Enclosure 1

Human Factors Assessment Branch Safety Evaluation Report
of the Detailed Control Room Design Review
for the Duane Arnold Energy Center

1.0 INTRODUCTION

The Iowa Electric Light and Power Company (IEL&P) submitted its Detailed Control Room Design Review (DCRDR) Summary Report (SR) for the Duane Arnold Energy Center December 15, 1986. The staff, assisted by consultants from Science Applications International Corporation (SAIC), reviewed the SR.

2.0 EVALUATION

The staff evaluation of the Duane Arnold DCRDR is provided in the following paragraphs. This Safety Evaluation Report (SER) is supported by the attached Technical Evaluation Report (TER) prepared by SAIC. The staff endorses the evaluations, recommendations and conclusions as presented in the TER (Attachment 1).

Establishment of a qualified multidisciplinary review team

Based on the staffing enhancements that were made subsequent to the NRC audit of March 18-21, 1985, the staff concludes that Iowa Electric Light and Power has satisfied the requirement to establish a qualified multidisciplinary review team for execution of the Duane Arnold DCRDR.

Function and task analysis to identify control room operator tasks and information and control requirements during emergency operations

The staff has determined the IEL&P has used an appropriate level of function and task analysis in the Duane Arnold DCRDR. The analysis was based on plant specific emergency procedures written in accordance with Revision 3 of the Boiling Water Reactor Owners' Group Emergency Procedure Guidelines. On this basis the staff concludes that IEL&P has satisfied the requirement to use function and task analysis to identify operator tasks and information and control requirements.

Comparison of display and control requirements with a control room inventory

The process described in the licensee's Summary Report that was used for performing the comparison of control room requirements with control room inventory meets the requirements of Supplement 1 to NUREG-0737.

A control room survey to identify deviations from accepted human factors principles

Based on its audit and a review of the licensee's summary report, the staff concludes that the control room survey process used in the Duane Arnold DCRDR is acceptable and meets the requirements of Supplement 1 to NUREG-0737.

Assessment of human engineering discrepancies (HEDs) to determine which are significant and should be corrected

The assessment process implemented by IEL&P is acceptable and meets the requirements of Supplement 1 to NUREG-0737.

Selection of design improvements

The process for selection of design improvements described in the SR was found to be reasonable and comprehensive. On this basis the staff concludes that IEL&P has satisfied the requirement to select design improvements that will correct control room discrepancies at Duane Arnold.

Verification that selected improvements will provide the necessary correction and will not introduce new HEDs

Based on the licensee's use of mock-ups and walk-through verification, the staff concludes that IEL&P has acceptably met the requirement for verification of improvements.

Coordination of control room improvements with changes from other Supplement 1 to NUREG-0737 initiatives

The staff concludes that the licensee has implemented an acceptable program of coordination with other initiatives; proper consideration having been given to SPDS, training, Regulatory Guide 1.97, and upgraded emergency procedures.

3.0 CONCLUSION

The licensee's Summary Report for Duane Arnold indicated a definite and acceptable commitment toward conducting a program which will meet the requirements of Supplement 1 to NUREG-0737. Staff review indicates that the licensee has satisfied the DCRDR requirements. The licensee should complete implementation of its resolutions to control room discrepancies in accordance with the schedule proposed in its Summary Report.

The staff reserves the option of confirming, by means of audit at some future date, that the Duane Arnold DCRDR is being or has been properly and completely implemented.