Questions from Accident Forum

What is the domain of this forum (Chapter 15 or greater?), are we focused on the statistical approach or venturing into the regulatory domain? Focus on methodology rather than code and plant-specific aspects. Capture regulatory precedence fundamental to all EMs.

1. What is the definition of “best estimate analyses” in licensing applications? Where and how do you incorporate conservatisms?

2. What does high probability mean and is it dependent on the likelihood of the event and its consequences?

3. Under what conditions should a Chapter 15 analyses be treated as a multivariate problem?
   a. Is LBLOCA treated as a multivariate problem? SBLOCA? AOO’s?

4. Under what conditions can a parameter be sampled in a Chapter 15 analysis?
   a. What parameters can not be sampled?

5. What constraints apply to the development of a probability distribution function for a Chapter 15 uncertainty analysis.

6. How should parameters that are controlled by Tech Specs be treated in an uncertainty analysis?

7. How should distributions be developed when there is a lack of knowledge about the distribution? (part of Question 5?)

8. How should “expected” operator actions be treated in uncertainty analyses? EOPs?

9. How should rulemakings be factored in? Change in ECR, risk-informed break size…

10. What is the correct mathematical statement of the regulatory requirement?

11. What is the minimum number of calculations on which a 95/95 uncertainty should be based if the output parameter(s) of interest are:
    (a) PCT, MLO, CWO
    (b) Min. water level, Peak pressure, or other (single) output parameter

12. For each output parameter, what set of input parameters should be sampled and ranged for each scenario? Does the input parameter set for a single output parameter (PCT) sufficiently cover other output parameters (MLO and CWO) ?

13. What parameters should NOT be ranged:
    (a) Time in life ?
    (b) Break area ?
    (c) Some plant parameters (SI temperature ?)
    (d) LOOP, or should there be separate 95/95 values for LOOP and non-LOOP ?

14. BE methodologies range parameters based on various code models and correlations, such as heat transfer coefficient, and interfacial drag. These are often regime dependent and are based on experimental data from numerous sources:

    (a) To what extent should regime dependence be accounted for in the ranging. (Acceptable to range single phase convection the same as film boiling ?)

(b) When ranging a specific model, should its effect be ranged <u>locally</u> (as in ranging heat transfer in the core only or interfacial drag in the chimney region only) or <u>globally</u> throughout a given model ??

(c) How sufficient must the assessment database be to determine a code bias and the type of distribution and limits over which to range a certain model/correlation ?

15. How should uncertainties due to things like nodalization, time step size, and other convergence parameters be included a BE methodology ?

16. If a plant initial condition is ranged as part of an uncertainty methodology, when is it appropriate to use Tech Spec limiting values , and when can or should plant performance data be used to establish the range and distribution ?

17. Are there parameters that because of their "first-order" importance (LCP, PLHR, DH uncertainty, etc.) should be bounded or ranged between nominal & an upper limit ?

18. Can recommendations be established for BE analyses using coupled codes ? Examples: TRACE/CONTAIN for containment pressure

feedback, and TRACE/PARCS for cases where 3D kinetics may be needed.

19. How do we qualify the statistical approach?

20. Change management, i.e., new data, operating parameters, code/model, etc.?