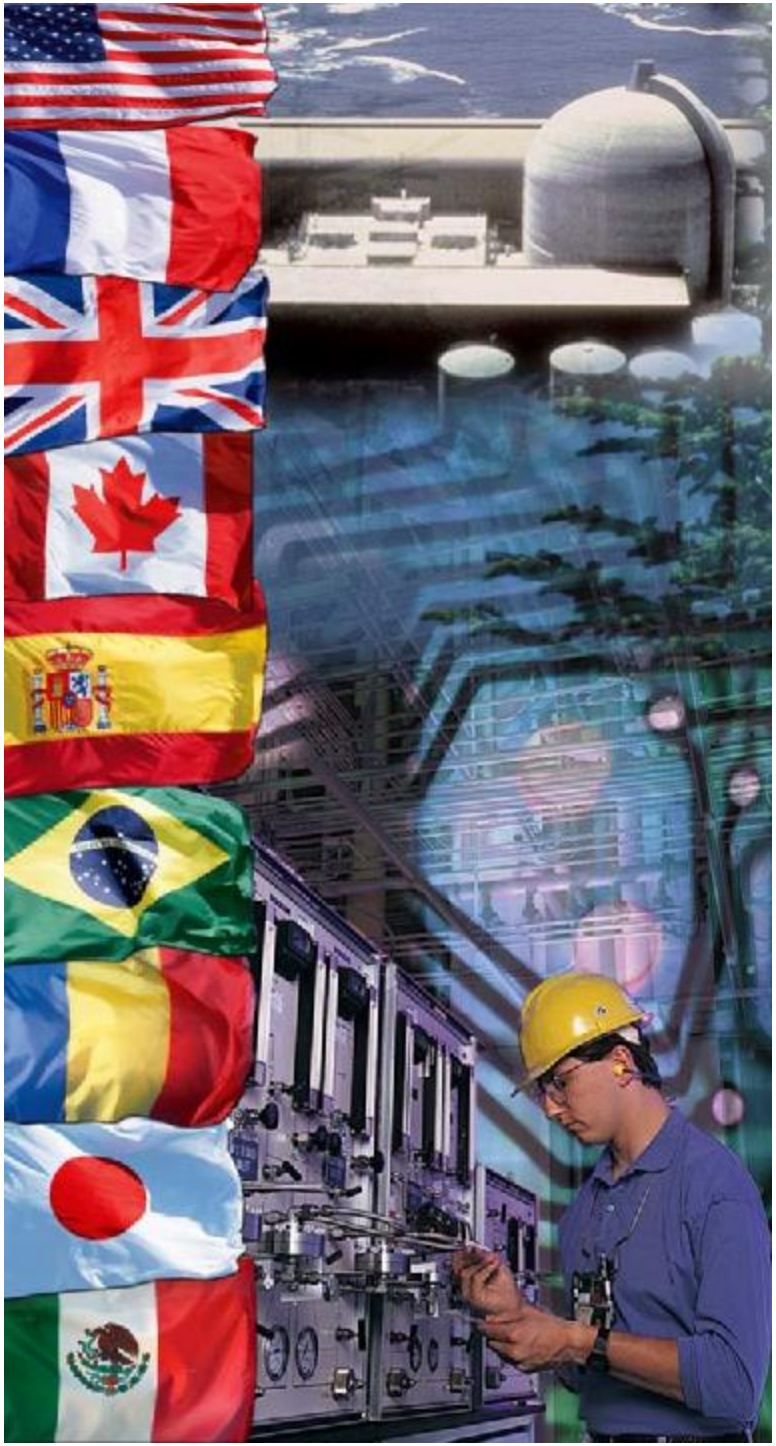

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PPM Changes – Discussion with NRC

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Background

- NRC SE issued on EPRI PPM Version 1.0 in 1996
- NRC issued Supplement covering hand calculation methods in 1997
- NRC issued Supplement covering PPM Version 2.0 in 2000
- NRC issued Supplement covering TUM in 2002
- To update Versions 1.0 and 2.0 (DOS), Windows Versions (3.1, 3.2, 3.3) have been issued
  - Topical Report Addendums 5, 6 and 7 document changes in the Windows versions

Background (cont)

- EPRI Topical Report Addendums 3 and 4 document refined methods for unwedging thrust and stem friction
- December 2005, NEI submitted PPM Versions 3.1, 3.2, and 3.3 and Topical Report Addendums 3 – 7, requesting an NRC Safety Evaluation

Meeting Objectives

- Convey a summary of the information provided by NEI
- Understand NRC's plans/schedule for review and preparation of a Safety Evaluation
- Identify activities by or expectations of EPRI to support the review process

PPM Changes Version 2.0 to 3.1

- Implemented Windows-based User Interface
- Automated report generation
- Automated hand calculations (replacing workbooks)
- Minor changes to methodology
  - Disabled certain system flow model configurations
  - Automated implementation of min/max temperatures for gate valves
  - Enabled application of PPM to AOVs and HOVs
  - Automated determination of maximum allowable closing thrust (limits on unwedging thrust requirement)
  - Automated input of default pipe roughness
- No changes to technical modules

PPM Changes Version 3.1 to 3.2

- Resolved one PPM Error Notice and one PPM Information Notice
  - PPM Error Notice 2003-1, “Effects of Upstream Disturbances”
  - PPM Information Notice 2002-1, “Butterfly Valve Output”
- Corrected several typographical and wording errors

PPM Changes Version 3.2 to 3.3

- New Capabilities
  - Codified method for predicting required thrust for gate valves with inverted guides (EPRI Report 1011290)
  - Added capability for parametric predictions
- Resolved several PPM Error Notices
  - Codified adjustments to butterfly valve torque predictions documented in Error Notice 2003-2
  - Corrected error in equivalent valve factor calculation (Error Notice 2004-1)
  - Corrected error in calculation of globe valve self-actuating strokes (Error Notice 2005-1)
  - Corrected error in selection of temperatures for guide friction coefficient determination (Error Notice 2005-2)

PPM Changes Version 3.2 to 3.3 (cont)

- Correction of mishandled tabular input of DP data by user (Error Notice 2005-3)
- Corrected error that had resulted in failed system flow predictions (Error Notice 2005-4)
- Corrected nomenclature error in input form for disk guide bottom edge configuration (Error Notice 2005-5)
- Corrected minor typographical errors and added convenience features

TR-113564, "An Improved and Validated Gate Valve Unwedging Methodology"

- Original PPM Unwedging Thrust Methodology includes two terms
  - Static unwedging thrust
  - Effect of DP on unwedging thrust
- Static unwedging thrust used a bounding value for disk-to-seat friction
- Improved method uses measured static unwedging thrust rather than bounding prediction
- Improved method validated against data from 18 gate valves from EPRI flow loop test program
- Improved method adequately predicts gate valve unwedging thrust requirements while reducing excessive conservatism

TR-113989, “Use of Static Closure Data for Determining Stem COF at Unwedging”

- Actuator Thrust capability during unwedging is affected by stem COF
- Rapid loading during gate valve unwedging tends to result in lower stem COFs (like ROL in closing direction)
- An analysis was conducted to justify use of stem COFs measured during wedging (at TST) to define stem COF during unwedging
- Method validated against data from 32 gate valves tested in EPRI flow loop and in situ test programs

TR-113989, “Use of Static Closure Data for Determining Stem COF at Unwedging”

- Conclusions
  - A stem COF justified for a population of valves based on data at TST during wedging, can be used at unwedging for the same population
  - For a specific valve, the measured COF at TST during wedging can be increased by 0.042 to obtain a COF for unwedging
  - Both conclusions apply if the nominal thread pressure at the peak unwedging thrust is greater than 6000 psi