LICENSEE: IES Utilities Inc.

May 23, 2000

FACILITY: Duane Arnold Energy Center

SUBJECT: DUANE ARNOLD ENERGY CENTER - MEETING BETWEEN IES UTILITIES, INC., AND THE NUCLEAR REGULATORY COMMISSION (NRC) STAFF REGARDING POWER UPRATE PLANS (TAC NO. MA8903)

The NRC staff met with representatives from IES Utilities Inc., the licensee for the Duane Arnold Energy Center (DAEC), at NRC Headquarters on May 16, 2000, to discuss the licensee's plans for power uprate for DAEC. Enclosure 1 lists the meeting participants. Enclosure 2 contains copies of the overhead slides that the licensee presented during the meeting.

The licensee plans to submit the extended power uprate amendment in October 2000 with an anticipated approval needed by the end of the Spring 2001 refueling outage. The planned amendment will be for an extended power uprate that would be for 15.3 percent above the current licensed power level. This would represent a total uprate of 120 percent above the original licensed power level. As part of the power uprate program, the plants accident dose calculations are being modified using the draft guidance for new alternate source term.

During the meeting, the NRC staff discussed various aspects of the review with the licensee. The extended power uprate amendment will be similar to those approved for the Monticello Nuclear Generating Plant and the Hatch Nuclear Plant, Units 1 and 2. The licensee is closely monitoring requests for additional information (RAIs) on other uprates, either completed or ongoing, and plans to use the RAI information to model its own submittals. However, the DAEC licensee is requesting a higher percentage power level increase than implemented at plants previously. In addition, IES Utilities, Inc. plans submittals this fall to allow the use of GE-14 fuel. The licensee would like approval from the NRC for its extended power rerate amendment by June 2001, so that it can begin implementation during refueling outage 17. The NRC staff commented that this is an optimistic schedule for the review of such a complex amendment. In addition, Advisory Committee on Reactor Safeguards (ACRS) plans to review the safety evaluation prior to issuance.

/RA/

Brenda L. Mozafari, Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-331

Enclosures: 1. List of Meeting Attendees
2. Licensee Handouts

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

May 23, 2000

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Duane Arnold Energy Center

cc:

Al Gutterman
Morgan, Lewis, & Bockius LLP
1800 M Street, N. W.
Washington, DC 20036-5869

Chairman, Linn County
Board of Supervisors
Cedar Rapids, IA 52406

IES Utilities Inc.
ATTN: Richard L. Anderson
Plant Manager, Nuclear
3277 DAEC Road
Palo, IA 52324

David L. Wilson
Vice President, Nuclear
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324

Ken Peveler
Manager, Nuclear Licensing
Duane Arnold Energy Center
3277 DAEC Road
Palo, IA 52324

U.S. Nuclear Regulatory Commission
Resident Inspector's Office
Rural Route #1
Palo, IA 52324

Regional Administrator
U.S. NRC, Region III
801 Warrenville Road
Lisle, IL 60532-4531

Daniel McGhee
Utilities Division
Iowa Department of Commerce
Lucas Office Building, 5th floor
Des Moines, IA 50319

LIST OF MEETING ATTENDEES

DUANE ARNOLD ENERGY CENTER

May 16, 2000

NAME	AFFILIATION
Brenda Mozafari	NRR/DLPM
T.J. Kim	NRR/DPLM
Steve LaVie	NRR/DSSA
Ralph Caruso	NRR/DSSA
Ed Kendrick	NRR/DSSA
George Thomas	NRR/DSSA
Amy Cubbage	NRR/DSSA
Joe Donoghue	NRR/DSSA
David Shum	NRR/DSSA
Tony Ulses	NRR/DSSA
Amar Pal	NRR/DE
Raj Goel	NRR/DSSA
Ken Putnam	Alliant Energy
Ron McGee	Alliant Energy
Chuck Nelson	Alliant Energy
Tony Browning	Alliant Energy
Paul Boehnert	NRC/ACRS
Millan Straka	NUSES
Christine Care	McGraw-Hill

NRR = Office of Nuclear Reactor Regulation
DLPM = Division of Licensing Project Management
DSSA = Division of Systems Safety and Analysis
DE = Division of Engineering
ACRS = Advisory Committee on Reactor Safeguards

ENCLOSURE 1

ALLIANT ENERGY

DUANE ARNOLD ENERGY CENTER

POWER UPRATE PROGRAM

PROJECT UPDATE

May 16, 2000

ENCLOSURE 2

INTRODUCTIONS & MEETING OUTLINE

PURPOSE:

- PROJECT UPDATE
- DISCUSS SUBMITTAL OPTIONS
- SEEK INPUT & "LESSONS LEARNED"

AGENDA

- PROJECT RECAP
- DISCUSSION TOPICS
  - Alternate Source Term
  - Use of Alternate Methods
  - Deviations from ELTR & UFSAR
  - Cycle 18 Core Design & Analysis
- SUBMITTAL(S) – CONTENT & SCHEDULE
- FEEDBACK & "LESSONS LEARNED"
- MEETING SUMMARY

PROJECT RECAP

- Full 120% Uprate per GE's ELTRs
  - Original FSAR = 1593 MWt
  - Current License = 1658 MWt
  - Proposed License = 1912 MWt
    - 120% of 1593 MWt
    - 115.3% of 1658 MWt
- Project Target Schedule
  - Project Begins = September, 1999
  - NRC Submittal = October, 2000
  - "Ideal" NRC Approval = May, 2001
  - Implementation & Testing Program = June, 2001

DISCUSSION TOPICS

- Use of Alternative Methods from ELTRs
  - GE models
    - ODYSY for Thermal/Hydraulic Stability
    - TRACG for Transients & ATWS
  - Inputs & Assumptions
    - ANS '79 Decay Heat curves (ATWS)
  - Level of detail for justifications

DISCUSSION TOPICS (continued)

- Deviations from ELTR & UFSAR
  - ELTR *vs* Current Licensing Basis
    - Level 1 Trip Avoidance in LOFW transient
  - Changes to Current Licensing Basis
    - Use RHR-Fuel Pool Cooling mode to meet SRP 9.1.3
    - Grid Stability analysis (VAR Capacity)

DISCUSSION TOPICS (continued)

- Cycle 18 Core Design & Analysis
  - Transition Core to EPU
  - GE10, GE12 & GE14 Fuel Types
  - Design Power Level = Based upon Core Energy Capability
  - Analysis Power Level = Bound Design Power w/additional margin
  - Application of Maximum Extended Loadline Limit (MELLL)
- Core Operating Limits Report Options
  - 1) Single, bounding *vs* Multiple, power-specific COLRs
  - 2) Power Level – 1658 MWt/Intermediate/1912 MWt
- Integration with EPU
  - COLR *vs* Licensed Power Level

SUBMITTAL(S) – CONTENT & SCHEDULE

- Extended Power Uprate
  - GE's PUSAR template
  - RAI's on other Uprates
    - Perry/LaSalle/River Bend
      - Methods
      - Grid Stability & SBO analyses
      - NSSS & BOP piping stresses
      - EQ profiles
  - Schedule = October 2000
- Cycle 18 Core Design/Analysis
  - Safety Limit MCPR change
  - SLCS Boron Concentration/Enrichment increase
  - License Amendment for Spent Fuel Pool Cooling
  - Others – MELLL (?)
  - Schedule = September 2000 (Spent Fuel Pool, SLCS)
    December 2000 (SLMCPR)

FEEDBACK & "LESSONS LEARNED"

- Additional Feedback from other Uprates
- Resource Availability
- Schedule

DAEC Alternate Source Term Implementation

Chuck Nelson

Principal Engineer

Power Uprate Team

319-851-7778

chucknelson@alliant-energy.com

Conditions for Analysis

- Analyzed Conditions
  - 120% Original Rated Thermal Power
    - (1593 MWt Original, 1658 MWt Current, 1912 MWt Uprate)
  - GE14 Fuel
  - 24 Month Operating Cycle

Scope of Submittal

- Full Implementation per DG-1081 1.2.1
  - Composition - NUREG 1465
  - Magnitude - ORIGEN2
  - Chemical and Physical Form - DG-1081
  - Timing
    - DG-1081
    - BWROG Report "Prediction of Fission Gas Release from Fuel in Generic BWR"

Scope of Submittal

- Analyzed Design Basis Accidents
  - Loss of Coolant Accident LOCA - App A
  - Fuel Handling Accident FHA - App B
  - Control Rod Drop Accident CRDA - App C
  - Main Steam Line Break MSLB - App D
- Output - Doses and Acceptance Criteria in TEDE

Equipment Qualification Impact of Cesium

- DAEC is performing EQ Evaluations in Power Uprate Analysis using TID-14844 Source Term in accordance with interim NRC staff guidance in SECY-99-240.
- DAEC will address the Cesium Impact in accordance with the resolution of the pending GSI or DG-1081 when issued.

RADTRAD Default 60 Isotope List

- DAEC Reviewed RADTRAD Default NIF files
  - PWR and BWR 60 Isotope Inventories use the same isotopes.
  - It is our understanding that these are the same isotopes used in NRC evaluations.
  - DAEC is using the same list

RADTRAD Default 60 Isotope List

- Cobalt Isotopes
  - Co-58, Co-60 are corrosion and activation products, not fission products. ORIGEN cutoff at 1E-8 => no Co fission products
  - ORIGEN cutoff 1E-10 => only Co-74 and above
  - DAEC is using the RADTRAD BWR Default NIF values for Co-58 and Co-60 - significantly higher than actual coolant borne concentrations
- EQ Isotopes - 60 isotopes using TID fractions

Submittal Options

- Option 1 Standalone Submittal of AST to support Separate Power Uprate Submittal with Future Amendments to Request AST Relaxations (DAEC Preferred)
- Option 2 Combined AST and Relaxations Submittal
- Option 3 Combined AST, Power Uprate and Relaxations Submittal

Considerations

The Recommended Option:

- Minimize changes so focus is on effects of power uprate.
- Minimizes schedule impact on power uprate review.
- Minimizes complexity of AST review.

Since the resolution of current industry issues (e.g., EQ GSI, CR Habitability) may impact cost/benefits for some relaxations (e.g., timing, leakage), DAEC will take additional time to determine the mix of exemptions to be pursued.

Submittal Schedule

- Analysis in Progress
- Shell for Submittal being developed from GGNS and Perry Submittals
- Last Engineering Task Report due July 00
- AST Submittal to NRC 3rd Quarter 2000

Miscellaneous

- DAEC is willing provide calculations and analysis cases to NRC, if desired
  - format and control point of contact?
- Incorporating lessons learned from Perry, GGNS RAIs for previous submittals
- Will work with NRC to address impacts of final RG, GSI, and emergent issues.
- Questions, Comments, Suggestions?