

REGULATORY INFORMATION DISTRIBUTION SYSTEM (RIDS)

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 MURLEY, T. E. Office of Nuclear Reactor Regulation, Director (Post 870411)

SUBJECT: Responds to NRC request for addl info re 870226 proposed
 Tech Spec change re ATWS mods.

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Iowa Electric Light and Power Company

July 10, 1987
NG-87-2426

Dr. Thomas E. Murley, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
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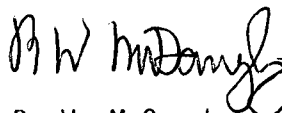
Subject: Duane Arnold Energy Center
Docket No: 50-331
Op. License No: DPR-49
Response to Request for Additional
Information Regarding DAEC Compliance with
10 CFR 50.62 (TAC # 64789)
Reference: R. McGaughy to H. Denton, "Technical
Specification Change (RTS-216), ATWS
Modifications", NG-87-0468, Feb. 26, 1987
File: A-107a, A-117, A-225

Dear Sir:

In our referenced submittal we described the modifications being made to the DAEC pursuant to 10 CFR 50.62, the ATWS rule. After reviewing our report, the staff has requested some additional information in order to complete its safety evaluation report. The revised pages to our report containing the requested information are attached. The changes are highlighted by revision bars in the margin.

Please contact this office if you require further information.

Very truly yours,



R. W. McGaughy
Vice President, Production

RWM/RAB/pjv*

Attachments: Revised pages to Iowa Electric's 10 CFR 50.62 Report

cc: T. Browning
L. Liu
L. Root
A. Cappucci (NRC-NRR)
A. Bert Davis (NRC-RIII)
NRC Resident Office
Commitment Control Ref: No. 870006

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1.0 STANDBY LIQUID CONTROL

1.1 INTRODUCTION

This section establishes the bases to be used to determine equivalency of the DAEC standby liquid control system (SLCS) to the 86 gpm, 13-weight percent sodium pentaborate control capacity requirement stated in 10 CFR 50.62, the ATWS rule.

1.2 DESIGN OBJECTIVES

10 CFR 50.62, Paragraph (c)(4) states, in part:

Each boiling water reactor must have a standby liquid control system (SLCS) with a minimum flow capacity and boron content equivalent in control capacity to 86 gallons per minute of 13-weight percent sodium pentaborate solution.

The NRC provided clarification of equivalent control capacity in Generic Letter 85-02 (Reference 2) as follows:

- a. The "equivalent in control capacity" wording was chosen to allow flexibility in the implementation of the requirement. For example, the equivalence can be obtained by increasing flowrate, or boron concentration, or boron enrichment.
- b. The 86 gallons per minute and 13-weight percent sodium pentaborate were values used in NEDE-24222, "Assessment of BWR Mitigation of ATWS, Volumes I and II," December 1979, for BWR/4, BWR/5, and BWR/6 plants with a 251-inch vessel inside diameter. That different values would be equivalent for smaller plants was recognized in NEDE-24222:

A plant meets the equivalency requirement if it is capable of reaching the same reactor water boron concentration in the same amount of time as the reference plant. Equivalency of a specific plant to the reference plant is calculated using a simple ratio of plant values. The 86 gpm requirement is based on a 251-inch diameter reactor pressure vessel. The DAEC reactor vessel is 183 inches in diameter and the mass of water in the reactor vessel and recirculation system at hot, rated conditions is 329,909 lbm. Therefore, the required flowrate is 52.4 gpm of sodium pentaborate solution, containing unenriched boron, at a chemical concentration of at least 11.2 wt. percent.

1.3 DESIGN BASIS REQUIREMENTS

The existing (or original) design basis for the SLC system is to provide a soluble boron concentration to the reactor vessel sufficient to bring the reactor from full power to a cold xenon-free shutdown condition. The SLC system was designed to provide the specified cold shutdown concentration in 1 to 2 hours. During reload licensing evaluations, this shutdown concentration is verified by analysis to be adequate to render the core subcritical at cold (20°C) condition.

The ATWS rule adds injection rate requirements that exceed, but do not become a part of, the generic SLC system design basis. Changes to flowrate, solution concentration, or boron enrichment, to meet the ATWS rule, must not invalidate the original SLC system design basis.

4.0 REFERENCES

1. NEDE-31096-P, "Anticipated Transient Without Scram Response to NRC ATWS Rule, 10 CFR 50.62," dated December 1985
2. USNRC Generic Letter 85-03, "Clarification of Equivalent Control Capacity for Standby Liquid Control Systems," dated January 28, 1986
3. Deleted, see Reference 1
4. Duane Arnold Energy Center Standby Liquid Control Dual-Pump Test Report, dated April 1986
5. NEDC-30859-1, "Duane Arnold ATWS Assessment," dated March 1985
6. Federal Register Vol. 49, No. 124, dated June 26, 1984
7. USNRC Generic Letter 85-06, "Quality Assurance Guidance for ATWS Equipment That Is Not Safety-Related," dated April 16, 1985
8. Letter, R. Gilbert to L. Liu, "ATWS Rule (10 CFR 50.62): Plant Specific Reviews," Jan. 8, 1987