that the drill evolution was of appropriate scope and was to be included in the performance indicator statistics. Identified weaknesses and deficiencies were compared and the inspectors verified that the licensee assessment was appropriate.

The October 24, 2001, training drill involved a dropped fuel bundle in the spent fuel pool; a loss of feedwater heaters that led to a reactor scram; failure of control rods to insert; fuel failure; and radioactivity release offsite.

The November 1, 2001, licensed operator evaluated simulator exercise scenario involved a loss of one residual heat removal service water system pump; a general service water pipe rupture; turbine runback due to stator cooling high temperatures; an electrical anticipated transient without a scram; and power level control for the protection of containment integrity. During the course of the scenario, emergency operating procedure

entries were made and event classification and report opportunities occurred. The inspectors observed implementation of emergency operating procedures. In addition, event classification and reporting actions were observed. The classifications were included as part of the performance indicator data for this scenario.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Cornerstone: Mitigating Systems

a. Inspection Scope

The inspectors reviewed control room operator logs, monthly operating reports, licensee event reports, and performance indicator data from the second quarter of the year 2000 through the second quarter of the year 2001 for Reactor Scrams with a Loss of Normal Heat Removal and Safety System Unavailibility for the Residual Heat Removal System. Appropriate licensee personnel responsible for data collection were interviewed.

b. Findings

No findings of significance were identified.

.2 Emergency Preparedness

a. Inspection Scope

The inspectors verified that the licensee had accurately reported these indicators: ANS, ERO Drill Participation, and Drill and Exercise Performance (DEP) for the EP cornerstone. Specifically, the inspectors reviewed the licensee's PI records, data reported to the NRC, and action requests for the period April 2000, through September 2001. Records of relevant Control Room Simulator training sessions, periodic ANS tests, and excerpts of drill and exercise scenario and evaluations were also reviewed to identify any occurrences that were not identified by the licensee and entered into the station corrective action program.

b. Findings

No findings of significance were identified.

4OA3 Event Follow-up (71153)

a. Inspection Scope

On October 17, 2001, at 6:10 a.m., the Division I instrument AC Bus 1Y11 unexpectedly de-energized due to a loss of its normal power supply, Inverter 1D15. Its alternate power supply, regulating Transformer 1Y1A, was out of service for preplanned maintenance. The loss of 1Y11 resulted in a trip of the "A" feedwater pump and caused a plant transient that required the operating crew to insert a manual scram in anticipation of reaching the automatic scram setpoint for low reactor vessel level. Plant operators used Abnormal Operating Procedure 317, "Loss of 120 Volt Alternating Current Instrument Control Power," Revision 41, and Emergency Operating Procedure 1 for reactor vessel level control. Following restoration of 1Y1A, 1Y11 was re-energized and various reactor isolation signals and the scram signal were reset. At 9:02 a.m., the use of EOP 1 was terminated. At the time of the scram, the high pressure coolant injection system was out of service for preplanned maintenance.

During the transient, the reactor core isolation cooling (RCIC) system injected and automatically tripped when the vessel high water level was reached. Initially, the operating crew was slow in reacting to and anticipating reactor water level changes. Following the reactor scram, the reactor water level dropped to a low level of at least 119.5 inches, then reversed to a high level of 211 inches. Level continued to alternate from a low level of 170 inches to a high level of 211 inches. Once the level control oscillations were recognized, reactor water level was stabilized at a level at or near 211 inches by plant operators. Also, an operating crew member did not inform the other crew members that the RCIC system injected to the vessel. This contributed to the difficulty in initial stabilization of the reactor vessel water level by control room operators. The licensee initiated corrective actions to review the operating crew's response and provide additional training to crews next training cycle to reduce or eliminate the water level control problem.

Troubleshooting efforts were unsuccessful in determining the cause of the invertor failure. Although the licensee was unable to recreate the invertor failure, it believed the problem was isolated to one of three invertor circuit cards. The circuit cards were replaced and shipped to the vendor for further analysis and testing.

The inspectors interviewed operating crew personnel, reviewed operator logs, plant computer data, and strip charts to determine what occurred and how the operators responded. Operator response was also evaluated and confirmed the licensee's evaluation of the crew's initial response to reactor water level control. The inspectors evaluated the performance of mitigating systems and licensee actions. Also the inspectors held discussions with the regional senior reactor analyst to evaluate the licensee's risk significance determination and NRC reactive response to the event. In addition, the inspectors confirmed the licensee properly classified the event and made timely notifications to the NRC.

b. Findings

No findings of significance were identified.

4OA6 Meeting

Exit Meeting

The inspectors presented the inspection results to Mr. R. Anderson and other members of licensee management on November 14, 2001. 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.

An interim exit related to the Emergency Preparedness Program and performance indicators was conducted on November 2, 2001 with G. Van Middlesworth. 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.

An interim exit related to the heat exchanger performance was conducted on November 9, 2001 with J. Bjorseth. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. The licensee identified that GE-NE-A22-00100-23-01, Task T0440: “Containment System Response, Revision 1, Table 2-1, Containment Analysis Inputs” was a proprietary document.

In addition to the exit meetings noted above, on October 16, 2001, during a meeting with Region III personnel, the licensee presented their plans for use of a general cask license to store spent fuel at an independent spent fuel storage installation located within the owner controlled area. The licensee’s handouts presented during the meeting are attached. Included in the presentation was a discussion of the background of the project, the basis for selection of a dry storage technology cask, the fuel storage pad site selection criteria, the project schedule, and concluded with a discussion of ongoing activities.

KEY POINTS OF CONTACT

Licensee

R. Anderson, Plant Manager
B. Bernier, System Engineer Supervisor
J. Bjorseth, Manager, Engineering
D. Brigl, Long Term Program Engineer
R. Brown, Nuclear Oversight Manager
E. Christopher, Program Engineer
D. Curtland, Site Support Manager
K. Dunlap, Emergency Preparedness Planner
J. Ertman, Team Leader-Engineer
T. Evans, Operations Manager
L. Gibney, Emergency Preparedness Planner
H. Giorgio, Manager, Radiation Protection
R. Johnson, Emergency Preparedness Scenario Developer
D. Johnson, Emergency Preparedness Specialist
J. Karrick, Licensing
B. Kindred, Security Manager
J. Lohman, Communications Manager
S. McVay, System Engineer
K. Putnam, Licensing Manager
A. Roderick, Principal Mechanical Engineer
W. Simmons, Maintenance Superintendent
P. Sullivan, Emergency Planning Manager
R. Titus, Emergency Preparedness Planner
G. Van Middlesworth, Site Vice-President Nuclear
C. Vogeler, Emergency Preparedness Specialist
G. Whittier, RHR System Engineer
K. Williams, Senior Emergency Planning Specialist

NRC

M. Kurth, Resident Inspector

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

None

Discussed

None

LIST OF ACRONYMS USED

ADAMS	NRC's Document System
AFP	Area Fire Plan
ANS	Alert and Notification System
AR	Action Request
CFR	Code of Federal Regulations
CWO	Corrective Work Order
DAEC	Duane Arnold Energy Center
DEP	Drill and Exercise Performance
DRP	Division of Reactor Projects
DRS	Division of Reactor Safety
EMA	Engineered Maintenance Action
EP	Emergency Preparedness
ERO	Emergency Response Organization
HPCI	High Pressure Coolant Injection
MWt	Megawatt Thermal
NRC	Nuclear Regulatory Commission
OI	Operating Instruction
P&IDs	Piping and Instrumentation Drawings
PARS	Public Availability Records
PI	Performance Indicator
RCIC	Reactor Core Isolation Cooling
ROP	Reactor Oversight Process
SDP	Significance Determination Process
SSCs	Structure, System, or Components
STP	Surveillance Test Procedure
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report

LIST OF DOCUMENTS REVIEWED

The following documents were selected and reviewed by the inspectors to accomplish the objectives and scope of the inspection and to support any findings.

1R04 Equipment Alignment

P&ID M119	Residual Heat Removal System	Revision 75
P&ID M120	Residual Heat Removal System	Revision 58
P&ID M121	Core Spray System	Revision 35
OI 149	Residual Heat Removal System	Revision 73
OI 151	Core Spray System	Revision 35

1R07 Heat Sink Performance

EMP-1E053-HT	Equipment Monitoring Procedure Emergency Diesel Generator 1E-53A & B Coolers Heat Transfer Test Accomplished on August 28, 2001	Revision 5
EMP-1E053-HT	Equipment Monitoring Procedure Emergency Diesel Generator 1E-53A & B Coolers Heat Transfer Test Accomplished on July 6, 2000	Revision 5
EMP-1E201-HT	Equipment Monitoring Procedure RHR Heat Exchangers 1E-201A & B Heat Transfer Test Accomplished on January 27, 2000	Revision 2
EMP-1E201-HT	Equipment Monitoring Procedure RHR Heat Exchangers 1E-201A & B Heat Transfer Test Accomplished on December 13, 2000	Revision 2
ACP 1208.4	GL 89-13 Heat Exchanger Performance and Trending	Revision 3
ACP 1208.5	Service Water Reliability Program	Revision 0
GENERA-F010-001	Inspect and Clean Heat Exchangers Accomplished by WO 1109906 on September 14, 1999	Revision 5
Pre-Planned Task:	Z11426 Clean Coils and Inspect Unit Accomplished by Work Order 1112760	May 10, 2001

Pre-Planned Task:	Z11427 Perform Eddy Current Examination On Designated Tubes Accomplished by Work Order 1112761	May 9, 2001
Pre-Planned Task:	Z14201 Perform UT Examination of Heat Exchanger Shell	November 17, 2000
OI 324	Operating Instruction for the Standby Diesel Generator System	Revision 52
Calculation 466-M001	Diesel Generator Cooler Performance	Revision 1
Calculation 466-M-009	Diesel- Generator Coolers Thermal Performance-Determination Of ESW Flow	Revision 0
AB-2000.doc	Thermal Performance Analysis of RHR Heat Exchangers 1E201A/B	March 2, 2000
RHR-12-2000.doc	Thermal Performance Analysis of RHR Heat Exchangers 1E201A/B	May 11, 2001
AR 16378	Install Sample/Chemical Injection Point on the "B" Edge	August 3, 1999
AR 16484	ESW Max River Water Temp. Versus UHS Temp. Limit of 95 Degrees Fahrenheit	August 27, 1999
AR 17905	EDG Water Jacket Bench Used for Sampling and Chemical Addition is in an Unsafe Location	November 20, 1999
AR 18318	RHR Heat Exchanger Performance	January 12, 2000
AR 19272	RHR Heat Exchanger Performance	March 9, 2000
AR 19588	Respond to GEDA-AEP-190-NSR , WIN26, Heat Exchanger Design	April 12, 2000
AR 19592	Respond to GEDA-AEP-205, WIN31, Heat Exchanger Design	April 19, 2000
AR 22546	New Sample Point on 1G031/ENG (ENGINE, DIESEL, EDG/1G031) Water Jacket Does Not Allow Enough Room to Place Catch Bucket Under Outlet	January 9, 2001
AR 24089	Instrument Out of Tolerance	February 13, 2001

AR 24865	POT1947 Out-of-Tolerance	April 20, 2001
AR 28661[1]	EDG Loading Limits in Ois	November 7, 2001
InstructorGuide 19	Standby Diesel Generator System	Revision 9
WO 1109769	PDI2067 Calibration	August 9, 1999
WO 1117153	PDI2067 Calibration	August 14, 2001
WO 1113391	PDI2067 Calibration	June 25, 2000
WO 1118152	TI3275A Calibration	October 4, 2001
WO 1110213	TI3258A Calibration	September 13, 1999
WO 11090252	FI1971A Calibration	May 30, 1999
WO 1107239	FI2050 Calibration	February 9, 1999
WO 1115688	FI2050 Calibration	February 3, 2001
WO 1111313	FI2050 Calibration	January 21, 2000
BECH-M119	P. & I.D. Residual Heat Removal System	Revision 75
BECH-M120	P. & I.D. Residual Heat Removal System	Revision 58
SD-149	RHR System Standby/Readiness Lineup	Revision 3
SD-454	Emergency Service Water	Revision 2
SD-149	Figure 4. Suppression Pool Cooling Mode of RHR System	Revision 6
BECH-M146	P. & I.D. Service Water System Pumphouse 66	
BECH-M113	P. & I.D. RHR Service Water & Emergency Service Water Systems	Revision 58
205 AA 662	Residual Heat Removal Heat Exchanger Specification Sheet	February 18, 1970
MO15-146	Standby Diesel Jacket Water Cooler Specification Sheet	Revision 0
APED-E11-2773-		

167-1	Instruction Manual for Residual Heat Removal Exchangers	September 17, 1971

Condition report issued as a result of this inspection.

1R12 Maintenance Rule Implementation

DAEC Perf Criteria Doc	Residual Heat Removal System	Revision 3
DAEC Perf Criteria Doc	Secondary Containment/Standby Gas Treatment System	Revision 1

Control Room Operators Logs

1R17 Permanent Plant Modifications

CWO A45566	Reroute HPCI Flow Sensing Lines	

1R19 Post-Maintenance Testing

CWO A53069	A' Standby Filter Unit - Valve Liner is Torn Outside the Sealing Area - Needs Replacement	
PWO 1117147	Overhaul Actuator for Residual Heat Removal Suppression Pool Spray Motor Operated Isolation Valve MO-2006	
STP 3.6.4.3-01	Standby Gas Treatment and Standby Filter Unit Operation With Heaters On	Revision 5
TS 3.7.4	Standby Filter Unit System	
UFSAR 9.4.4	Control Room Ventilation System	
OI 149	Residual Heat Removal System	Revision 73
TS 3.6.2.3	Residual Heat Removal Suppression Pool Cooling	

1R22 Surveillance Testing

STP 3.5.3-04	Reactor Core Isolation Cooling Simulated Auto Actuation Test,"	Revision 7
STP 3.5.1-09	High Pressure Coolant Injection System Post-Startup Operability Test	Revision 8

1R23 Temporary Plant Modifications

TMP No. 01-061	Bypass Voltage Monitoring Relay for Residual Heat Removal Shutdown Cooling Outboard Suction Isolation Motor Operated Valve MO1909	
OI 149	Residual Heat Removal System	Revision 73
Affected Drawing - BECH-E122(004)	Nuclear Steam Supply Shutoff System	Revision 13
UFSAR Section 6.3.2.2.4,	Low Pressure Coolant Injection	Revision 13

1EP2 Alert and Notification System (ANS) Testing

EPDM 1013	Emergency ANS and Siren Sign Program	Revision 0
	Siren Trouble Shooting Guide	
	Monthly Siren Test Polls, August - October 2001	
	Letter of Understanding Between the DAEC Electrical Shop and the EP Department	September 16, 1999
Memorandum	AR #21434, Siren Battery Failures	December 28, 2000
	Preliminary Report For AR #16385, Emergency Siren Inoperability	
	Justification for the Addition of Addendum 'A' to the FEMA-43/REP-10 Report	
	An Offsite Emergency Plan Prompt ANS Addendum For The DAEC	Revision 4A
AR#20804	EP Siren 15J Reported as Inoperable	July 18, 2000
AR#20829	DAEC Siren Operability Reports Show a Significant Negative Trend For June and July	July 6, 2000
AR#20823	Need to Purchase a Portable Test Box for Whelen Emergency Siren System	August 1, 2000
AR#20825	EP Siren Test Report for August 2000	August 3, 2000
AR#23299	Benton County Microwave to Sheriff and EOC Is Not Working	December 13, 2000

1EP3 Emergency Response Organization (ERO) Augmentation Testing

Memorandum	Off-hours Callout	October 3, 2000
Section C	Emergency Plan	Revision 20
	Emergency Telephone Book	
	April 10, 2001 Semi-Annual Off-hours Callout Test Results	
	August 28, 2001 Semi-Annual Off-hours Callout Test Results	

1EP4 Emergency Action Level and Emergency Plan Changes

Section B	DAEC Emergency Plan	Revision 22
Section F	DAEC Emergency Plan	Revision 21

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies

ACP 114.5	Action Request System	Revision 28
Section B	DAEC Emergency Plan	Revision 21
Memorandum	Results of the 2000 ERO Survey	April 3, 2000
	ERO Training and Qualification Survey	April 3, 2000
	DAEC EP 71114 Assessment Report, August 27-31, 2001	
	Quality Assurance Quarterly Assessment Reports, Second - Fourth Quarters 2000	
	Nuclear Oversight Quarterly Assessment Reports, First - Second Quarters 2001	
AR#20393	Action Items Generated During the EP Self-Assessment Have No Actions Taken	June 22, 2000
AR#21433	Restore Rad Protection ERO Positions to 3 Deep	October 3, 2000
AR#22207	Operations Training Comprehensive Self-evaluation Team Concern	October 17, 2000
AR#22624	Year 2000 Evaluated Exercise: All Required Information Not Provided When Alert Declared	October 18, 2000

AR#22641	Year 2000 Evaluated Exercise: EOF Was Misinformed of a Hard Pipe Release by the TSC	October 19, 2000
AR#23739	Determine Method of Updating EP Call Out Board Listing Immediate Responders for Control Room	January 24, 2001
AR#23861	Review EP Notification Per Recommendations	February 6, 2001
AR#24234	Perform an Assessment of EP Program to Verify Conformance to NRC 71114	February 20, 2001
AR#24234	Create a Formal EP Siren Program Procedure	February 20, 2001
AR#24485	Review of the Kewaunee Extent of Condition Root Cause Evaluation for Applicability to DAEC	March 6, 2001
AR#26299	Requalification of ERO Responders From Security, Rad Pro, and Maintenance Exceeds Window	May 30, 2001
AR#26558	The TSC ENS Communicator Position is One Deep	June 26, 2001
AR#27668	Verify EPIP 1.1 Requires EAL Declaration Within 15	September 28, 2001
AR#27670	Benchmark To Determine How Numbers of Opportunities Are Measured for ERO PIs	September 28, 2001
AR#27674	Evaluate Actions Necessary For 30-60 Minute Responders Who Cannot Respond in 30-60 Minutes	September 28, 2001
AR#27676	Review EPDM 1008.1 to Determine if EALs Should Be Reviewed with Offsite Authorities	September 28, 2001
AR#27678	Evaluate Need to Collect All Documentation During LOR for ERO Classification, Notification PIs	September 28, 2001
AR#27786	Write a Procedure Encompassing All Areas of ERO Drill and Exercise Program Including Augmentation Drills and Documentation	September 18, 2001

4OA1 Performance Indicator (PI) Verification

	1999 DAEC Siren Monthly Operability Report
	2000 DAEC Siren Monthly Operability Report
	2001 DAEC Siren Monthly Operability Report
ACP 1402.4	NRC Performance Indicator Collection and Reporting - PI Data Calculation, Review, and Approval 4th Quarter 1999 Through 3rd Quarter 2001

LIST OF INFORMATION REQUESTED

The following information is needed by October 29, 2001, to support the biennial "Heat Sink Performance" inspection, Procedure 71111.07. Please provide for the following heat exchangers (HXs) [1E053A3 - Diesel Jacket Cooling Water Heat Exchanger and A RHR Heat Exchanger]:

1. Copy of the two most recently completed tests confirming thermal performance of each HX. Include documentation and procedures that identify the types, accuracy, and location of any special instrumentation used for these tests (e.g., high accuracy ultrasonic flow instruments or temperature instruments). Include calibration records for the instruments used during these tests. Include drawings showing the piping configurations and flowpaths for normal operation and testing for the HXs. Also indicate where the instruments used for the tests were located. Describe the measures to ensure proper fluid mixing for temperature considerations.

2. Copy of the evaluations of data for the two most recent completed tests confirming the thermal performance of each HX.

3. Copy of the calculation which establishes the limiting (maximum) design basis heat load which is required to be removed by each of these HXs.

4. Copy of the calculation which correlates surveillance testing results from these HXs with design basis heat removal capability (e.g., basis for surveillance test acceptance criteria).

5. The clean and inspection maintenance schedule for each HX. For the last two clean and inspection activities completed on each HX, provide a copy of the document describing the inspection results. Provide HX performance trending data each for each HX.

6. Provide a copy of the document which identifies the current number of tubes in service for each heat exchanger and the supporting calculation which establishes the maximum number of tubes which can be plugged in each HX. Provide a copy of the document establishing the repair criteria (plugging limit) for degraded tubes which are identified in each HX.

7. Copy of the as-built HX specification sheets. Also provide the design specification and heat exchanger data sheets for each HX. Copy of the vendor and component drawings for each HX. Copy of the vendor and operating manuals for each HX.

8. Provide a list of issues with a short description documented in your corrective action system associated with these HXs in the past three years. Provide a list of issues with a short description documented in your corrective action system associated with the ultimate heat sink, especially any loss of heat sink events and any events or conditions that could cause a loss of ultimate heat sink.

If the information requested above will not be available, please contact Gerard O'Dwyer as soon as possible at (630) 829-9624 or E-mail - gfo@NRC.gov.