March 21, 1990

Docket No. 50-331

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LICENSEE: Iowa Electric Light and Power Company FACILITY: Duane Arnold Energy Center SUBJECT: SUMMARY OF JANUARY 30, 1990 MANAGEMENT MEETING DISTRIBUTION: Docket Files NRC & Local PDRs PDIII-3 r/f JSniezek OGC EJordan ACRS(10) JClifford

On January 30, 1990, NRC staff from NRR and Region III met with Iowa Electric Light and Power (IELP) Company personnel in Rockville, Maryland, to discuss the licensee's planned engineering reorganization and other issues of current interest related to the operation of the Duane Arnold Energy Center (DAEC). A list of meeting participants is provided in Enclosure 1. Meeting slides provided by IELP are included as Enclosures 2 and 3; Enclosure 2 pertains to the engineering reorganization, Enclosure 3 to plant issues. The specific plant issues discussed included the effects of silting on plant service water systems and equipment, potential impacts of the prolonged drought on plant operations, an update on operations department activities, and the status of the program to improve HPCI performance.

Mr. Bruce Lacy, Manager of Design Engineering, discussed the planned changes to his organization. IELP had performed internal reviews and contracted two independent studies to examine the efficiency and staffing of the entire Nuclear Generation Division. Following the evaluation of these reviews, the licensee determined that significant changes were needed in the Design Engineering organization. Total staffing in this area will remain at current levels, approximately 87 engineering professionals, supplemented by 10-15 contractor employees. The licensee will reassess staffing as part of an overall evaluation of the effectiveness of the new organization, after a sufficient trial period has elapsed.

Of the six groups in the new Design Engineering organization, two, the Configuration and Discipline/Component groups, are newly created. The remaining four groups, Analysis, Systems, Projects and Response, will continue to exist with revised responsibilities. The reorganization will reallocate existing engineering resources to concentrate on areas to which the licensee has assigned a high priority, including configuration management, design basis reconstitution and probabilistic risk assessment. NRC concerns regarding the burden placed on individuals with dual responsibilities as systems engineers and shift technical advisors will be resolved by assigning the responsibilities to separate individuals in the Systems and Response groups, respectively.

In response to NRC questions, IELP indicated that the new organization was not specifically based on the resources required to meet the licensee's current Integrated Plan commitments. IELP feels that the new organization will effectively dictate future priorities, which will be reflected in the Plan.

meeting, the licensee and staff agreed that the discussions were productive and planned to continue to meet regularly. Any questions regarding this meeting summary may be directed to the NRC Project Manager, Mr. James R. Hall, at (301) 492-1391.

/s/

James R. Hall, Project Manager Project Directorate III-3 Division of Reactor Projects - III, IV, V and Special Projects Office of Nuclear Reactor Regulation

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UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20555

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In response to NRC questions, IELP indicated that the new organization was not specifically based on the resources required to meet the licensee's current Integrated Plan commitments. IELP feels that the new organization will effectively dictate future priorities, which will be reflected in the Plan. The second part of the meeting dealt with plant issues, including silting, prolonged drought, operations activities, and the HPCI performance improvement program. Extended drought conditions in the vicinity of the DAEC have lowered the flow rate and water level of the Cedar River, thereby increasing the amount of silt deposited into the plant. The greatest impact of increased silting has been observed in the accelerated wear of the river water supply pumps' impellers and seals. Excessive leakage has been observed and attempts to control the leakage by tightening the packing have resulted in further acceleration of seal degradation.

The licensee indicated that the silting phenomenon has not yet resulted in a significant impact on safety-related components. Specifically, they believed that no significant degradation of safety-related heat exchangers had been identified in any licensee inspection. IELP agreed to confirm this and inform the NRC staff. The licensee has been performing improved inspections of heat exchangers, including eddy current examinations, during the previous two refueling outages. In response to NRC Generic Letter 89-13 on service water systems, the licensee plans additional system equipment inspections and maintenance, particularly for piping. Heat exchanger thermal performance testing will also be conducted. These and other activities are scheduled for completion by the end of the 1990 refueling outage.

IELP also discussed actions taken and future plans to reduce silting impacts on the river water supply pumps. Erosion of pump impellers and excessive seal leakage has been noted, requiring extensive maintenance on accelerated schedules. Although substantial redundancy has been designed into the system (only one pump of the four is needed to meet post-accident design requirements and only two pumps are required during normal service), the licensee has acknowledged that the current conditions are unacceptable. IELP is evaluating different packing designs, harder shaft sleeving materials and improved maintenance practices on the pump seals to reduce leakage. They are also procuring a spare pump to minimize the potential for entering a TS Limiting Condition for Operation if several pumps are inoperable. To reduce the intake of silt, the licensee plans to dredge the river bottom and is considering installing vanes in the river to redirect the deposition of silt. The NRC safety system functional inspection of the Duane Arnold service water system in early 1990 is expected to assess the impact of silting on that system and the effectiveness of the actions taken or planned by the licensee.

The licensee next discussed additional potential problems created by the extended drought and resulting low flow of the Cedar River. River flow rates have historically been about 1800 cubic feet per second (cfs), but have recently averaged about 300 cfs. The DAEC Emergency Action Levels (EALs) currently call for the declaration of an Unusual Event at a river flow rate of less than 200 cfs, an Alert at less than 50 cfs, and a Site Emergency at less than 13 cfs if the plant is not in cold shutdown. Average flow rates are expected to decline further, as river flow is mainly dependent on groundwater runoff. The licensee stated that the selection of 200 cfs for the Unusual Event EAL was conservative, and was based on predictions that the lowest recorded flow rate of 236 cfs would not likely recur for 200-300 years. From a safety standpoint, the plant only requires a flow rate of 13 cfs to meet emergency cooling water needs. The licensee suggested that the EAL for an Unusual Event could therefore be lowered with adequate technical basis. The staff agreed that the EAL could be revised with sufficient documented supporting analysis.

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The licensee is also evaluating the potential impact of increased river water temperatures, as summer temperatures may approach TS limits. A TS change may be requested, following a reanalysis of the design requirements for emergency core cooling systems. Other methods of limiting cooling water temperature will be investigated.

The licensee next provided an update of operations department activities. The conservative operating philosophy was discussed, with an emphasis on transient avoidance and placing the plant in a safe condition. Training and development of the operations staff was discussed, including the licensee's program for temporarily assigning shift supervisors to other departments. It was further noted that a high percentage of permanent supervisors in other departments at the DAEC have extensive operations experience.

The final topic discussed by IELP was the status of the HPCI performance improvement program. Historically, problems with the system have resulted in a high number of LERs, LCOs and unavailable hours. The licensee has entered into an incentive contract with General Electric (GE) and has established measurable performance goals indicative of improved HPCI performance. Thirteen substantial modifications to HPCI and supporting systems are in progress and will be completed by the 1990 refueling outage. A detailed system assessment, motor-operated valve program audit and implementation of a HPCI performance monitoring program will also be completed by that time. GE could earn an additional 2.4 million dollars over the next three refueling outages if the HPCI performance goals are met. At the conclusion of the meeting, the licensee and staff agreed that the discussions were productive and planned to continue to meet regularly. Any questions regarding this meeting summary may be directed to the NRC Project Manager, Mr. James R. Hall, at (301) 492-1391.

/s/

James R. Hall, Project Manager Project Directorate III-3 Division of Reactor Projects - III, IV, V and Special Projects Office of Nuclear Reactor Regulation

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DOCUMENT	NAME :	MGT	MEETING	DΑ	1/3/90
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Surname:	PKreutzer	RHall/tg/CH	JHannon
Date:	3 19 190	319190	3/1/90

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James R. Hall

James R. Hall, Project Manager Project Directorate III-3 Division of Reactor Projects - III, IV, V and Special Projects Office of Nuclear Reactor Regulation

ENCLOSURE 1

NRC/IOWA ELECTRIC MEETING 1/30/90

NAME

Randy Hall Michael Parker Chuck Phillips John Hannon Hubert Miller Richard Knop John A. Zwolinski Rick Hannen* D. L. Mineck Bruce Lacy Frank J. Witt* Steve Swails* Ernest Matthews* Maureen Hunemuller* Ken Putnam* Raj P. Goel*

ORGANIZATION

NRC/NRR Project Manager NRC/Reqion III, SRI NRC Section 3C Project Inspector NRC/NRR Project Director NRC/RIII, DRS Director NRC/RIII Proj. Branch Chief NRC/NRR Asst. Director DAEC - Plant Superintendent DAEC - Nuclear Division Manager DAEC - Manager, Design Engineering NRC/NRR/Materials & Chem Eng. Branch Iowa Electric - Mgr, Nuclear Licensing Iowa Electric - Mgr, QA NRC/NRR Operations Engr. Iowa Electric Technical Support Spv. NRC/NRR - SPLB (Plant Systems Branch)

*Attended portion of meeting dealing with plant issues only



ENCLOSURE 2

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DUANE ARNOLD ENERGY CENTER IOWA ELECTRIC LIGHT AND POWER COMPANY

ENGINEERING REORGANIZATION

JANUARY 30, 1990

- o Motivation
- o Process

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- o Results
- o Responsibilities Overview
- o Priorities

MOTIVATION

- Internally Recognized Needs 0
 - Departmental Company -
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Externally Recognized Needs 0

PROCESS

0	Internal Interviews/Proposals		
0	Concept Organization		
0	Sub-committees for Details		
	 New Organizational Elements Position Reallocation Procedure Revisions Transition Plan 		
0	Select New Supervisors and Group Leaders		
0	Reassign Personnel		

o Effective Date - February 16, 1990

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DESIGN ENGINEERING ORGANIZATION



RESPONSIBILITIES - OVERVIEW

- o Configuration
 - Configuration Management
 - Division and Departmental Procedures
 - Design Basis Program
- o Analysis
 - IPE/PRA
 - Severe Accident Management
 - Set Point Methodology
- o Systems
 - System Performance/ Trending/ Activities/ Goals
 - Overall Engineering Priorities for Action
 - Participate in PRA

o Discipline/Component

- Equipment Performance/ Trending/ Activities/ Goals
- Engineered Equipment Maintenance Program
- Discipline Oriented Programs
- o Projects
 - New Design
 - Construction
 - Project and Contract Management
- o Response

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- Immediate Support of Plant Needs
- Routine Interface with Regulatory Organizations
- STA's
- * Professional Development
- * Engineering Practice and Evaluation

PRIORITIES

- Near Term 0
 - Refocus Priorities Prepare for Outage
- Longer Term 0
 - IPE/PRA -
 - _
 - Design Basis Activities Engineered Maintenance Program -

DUANE ARNOLD ENERGY CENTER

AGENDA JANUARY 30, 1990

- HPCI Improvement Plan Status
- Service Water Silting
- Potential Drought Impact on DAEC
- Operations Update

DUANE ARNOLD ENERGY CENTER

HIGH PRESSURE COOLANT INJECTION SYSTEM

IMPROVEMENT PLAN

January 30, 1990

- History
- IE/GE Performance Program
- Scope of Effort
- Projected Cost and Schedule

HISTORY

- Sporadic Performance
- No case of failure to respond to an automatic initiation signal
- 1985 to present
 - Unplanned Unavailable Hours 214 (5 year average)
 - . LER's 13
 - . LCO's 23
- Need to Improve

IE/GE Performance Program

- Three Operating Cycles
- Goals
 - Unplanned unavailable hours <120 hrs/year
 - LER's < 1 per cycle
 - Startup time consistently <25 seconds
 (5 seconds of margin to 30 second licensing limit)
 - No auto-initiation actuation failure
 - No related plant forced shutdown
- Risk/Reward Program with GE

SCOPE OF EFFORT

- Specific Modifications
 - 13 currently in progress
- System Assessment
 - . General
 - Turbine Control
 - Instrumentation and Control
 - Turbine Drive Train
 - Interface with Steam Leak Detection
- MOV Program Audit
- Program for System Performance Monitoring

PROJECTED COST AND SCHEDULE

- Complete by 1990 Outage
 - System Assessment
 - 13 Modifications Currently Identified
 - MOV Program Audit
 - Performance Monitoring Program
- Subsequent Outages
 - Additional Modifications as Identified
 - Monitoring of Performance for Risk/Reward Payments (through 1994)

Initial Payment	\$ 2,800K
Risk/Reward Pool	\$ 2,432K
Total Potential Payment	\$ 5.232K

DUANE ARNOLD ENERGY CENTER

SERVICE WATER SILTING

January 30, 1990

- Overview
- NRC Generic Letter 89-13
- Related Issues

OVERVIEW

- History
 - . Long Term Interest
 - General Service Water
 - . Heat Exchanger Inspections
- Nature of the Problem
 - . Sedimentation
 - Suspended Solids

NRC GENERIC LETTER 89-13

Service Water System Problems Affecting Safety-related Equipment

Activities Complete or Need Formalization

Pit Cleaning

Chlorination Capability

System Flushing

Heat Exchanger Inspections and Maintenance

Related System Equipment Inspections and Maintenance

Maintenance and Operation Procedures and Training

Activities to Complete by 1990 Refuel

Additional System Equipment Inspections and Maintenance, Particularly Piping

Lay Up Procedures for Systems

Heat Exchanger Thermal Performance Testing Program

Licensing Basis Review

Completeness Review of Procedures and Training

RELATED ISSUES

- Pump Shaft Leak Off
 - Excessive bypass flow creates unacceptable
 environment for personnel and equipment
 - Activities Underway

Establish optimum packing and sealing configurations for each pump

Establish installation and maintenance practices for correct shaft leakoff

. Goal

Correct shaft leakoff

Improved leakoff effluent handling

- River Bed Elevation Increase
 - Historical Trend
 - Increased ingestion of sediment
 - Increased wear on service water pumps
 - Increased attention
 - Dredging required and vane installation possibly required

DUANE ARNOLD ENERGY CENTER

CEDAR RIVER ISSUES

January 30, 1990

- Low Flow Emergency Action Levels
- Pleasant Creek Reservoir
- River Temperature

LOW FLOW EALs

- Cedar River Provides make-up cooling water for DAEC
- 3500 gpm (8cfs) during power ops
- River flow is typically 1800 cfs
- Drought conditions have reduced flow to around 300 cfs
- Expect the flow to drop further
- Unusual Event < 200 cfs</p>
- Alert < 50 cfs
- Site Emergency < 13 cfs with plant not in cold shutdown</p>

EMERGENCY ACTION LEVEL BASES

- Lowest river flow on record 236 cfs (daily mean) during "Great Drought" of the 1930s.
- That drought had a predicted recurrence interval of 200-300 years
- Predicted 1000 year daily low flow of 120 cfs
- DAEC requires 13 cfs to meet emergency cooling water needs
- Estimates and historical low flows are on order of magnitude above the 13 cfs requirement
- 200 cfs limit for Unusual Event is conservative no significant effect on plant operability or safety

EAL CONTINGENCY PLAN

- If river flow drops below 200 cfs (24-hour average), declare Unusual Event
- Determine river level at least once per shift
- Monitor flow in Waterloo in addition to Cedar Rapids to detect further trends
- If river level < 727 ft MSL</p>
 - perform daily RWS pump surveillances
- If river level > 727 ft MSL
 - exit, Unusual Event
- Continue enhanced monitoring until flow increases above 200 cfs

PLEASANT CREEK RESERVOIR

Multi-purpose lake

provides water makeup for DAEC consumptive use when river flow < 500 cfs

recreation area

- Releasing approximately 8 cfs since November 30
- Reservoir contains enough water to last slightly more than a year
- We are discussing alternatives with the lowa Dept. of Natural Resources
- State water permit issue not a nuclear safety issue

RIVER TEMPERATURE

- Tech Specs contain ESW flow vs. river temperature graph
- Establishes limits on river water temperature
- Have approached the limits the past two summers
- Expect river temp may exceed limits this summer if river flow does not improve
- Expect plant to be in refueling outage at the time
- Re-evaluating SW systems and will be looking at possible solutions

OPERATIONS UPDATE

January 30, 1990

- Conservative Operating Philosophy
- Commitment for Self Improvement
- Staff Training & Development

Conservative Operating Philosophy

- Transient Avoidance
- Culture for Putting Plant in Safe Condition
- Power Reductions

Commitment for Self Improvement

- Training
- Simulator
- Peer Evaluators
- Control Room Design
- Procedures
- Labeling and Tag Out

Staff Training & Development

- Off Shift Assignments for Shift Supervisors (8)
- Transfers
 - Leadership Role in Setting Culture