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DAVIS, A.B. Region 3 (Post 820201)

SUBJECT: Forwards "Summary of Duane Arnold Energy Ctr Performance Progress," summarizing progress/improvements made at facility since beginning of 1990. Util able to achieve availability factor of 65% in 1990.

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Iowa Electric Light and Power Company

March 29, 1991

NG-91-0709

Mr. A. Bert Davis
Regional Administrator
Region III
U. S. Nuclear Regulatory Commission
799 Roosevelt Road
Glen Ellyn, IL 60137

Subject: Duane Arnold Energy Center
Docket No.:50-331
Op. License No: DPR-49
DAEC Performance Highlights
File: A-100

Dear Mr. Davis:

This letter summarizes progress and improvements made at the Duane Arnold Energy Center (DAEC) since the beginning of 1990. These include improvements discussed in periodic management meetings and/or regulatory correspondence with the NRC, as well as items that have not been the subject of prior communication. Highlights of improvements are described in this cover letter; more detail is provided in the attached "Summary of DAEC Performance Progress."

In broad overview, DAEC was able to achieve an availability factor of 65% in 1990 notwithstanding the 74-day refueling outage during which a number of major projects were completed in response to both regulatory requirements and Iowa Electric (IE) initiatives. These projects included significant work on key pieces of equipment at DAEC and should result in improved plant performance. Much of this work was completed in the Drywell or under other difficult conditions. Because of the nature of this work, IE views the completion of the outage very close to schedule as an important achievement.

The performance of the operators continued essentially as noted in the SALP 8 report (at page 3); namely:

Operators are very knowledgeable of the plant and have exhibited excellent and timely operator actions during off-normal plant transients. Licensee management has demonstrated a conservative operating philosophy

As you are aware, DAEC experienced a higher number of reactor scrams in 1990 than in previous years. Analysis of the events demonstrates that, in all but one case, the root cause was unrelated to the performance of the control room staff or the Operations Department. The causes of these events are being addressed through changes and improvements in plant support functions such as maintenance and engineering.

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IE management places a high priority on eliminating the causes of scrams at DAEC. A Scram Frequency Reduction Program is currently underway to review these causes systematically and take actions to reduce the likelihood of future scrams. As described in the Attachment, a number of modifications were made during the 1990 refueling outage as part of this program.

The highlights of performance in specific functional areas are summarized below.

Operations: A conservative operating philosophy and more intensive management involvement and supervision characterized DAEC operations over the past year. As indicated in the Attachment (at page 5), the three manual scrams are evidence of conservative decisionmaking as is the instance in which supervisory personnel suspended late night activities to wait for additional day shift personnel. Prompt corrective action involving discipline, training and modification of procedures was taken following the one event in which the heat-up rate during a reactor start-up exceeded the limit specified in the Technical Specifications.

Management involvement in and supervision of Operations have been intensified. As noted in Inspection Report 90-02, plant supervisory personnel keep themselves well informed of plant status, make frequent visits to the control room and regularly tour the plant. Inspection tours have been resumed, deficient conditions are documented and evaluated for corrective action. In addition, an off-hours inspection program was reinstated last month to promote increased management awareness of plant activities on all shifts. (See page 7.)

Corrective measures have been taken to address problems identified during the NRC-administered requalification exam. The Operations Department has made important contributions to these measures by transferring four operators to the Training Department and by assigning the Shift Supervisor responsibility for critiquing simulator training sessions. These and related measures discussed below (see page 7) have provided Operations with a greater sense of "ownership" of the training program as well as increasing the operating expertise applied to that program.

Operations performance has been enhanced and will be further improved by a number of important hardware upgrades. Corrective measures have been taken to deal with the control of reactor water level during plant transients -- a concern in the SALP 8 report. A large number of control room modifications have been completed as part of the continuing Detailed Control Room Design Review. These changes and other upgrades are described in the Attachment. (See page 8.)

Radiological Controls: Performance indicators in this area, normalized to account for the nature and extent of the 1990 outage activities, were within anticipated ranges but in excess of DAEC goals. Personnel contamination events exceeded corporate goals, owing largely to outage-related activities. However, when the magnitude of the outage work is factored in, the personnel contamination event rate (events per 1000 man-hours worked under a Radiation

Mr. A. Bert Davis
March 29, 1991
NG-91-0709
Page 3

Work Permit) was lower in 1990 than in 1988, the last year in which DAEC underwent a refueling outage.

IE is taking action to reduce exposures and personnel contamination events, based on recommendations derived from a DAEC self-assessment against industry performance objectives and criteria. Actions being taken include improved trending and tracking of exposures to identify more closely the causes of exposures and permit better work planning and exposure estimates as well as enhanced training of plant personnel on how to minimize exposures. The number of contamination events should diminish in 1991 toward the corporate goal of less than 1 per 1000 RWP man-hours; events for January and February are within this range. This is attributable to new procedures, training and reporting systems as well as efforts to effectively communicate management expectations. Details are provided in the Attachment. (See page 14.)

Achievement of corporate goals will also be facilitated by changes in the organization and staffing of the Radiation Protection Department. There is now an Assistant Plant Superintendent whose sole responsibility is radiation protection; a layer of management has been eliminated and supervisors now report directly to him. Five experienced radiological engineers have been added to the staff. The Department is now more involved in planning at DAEC for the purpose of anticipating special Radiation Protection support that may be required for work activities. The Attachment discusses in greater detail enhancements to the ALARA process; the improved exposure-tracking system; and reclamation of the torus area, a decontamination and clean-up activity intended to allow access in "street clothes". (See page 16.)

Radioactive waste volume was reduced in the past year, placing DAEC in the best quartile of U.S. Boiling Water Reactors.

NRC Inspection Report 90-12 noted that Radiation Protection and radwaste programs are capable of protecting the health and safety of the public. IE believes this continues to be an accurate characterization of these programs.

Maintenance/Surveillance: Since the end of 1990 refueling outage, Maintenance Action Requests have been reduced from 925 to 792 (as of March 1, 1991). The 1990 goal for preventive maintenance (PM) as a function of total maintenance (60%) was surpassed with PM accounting for over 70% of all non-outage maintenance items. This ratio has been maintained in the first quarter of 1991.

The Maintenance Department has initiated a Maintenance Quality Improvement Program (MQIP) which concentrates on self-assessment to identify and correct impediments to effective maintenance performance. The MQIP uses an "Observer" each week to analyze job planning and observe maintenance and post-job activities as well as the interface between maintenance and other Departments. Prompt feedback is provided to maintenance personnel and assignments are made for timely follow-up action. (See page 20.)

Supervision has been strengthened by increasing supervisory staffing, thereby reducing the number of craftsmen supervised by each foreman. Foremen and

supervisors have received instruction in management expectations with special emphasis on their personal accountability for achieving Department goals while stressing procedural adherence and the importance of direct observation of work activities.

Several steps have been taken to upgrade maintenance procedures. A cross-discipline Maintenance Procedures Users Group evaluates current procedures and recommends necessary changes. A Procedural Coordinator in each maintenance group is the focal point for procedure-related concerns within each shop and serves as a communications link with the Plant Procedures Group. A procedure writer meets each week with the Coordinator to discuss strengths and weakness in procedures used during the week and those to be used in the following week. (See page 21.)

The post-maintenance testing (PMT) program is being strengthened by activities initiated in 1990 to better define PMT requirements, additional training, and measures to assure that PMT requirements are properly incorporated in MARs as part of the work planning process.

The Attachment also describes (at page 22) steps taken to improve predictive maintenance and instances in which the Predictive Maintenance program identified and avoided problems with potential reliability and/or safety implications.

As noted on page 2 above, the extensive 1990 refueling outage was completed very close to schedule, notwithstanding the major work performed, difficult conditions it was performed under and need for additional, unplanned work. It was a challenging effort for the new permanent outage management organization. The strengths and accomplishments demonstrated in the outage are noted in the Attachment, as is the primary weakness, the need for tighter control of contractor work. (See page 26.) This problem was not entirely unexpected since the outage involved an innovation for IE -- the integration of a contractor's large management/supervision group into the outage team. The "lessons learned" from this experience have been reviewed and corrective measures are now being developed by a Work Control Task Force, operating under a milestone schedule with October 31, 1991, established as the date for implementation of its recommendations.

Emergency Planning: The strong progress reflected in the SALP 8 report (at pages 14-16) continued over the past year. As noted in NRC Inspection Report 90-18, the NRC's evaluation of the 1990 full-scale emergency planning exercise identified no violations, deficiencies, or weaknesses. All classification decisions were correct, and notification to state and local officials was timely. In order to help assure that the trend toward excellent performance continues in this area, a number of steps to enhance training of IE, state and local personnel have been taken as well as upgrades of EP equipment. Further improvements are planned in 1991 as detailed in the Attachment. (See page 28.)

Security: The Attachment identifies major security enhancements including significant hardware upgrades and security staff training, an area noted in the SALP 8 report (at pages 17-18) as requiring improvements.

The strong management support for security described in the SALP 8 report (at pages 16-17) continued over the past year, as recognized in NRC Inspection Reports 90-21 and 91-04. The reports reflect that the program is adequately implemented and managed. This is generally consistent with the results a major self-assessment of security conducted by an IE contractor as described in the Attachment (at page 29). The assessment identified relatively minor weaknesses, primarily in procedures and record-keeping. The Security Director now reports directly to the Plant Superintendent. As noted in Inspection Report 90-21, the attitude and cooperation of the Security Department Staff is excellent and they have done a good job of performing their duties. No instances of inattentive security personnel on post were noted during the SALP 9 period.

Engineering/Technical Support: Despite attrition which adversely affected efficiency to some degree the Design Engineering Department contributed significantly to plant improvements during the past year. These included major contributions to the improvement of equipment (e.g., HPCI, MSIV, SRM/IRM performance) and assistance in completing plant modifications during the 1990 refueling outage which will contribute to the scram reduction effort. The 54 permanent engineering positions recently authorized and aggressive recruiting to fill these new slots should further enhance the performance of these organizations in 1991; a number of the positions have already been filled.

The Design Engineering Department was reorganized recently to reflect the evolution of the Department's role from one that primarily processes plant design changes to more proactive plant support functions. The reorganization resulted in the establishment of 6 major engineering groups and the assignment of staff personnel to coordinate and facilitate professional development and engineering practices.

As described in greater detail in the Attachment (at page 41), Engineering continues to make progress in updating station drawings, procedure manuals, and vendor manuals and has taken important steps to strengthen the effectiveness of the environmental qualification (EQ) program. The experience level and technical competence of the engineering staff was noted as a strength in NRC Inspection Report 90-03.

The System Engineering staff played a significant role in supporting the 1990 refueling outage, the HPCI improvement program, and a broad range of service water system improvements. In addition, the system engineers helped conduct an extensive instrument air testing program in 1990 in accordance with Generic Letter 88-14. The system engineers also helped develop a new procedure for monitoring equipment performance which establishes the requirements and responsibilities for monitoring operational data, common mode failures, periodic maintenance, test information, and other parameters important to plant availability. (See page 39.) The Technical Support Group, using a revised

Mr. A. Bert Davis
March 29, 1991
NG-91-0709
Page 6

Deviation Reporting System in which each DR is screened to determine whether a root cause analysis is appropriate, performed more than 40 such analyses.

As noted earlier, a number of steps were taken to address the unsatisfactory performance experienced in the July 1990 NRC-administered requalification examinations. The root causes were identified by a task force of IE personnel, assisted by operations training specialists from Northern States Power Company. The Attachment describes the identified root causes and the corrective actions which include additional simulator training, remedial programs for personnel who do not meet standards during weekly EOP training scenarios on the simulator, and increased Operations Department involvement in the licensed operator training program. (See page 47.) IE's initial operator training program continued to show good results in 1990 as reflected in a 100% success rate among candidates taking the Generic Fundamentals examination, good performance in the initial Reactor Operator examination (3 out of 4 passed) and a perfect pass rate among those who took the Senior Reactor Operators upgrade examination.

Safety Assessment/Quality Verification: As noted in the Attachment (at page 49), very substantial changes have been made in the Quality Assurance (QA) organization, including appointment of a new, experienced QA Manager, the creation of new supervisory position for material and supplier quality as well as a Group Leader position for internal audits with an augmented staff and increased funding.

Management involvement has been enhanced by a more comprehensive reporting system which provides greater detail on events, their causes, and trends. A monthly report is now provided to the Vice President, Production, and the Manager, Nuclear Division on the status and results of audits, surveillances, and adverse quality trends.

Self-assessment and internal auditing received additional emphasis. Among the areas reviewed were chemistry, fuel reload management and safety evaluations of Design Change Packages. Teams with appropriate specialized expertise were assembled for each audit. The NRC inspection of IE's Quality Assurance and Self Assessment program noted that QA audits and surveillances were thorough and identified useful findings and observations. In addition, Inspection Report No. 90-16 noted that recent changes in the QA organization should improve the organization's ability to identify problem areas and aid management in determining areas where additional attention is warranted.

Assurance of timely corrective action remains of vital concern to NRC and IE management. A policy statement has been issued describing management expectations in this regard and stressing personal accountability for meeting corrective action commitments. In addition a position was created and staffed, reporting directly to the Manager of the Nuclear Division to track and report progress in the implementation of corrective actions.

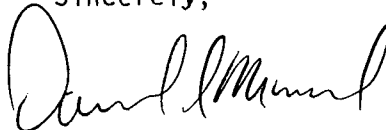
We hope this information is helpful. The Attachment provides more detailed information in each of the areas summarized above including, where appropriate,

Mr. A. Bert Davis
March 29, 1991
NG-91-0709
Page 7

supporting data or examples. I also wish to reiterate that Iowa Electric recognizes that our performance can be improved further and that we are committed to accomplishing this.

If you have any questions or require additional information, please do not hesitate to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel L. Mineck". The signature is fluid and cursive, with the first name "Daniel" being more prominent than the last name "Mineck".

Daniel L. Mineck
Manager, Nuclear Division

RWM/PMB/PJV+

cc: P. Bessette
R. McGaughy
L. Root
L. Liu
S. Sands (NRC-NRR)
NRC Resident Office
Commitment Control No.