HLWYM HEmails

From: Biswajit Dasgupta
Sent: Wednesday, April 26, 2006 11:09 AM
To: Asadul Chowdhury; Amitava Ghosh; Simon Hsiung; Fernando Ferrante; Robert Johnson (NMSS); Christopher Ryder; Rosemary Reeves; Albert Wong; Michael Waters; Mahendra Shah
Cc: Andy Campbell; Frederick Brown; Marissa Bailey; King Stablein
Subject: RE: Re: uncertainty
Attachments: Summary Highlights Preclosure Tech Exchange 2001.wpd

Rosemary,

Thanks for forwarding the Tim's comments on the uncertainty. I would like to draw attention to NRC's comment in the same pages and the quote is given below. DOE stated its position that it will consider uncertainty and variability in the failure rate and use the mean component failure rate in the event sequence analysis. However, NRC statement to me suggests, uncertainty and variability in the failure data need to be considered and propagated in the event sequence analysis. The mean value of the probability distribution of the event sequence can be used for categorization of event sequences. Please let me know if I am misinterpreting the statement. I have attached the relevant section of the summary.

"The next NRC comment stated that if DOE obtains a probability distribution for the frequency of a Pre-Closure event sequence, the mean value of that distribution can be used to categorize the event sequence, provided that the probability distributions of the component failures are valid and appropriately account for uncertainty and variability."

Bis

-----Original Message-----
From: Rosemary Reeves [mailto:RBR@nrc.gov]
Sent: Wednesday, April 26, 2006 8:55 AM
To: achowdhury@cnwra.swri.edu; aghosh@cnwra.swri.edu; bdasgupta@cnwra.swri.edu; Fernando Ferrante; Albert Wong; Christopher Ryder; Mahendra Shah
Cc: Andy Campbell; Frederick Brown; Marissa Bailey; N King Stablein
Subject: Fwd: Re: uncertainty

Here is what Tim McCartin provided me, upon my request, regarding uncertainty.

I have a place holder slide in the reliability presentation where I hope to establish our PCSA team position, to the extent that it applies to reliability.

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Mail Envelope Properties (bdasgupta@cnwra.swri.edu20060426110916)

Subject: RE: Re: uncertainty
Sent Date: 4/26/2006 11:09:16 AM
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From: Biswajit Dasgupta

Created By: bdasgupta@cnwra.swri.edu

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Post Office:

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MESSAGE	1693	4/26/2006 11:09:16 AM
Summary Highlights Preclosure Tech Exchange 2001.wpd	15144	

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:

Recipients Received:

Summary Highlights of NRC/DOE Technical Exchange and Management Meeting on Pre-Closure Safety
July 24-26, 2001
Las Vegas, Nevada

Justification of Probability Estimates

DOE provided responses to NRC comments related to justification of probability estimates as discussed below. NRC asked for clarification as to how DOE treated failure data from nuclear industry and other commercial sources. DOE stated that both types of data will be used with appropriate justification for their use. DOE stated that it agreed with the NRC position that failure probabilities must be justified sufficient to support the design basis event categorization process. DOE stated that appropriate attention will be given to event scenarios that are near thresholds. The analysis would ensure that the technical basis supports the event categorization or that the categorization is conservative (e.g., an event that is of borderline beyond design basis event may be conservatively categorized as Category 2 and a borderline Category 2 may be conservatively categorized as Category 1).

The next NRC comment pertained to the use of point estimates of frequency of failure of different components in DOE's preliminary safety analysis. DOE stated that categorization of design basis events will be defensible, including the inputs and discussions on uncertainties and sensitivities associated with any failure rates or distributions of such rates. DOE stated that mean values will be used where applicable to categorize event frequencies. NRC questioned how beyond design basis events get captured in the design basis. DOE stated that it would analyze and include the systems, structures, and components in the design basis that would be relied on to push the probability or consequences below the regulatory limit. Items that are included in the design basis will be included in the potential license application. DOE stated other analyses would be available through document control and the licensing support network.

The next NRC comment pertained to probability estimates for component failures. DOE stated that it would, as appropriate, assign probability distributions to component failure rate estimates. These distributions will be used to estimate the mean component failure rate and the variability in the estimated failure rate.

The next NRC comment stated that if DOE obtains a probability distribution for the frequency of a Pre-Closure event sequence, the mean value of that distribution can be used to categorize the event sequence, provided that the probability distributions of the component failures are valid and appropriately account for uncertainty and variability. DOE stated that they interpret this to say that the mean is acceptable for categorizing an event. The NRC agreed and noted that if it is close to the border (i.e., between Category 1 and 2, or Category 2 and beyond design basis events), the uncertainty should be subject to further scrutiny.

After further NRC discussions, the staff stated that it agreed with DOE's general methodology in this area and that it would review future documents and provide any issues at that point. No agreements were needed at this time.