

**RESPONSE TO NEI PROPOSAL ON  
MSPI PRA QUALITY**

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**BACKGROUND**

- MSPI PRA quality task group provided its recommendations December 16, 2004
- April 22, 2005 letter from J. Dyer to NEI requested information on the approach to be used by industry in establishing PRA technical adequacy
- NEI response in July 27, 2005 letter from A. Pietrangelo

## **NEI PROPOSAL**

- **Alternative A**
  - Consistent with the task group recommendations
- **Alternative B**
  - Resolve the A&B F&O peer review comments (consistent with task group recommendations)
  - Use industry cross-comparison in lieu of self-assessment
  - Disposition any candidate outliers identified by an industry cross-comparison process

## **NEI PROPOSAL (Cont'd)**

- If F&Os cannot be resolved by 1/1/2006, and significantly impact MSPI, use a modified Birnbaum equal to 3 times the median Birnbaum for the cross-comparison group
- If self-assessment findings (Alternative A) or problems identified by cross-comparison (Alternative B) cannot be resolved by 1/1/2006 use a modified Birnbaum equal to 3 times the median Birnbaum for the cross-comparison group

## **NEI PROPOSAL (Cont'd)**

- Criteria for identification of candidate outlier:
  - Birnbaum is  $<$  one third of the median value for the comparison group **AND**
  - Birnbaum is  $<$  mean minus one standard deviation for the comparison group

## **STAFF ASSESSMENT**

- Assessment based on review of industry data, and comparison with SPAR model results
- Results analyzed by RES using the Staff's grouping of plants
- The analysis has not yet been performed for the cooling water systems, and the staff conclusions may differ for these systems

## **STAFF RECOMMENDATION 1**

- Observation: for some groups the Birnbaum mean minus one standard deviation is negative
- Staff recommendation: change the screening criteria for candidate outliers to :
  - Birnbaum is  $<$  one third of the median value for the comparison group **OR**
  - Birnbaum is  $<$  mean minus one standard deviation for the comparison group

## **STAFF RECOMMENDATION 2**

- Observation: applying a factor of 3 to the median of the cross-comparison group can result in a value for the Birnbaum that is less than the original value
- Staff recommendation: apply the factor of three to the original value or the median of the cross-comparison group, whichever is the larger

### **STAFF RECOMMENDATION 3**

- Observations:
  - In some cases there is a systematic shift between the SPAR and industry distributions of Birnbaum values, with SPAR tending to lower values
  - There are some substantial differences in ranking between SPAR and industry for some plants, even when the distributions agree in shape

### **STAFF RECOMMENDATION 3 (Cont'd)**

- The systematic shift may be due to differences in data, e.g., LOCA frequencies or TDP FTR, but this has not been verified
- The significant differences in ranking may result from:
  - Issues with the SPAR model
  - Issues with the licensee model
  - Licensee model may take appropriate credit for more mitigation than is typical
  - Other?

## **STAFF RECOMMENDATION 3 (Cont'd)**

- Since the reason for the difference is not known a priori, the staff will identify those plants with significant differences in ranking as candidate outliers
- Criteria for candidate outliers: SPAR and industry values ranking differ by 4 deciles or more, or where distributions overlap, where SPAR and industry values differ by greater than a factor of three
- Information needed for resolution: a summary of how the corresponding issues identified in Section 2 and Table 1 of the MSPI task group report are addressed

## **CONCLUSION**

- The NEI Alternative B when modified as described in this presentation should be an acceptable approach to demonstrating PRA technical adequacy for MSPI implementation for front line systems
- The SPAR/industry rank comparison is consistent with the recommendation in Section 7 of the task group report
- When the data on cooling water systems had been analyzed, there may be a necessity to modify the staff position