

**TRANSMITTAL OF MEETING HANDOUT MATERIALS FOR
IMMEDIATE PLACEMENT IN THE PUBLIC DOMAIN**

This form is to be filled out (typed or hand-printed) by the person who announced the meeting (i.e., the person who issued the meeting notice). The completed form, and the attached copy of meeting handout materials, will be sent to the Document Control Desk on the same day of the meeting; under no circumstances will this be done later than the working day after the meeting.

Do not include proprietary materials.

DATE OF MEETING

12/05/2001

The attached document(s), which was/were handed out in this meeting, is/are to be placed in the public domain as soon as possible. The minutes of the meeting will be issued in the near future. Following are administrative details regarding this meeting:

Docket Number(s) **50-269, 50-270, 50-287**

Plant/Facility Name **OCONEE NUCLEAR STATION, UNITS 1,2 AND 3**

TAC Number(s) (if available)

Reference Meeting Notice **NOVEMBER 20, 2001**

Purpose of Meeting
(copy from meeting notice)

TO DISCUSS DIGITAL UPGRADES FOR THE

KEOWEE HYDRO UNITS

NAME OF PERSON WHO ISSUED MEETING NOTICE

L. N. OLSHAN

TITLE

PROJECT MANAGER

OFFICE

NRR

DIVISION

DLPM

BRANCH

PD II-1

Distribution of this form and attachments:

Docket File/Central File
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DF01



Oconee Nuclear Station

Keowee Governor & Exciter Upgrades

December 5, 2001

- ❖ Purpose of Meeting & Expected Outcome
- ❖ Project Overview
- ❖ Conceptual Licensing Approach
- ❖ Discussion
- ❖ Closure

Purpose & Outcome

- ❖ Staff is Fully Informed on 2 Keowee Projects:
 - Governor Upgrade
 - Exciter Upgrade
- ❖ Discussion is Centered on Digital I&C Issues
- ❖ All Stakeholders Agree on Conceptual Licensing Approach

- ❖ Keowee Licensed as ONS Emergency Power Source
- ❖ Mechanical Flyball Governor (Woodward)
- ❖ Static Exciter/Regulator (Westinghouse)
- ❖ Initiated Upgrade to Resolve Obsolescence Issues
- ❖ Status: Still in Conceptual Design Stage
- ❖ Apply Generic PLC Platform on Governor
- ❖ Apply COTS Exciter/Regulator

Current Governor

- ❖ Well Maintained, but Obsolete
- ❖ Existing Functionality - Fixed Transfer Function
- ❖ Existing Performance - Tuning is Constrained

Proposed Governor

- ❖ Use Pre-Qualified, Standard PLC Platform
- ❖ Improved Functionality - Apply Best Practice Control Algorithm
- ❖ Improved Performance - Tune for Steady State + Transients
- ❖ Improved Reliability

Current Exciter

- ❖ Well Maintained, but Obsolete
- ❖ Good Functionality - Simple Application
- ❖ Good Performance - Steady State + Transients

Proposed Exciter

- ❖ Apply COTS Equipment
- ❖ Qualify per TR-106439 (COTS Guideline) - Chapter 7, SRP
- ❖ Equivalent Function & Performance
- ❖ Improved Reliability



Licensing Approach

- ❖ Follow NEI 96-07, Rev. 1 and TR-102348, Rev. 1
 - Modification Screens In (Analog to Digital)
 - New Systems and Components are 1E Qualified
 - Exciter = Improved Reliability
 - Governor = Improved Function, Performance & Reliability
 - Evaluate SWCMF in same context as HWCMF

- ❖ SRM to SECY 93-087 (ALWR) addressed SWCMF:
 - Common mode failures are “beyond design basis”
 - Still warrants qualitative evaluation of Defense-in-Depth and Diversity (D³)
 - May require diverse backups to cope (can be non-safety)
- ❖ Likelihood of LOCA + LOOP + Loss of Keowee:
 - Beyond Design Basis
 - Extremely Low ($< 10^{-8}$)
- ❖ Total Loss of Keowee due to Governor or Exciter Failure is Less Likely than Before
- ❖ Offsite Power is Diverse, with Typical Grid Reliability

❖ Diverse Power Sources:

- Grid (230 & 525 kV)
- Lee Combustion Turbine (100 kV)

❖ Typical Grid Reliability:

- EPRI TR-1000158 - LOOP Events thru 1999

Upgrades *Do Not* Create an Increase in Likelihood of a Malfunction

Upgrades *Do Not* Create a Malfunction with a Different Result

All Other 50.59 Questions Evaluate Satisfactorily

Keowee Upgrades Can Proceed under 10CFR50.59



Discussion and Questions & Answers

Check for Concurrence

- ❖ All Digital Issues Have Been Identified & Discussed
- ❖ All Stakeholders Understand & Agree With Concept
- ❖ All Stakeholders Understand Action Items & Expectations
- ❖ Deviations = Stop and Review