

January 23, 2002

MEMORANDUM TO: Stuart A. Richards, Director  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

FROM: Drew Holland, Project Manager, Section 2  
Project Directorate IV /RA/  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

SUBJECT: SUMMARY OF MEETING HELD ON NOVEMBER 28, 2001, TO  
OUTLINE THE COMBUSTION ENGINEERING OWNERS GROUP  
(CEOG) STARTUP TEST TIME REDUCTION PROGRAM

A meeting was held with the NRC staff on November 28, 2001, to discuss the CEOG project on startup test time reduction (STAR).

The CEOG presentation outlined the current status of the STAR program. The extensive backup information and references that support efforts to simplify startup testing were noted. The application of modern physics methods were also explained. Discussions focused on the significant amount of work performed to date and the planned generic topical report, applicable to both CEOG and other pressurized water reactor (PWR) plants. It will be submitted for staff approval. Tentatively, the submittal is scheduled to be submitted the third quarter of 2002. It was also highlighted that startup testing was originally done to benchmark physics codes which were then in their infancy, and to detect "gross" problems in core design.

The CEOG advised that the planned topical report will be generic in nature and applicable to both Combustion Engineering (CE) plants and non-CE PWRs using modern physics methods. Generic applicability criteria related to the application of STAR will be included in the report. These criteria, including those relating to application to non-CE PWRs, will be applied by the participants on a cycle-specific basis to assure that the bases for elimination of each of the subject measurements are applicable.

From a contemporary viewpoint, analytical predictions made by modern physics codes are as accurate as test measurements assuming similarity of cycle-by-cycle core designs. The CEOG advised that the approach to the evaluation was deterministic and used a qualitative assessment of the effectiveness of startup tests to detect various types of problems, i.e., fuel misloading, control element assembly (CEA) pellet loss, CEA coupling, etc. It was noted that intermediate and hot full power measurements for incore flux symmetry, incore power distribution, isothermal temperature coefficient and differential critical boron concentration were at least as effective, in general, as the eliminated tests in the ability to detect problems.

The staff offered the following for consideration when preparing the topical report:

- Provide a clear explanation of the purpose of startup physics tests, and clearly state the applicability of the report, i.e., the participants in the project along with the projected need and implementation dates.
- Provide a quantitative analysis of prediction versus measurement for physics parameters important to the evaluation.
- Define the technical basis for justifying/defending test omissions. Elements of the existing startup test program that are retained should be explained.
- The staff's interpretation of current requirements is that measured, not calculated, values must be used to satisfy technical specifications. A simple flowchart of the evaluation process will help the staff understand the assessment and conclusions for the tests and their effectiveness in detecting problems.
- The report should address "credible problems" and consider both CEOG and other industry experiences. Modeling, calculation errors, and as-built core problems encountered in non-CE PWRs will need to be identified and addressed.

The staff encouraged the CEOG to complete the STAR project based upon the preliminary assessment results.

Project No. 692

Attachment: Meeting Attendees

cc w/att: See next page

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CE Owners Group

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**CEOG STARTUP TEST TIME REDUCTION PROGRAM**

**NOVEMBER 28, 2001**

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Paul Hijeck (CEOG Project Manager)  
Howard Jones, Jr.

**NRC**

Undine Shoop  
Ralph Caruso  
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Tony Attard  
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