

CEOG Approach to PSA Quality and
Quality Applications

Task 1164
August 2001

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Task Status

- Report represents a unique CEOG capstone for PSA quality
- Final Report Issued in March
- Information provided to NRC but not formally documented
- Report used to support CEOG applications

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Probabilistic Safety Assessment Process

Ensures Quality In PSA Applications

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Task Objective

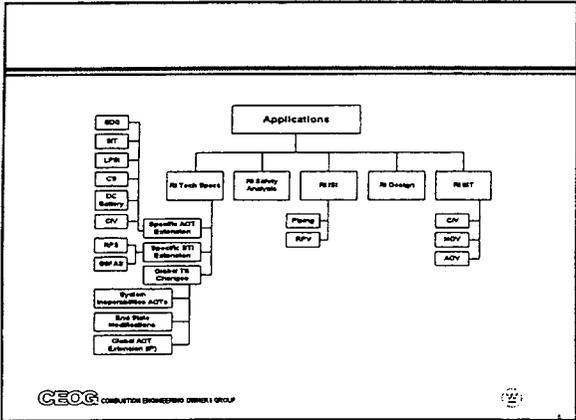
- Develop summary report for submittal to NRC describing the CEOG activities towards RI Regulation
- Report will provide additional basis for NRC position on the Quality of CEOG PSA applications

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PSA Quality

- CEOG process evolutionary and has evolved over a period of 5 years
- Consistent with ACRS vision of "top down"/"bottom up" approach which both supports PSA development and validates specific applications
- Key elements of Quality process include:
 - PSA Insights gained from focused applications
 - Plant-Plant PSA feature comparisons
 - PSA Standards and Guidelines
 - "Peer Review" / Certification process

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PSA Comparisons

Task 2025

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CEOG History of Cross Comparisons

- Cross Comparison Tasks initiated in 1995
- Cross Comparisons looks at detailed PSA aspects from several directions
 - CDF, LERF
 - CDF (per event)
 - Conditional core damage frequency
 - Data Comparisons
 - IEF, reliability data
 - Assumptions
 - treatment of common cause
 - success criteria
 - treatment of human factors
 - Cutset comparisons

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Lessons Learned

- Comparisons are useful in identifying
 - impact of conservative modeling approaches
 - impact of plant uniquenesses
 - importance of key assumptions
 - benefits of potential model improvements
- Cross comparisons used a partial measure of quality in early applications. Small variability and bounded impacts across the fleet suggest the adequacy of a generic decision.
- Comparisons lead to modeling changes and standards

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Typical Comparisons	

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Typical Comparisons	

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CEOG PSA Comparisons	
<ul style="list-style-type: none"> • Questionnaire not yet issued <ul style="list-style-type: none"> - will be modified version of NEI - additional detail and consistency needed in reporting of initiating events - added information on key assumptions and success criteria will be collected • From a preliminary look of new data most CE plants have CDF in the $2-4 \times 10^{-6}$ /year range. <ul style="list-style-type: none"> - One outlier due to temporary conservatism taken in model (issues being addressed) • NEI responses will be used to focused CE Request. Duplication will be minimized. 	

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PSA Comparisons

- Task Schedule

- CEOG data request to be issued early September
- Data collection to be complete mid-October
- Draft report to be prepared by November 10.
- Member review by December 10
- Report issued by December 31

- CEOG Report will highlight the impact of key plant differences on PSA results and place results in a proper perspective for use by an interested third party.



DEVELOPMENT AND IMPLEMENTATION OF A FLEXIBLE AOT

August 2001

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Goal of Risk-Informed Technical Specifications

- Use Risk Informed Strategies to Adjust Technical Specification in order to establish a safe haven for plant operation
 - No changes to 10CFR50.36
 - Remove shutdown as a punitive action
 - Integrate Maintenance Rule, Tech Spec Actions and Risk Informed Decision Making (RIDM) to:
 - prioritize plant activities
 - select appropriate action
 - control plant risk to acceptable levels
 - Drive plant to the appropriate end-state and action

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Risk Informed TS Effort

- Several issues are bundled in this Overall Effort. Goal is to establish a RI approach to control plant configuration and maintenance and reduce impact of TS by making them consistent with RIDM.
- Mode End State Change
 - Missed Surveillance Treatment
 - Relaxation of Mode Restraints
 - Replacement of AOTs with A4 based Action Statements (Initiative 4B)
 - Move STI to admin control and allow RI extensions
 - 3.03 Changes and 3.0.3 Avoidance
 - Redefine OPERABLE

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Goals of Initiative 4B

- Develop a Risk - Informed Flexible AOT structure that:
 - Maintain general TS structure
 - Is integrated with Maintenance Rule (a)(4)
 - May be implemented by plants with robust (a)(4) programs
 - graded implementation approach
 - flexibility commensurate with capability

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Concept

- Identify high risk operational considerations which may require expedited plant shutdown.
- Develop a Risk Informed Shutdown Decision Process
- Provide a lower limit AOT
- Use Maintenance Rule Process to control outage time
- Define Backstop AOTs for extended repairs
- Use of Flexible AOT tracked via MR targets and Oversight Process

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Bases for Concept

- The proposed concept attempts to maintain several features that exist within the current TS
 - High risk conditions are identified and dealt with promptly
 - A period to complete the repair and return the plant to the DB configuration is defined
 - Shutdown of the plant may be a required outcome of the process
 - Controlled via MR and Oversight process

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Use of Backstop

- Backstop AOT should reflect low risk usage of TS LCO.
 - For Example: One SI valve OOS may result in declared INOPERABILITY of the HPSI train with minimal risk. Thus extended time could be used if needed. However, 1 SI train completely inoperable would not be expected to take advantage of full backup AOT.
 - 10CFR50.59 defines permanent change as 90 days
 - Initiative 4 B will likely recommend 30 days
 - sufficient time for most all component repairs/replacements
 - provides adequate time for alternatives

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Use of Flexible AOT tracked via MR targets and Oversight Process

- Maintenance Rule Performance Criteria
- Oversight Process Regulatory Risk associated with unknown configurations. Melric will drive plant to keep operation in the GREEN range.
- Individual system availability PMs may also control actions
- NRC needs to understand that sufficient regulatory controls exist to ensure plant safety is maintained

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Long Term Vision of a R-I TS

- Required Actions (time to repair, repair mode, etc) driven by CRMP (A4) RIDM process
- Increase flexibility in definition to allow partial functionality and alternative risks to be considered in RIDM
- High risk actions outside of known/analyzed conditions addressed within RIDM process
- Early risk assessment emphasizes identification and treatment of common cause

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CEOG Pilot

- Use HPSI AOT extension to Provide focused pilot for Initiative 4B
 - Establishes proof of concept
 - High risk system with some low risk states
 - Easy to demonstrate control and plant status
 - Philosophy already discussed with NRC

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CEOG Pilot

- Pilot will consider and address
 - Philosophy of change
 - Nexus to (a)(4)
 - Role of PSA "quality"
 - Identify utility pre-requisites for implementation
 - Identify Implementation Options (Risk Matrix vs. Robust Monitor)
 - Example TS changes and expected example usages
 - Modified MR actions to be identified in Appendix
 - Include industry Draft TS

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CEOG Pilot

- Questions
 - Use of existing vs. upgraded analyses, key plants
 - Any new experiences to include in data base/need discussion
 - Extent of industry review of A4 "enhancements" and submittal
 - Value of numbers in "enhanced process"
 - Schedule
 - Submittal planned for fall
 - Process validation
 - exercises vs inspection
 - Implementation
 - single AOT or complete set later

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Future

- Draft report to address Initiative 4B in progress.
- Fast submittal provides a concept on the table so that more detailed discussion may be held
- Once process is agreed to and TS philosophy is defined more global application will be likely.

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Prerequisites for Future Vision

- To maximally partake in the new vision a utility must be committed to an A4 program with use of PSA and RIDM process.
 - Robust PSA
 - Process to efficiently establish risk informed decisions
 - Consideration of all plant risks including dominant external events
 - Effective means of addressing current plant conditions

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Summary

- Proposed program increases plant safety and reduces potential for unnecessary plant shutdowns and inappropriate violations
- Phased and graded aspects of relief provides timely benefit for the entire industry.
- Program is Win-Win Utility payback is large (millions dollars per year) provides industry with local control, reduces unnecessary regulation and enhances public safety.

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