

Piping DAC WESTEMS™ Topical Report Strategy

September 21, 2011

WESTEMS™ Topical Report Strategy

- Address NRC concerns with code
 - Prevent algebraic summation of orthogonal moments
 - Control user intervention in peak and valley selection process
- Improve NB-3600 Fatigue Analysis Process
 - Revised WESTEMS™ default peak selection option to be SRSS of moments
 - Revised user manual to incorporate all addenda
 - Updated draft NB-3600 Evaluation Procedure in light of previous NRC comments
 - Test revised Procedure with benchmark problem
 - Typical AP1000 piping element
 - Compile procedure improvements identified during benchmark

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- Update draft Procedure based on benchmark comments
- Third party fatigue expert execution of Procedure for benchmark problem
 - Compare with Westinghouse benchmark results
 - Reconcile differences (if any)
 - Compile procedure improvement comments
- Finalize Procedure based on all comments
- Topical report of benchmark problem
- Licensing Amendment Request to add WESTEMS™ to DCD/FSAR for use in Class 1 piping fatigue analysis

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- Benchmark Analysis Summary
 - NB-3600 evaluation of typical AP1000 piping element:
Butt weld joining pipe to spray nozzle safe end transition
 - Considers representative set of controlling transient conditions and piping moment loads
 - Detailed, step-by-step implementation of WESTEMS™ NB-3600 Fatigue Analysis Procedure to:
 - Define analysis model inputs
 - Perform analysis for three different types of moment input
 - Verify and document fatigue results
 - Identify and justify elimination of redundant peaks to reduce analysis conservatism
 - Complete quantitative validation of analysis results
- Lessons learned used to refine procedure

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- Status of benchmark / technical issues
 - Program revised to make SRSS the default moment peak selection option
 - User manual updated to incorporate all addenda addressing previous comments
 - First revision of draft procedure completed for use in benchmark problem
 - Westinghouse execution and documentation of benchmark problem is complete
 - Westinghouse to update WESTEMS™ procedure with benchmark improvements (in progress)

Questions / Discussion on Future Interactions
