



Board of County Commissioners
Lincoln County, Nevada

P.O. Box 685, Pioche, Nevada 89043
Telephone (775) 962-5671
Fax (775) 962-5877

DISTRICT ATTORNEY
Philip H. Dunleavy

COUNTY CLERK
Corrine Hogan

COUNTY COMMISSIONERS

Spencer Hafen
Tim Perkins
Tommy Rowe
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2/21/03
68 FR 8530
57

May 19, 2003

Mr. Michael Lesar
Chief, Rules and Directives Branch
Office of Administration
Mail Stop: T-6-D-59
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

RECEIVED
2003 MAY 29 AM 9:34
Rules and Directives
Branch
USNRC

RE: Comments on Spent Fuel Transportation Package Performance Study Test Protocols

Dear Mr. Lesar:

The Board of Lincoln County Commissioners, in consultation with the Caliente City Council and through their joint City/County Impact Alleviation Committee, has reviewed the subject protocols and offers the following comments thereto. Lincoln County and the City of Caliente would appreciate being informed as to the manner in which County and City comments are specifically addressed in the final spent fuel transportation package performance study test protocols to be prepared and implemented by the Nuclear Regulatory Commission.

The County and City have developed the following questions which we believe should be answered within the final version of the spent fuel transportation package performance study test protocols. Where an answer to said questions is not found within the draft protocols, the County and City would expect to find a suitable answer in the final document. We believe that NRC's efforts to include responses to the following questions within the final protocol will result in a spent fuel transportation package performance study which enables NRC to determine the validity of existing models used to confirm fuel transportation package performance and to better communicate the results of said study to a variety of stakeholders.

Template = ADM-013

E-KFDS = ADM-03
1 call = A. Snyder (AMSB)
A.J. Murphy (HSMC)

General Questions

1. The PPS is highly technical. Can the public expected to have confidence in something they do not understand?
2. How will model results be communicated to the general public? NEPA compliance documents are written to a 6th grade reader. Can the PPS results be described in a manner understandable by a 6th grade reader?
3. How will NRC demonstrate the absence of bias in model assumptions, data, cask fabrication, testing, result interpretation and presentation of results?
4. The “availability heuristic” of human cognition suggests that people will believe what they have read recently regarding subjects of a highly technical nature. How will NRC mitigate effects of the availability heuristic in communicating PPS results? For example, the public may remember that a corner impact produces a lid seal gap 10 times greater than an end-on impact.
5. If PPS results suggest that finite element modeling does not accurately predict cask responses to impact and/or fire will enough data be obtained from field tests to improve the models? In such a case, will another round of model valuation result?
6. How will results obtained from the PPS be used by NRC (non-regulatory risk assessment, cask certification, public information, regulatory reform (cask design, modeling criteria and assumptions)).

Specific Questions

1. Page ix, 2nd paragraph – Is the PPS focused on the 99% of 1% of possible transportation accidents?
2. Page ix, 5th paragraph – The previous paragraph suggests that NRC has complete confidence in its cask safety and certification program. In fact, the 5th paragraph states that the PPS is not intended to involve development of new standards. Why then is NRC undertaking the PPS? Which stakeholders and how many stakeholders have expressed concerns of sufficient stature to move NRC to undertake the PPS? Does NRC itself have doubts about the adequacy of analytical methods and data currently used for cask certification and/or risk assessment?
3. Page ix, 5th paragraph – Are the “extreme accidents” referred to here within or outside of the 99% of accidents referred to in paragraph 4.
4. Page x, 1st paragraph – Why is not data obtained from item 1 being used to inform the design of tasks 2 and 3? When will said data be available?
5. Page x, 4th paragraph – What is the probability of drop damage versus horizontal damage? Will the results of Task 1 (see paragraph 1 of Page x) inform the selection of drop damage versus horizontal damage tests.
6. Page xi, Figure on page – Will the choice of a rounded versus square surface against which the “back-breaker” test will be performed should be informed by the results of Task 1 (see paragraph 1 of Page x)?
7. Page xii, 1st full paragraph – Why not expose the cask to fire for a duration resulting in seal failure?
8. Page xii and xiii, 3rd paragraph, 4th-9th bullets – The results of Task 1 (see paragraph 1 of Page x) should inform these answers. When will the results of Task 1 be available for review?

9. Page xiii, 3rd bullet – What are NRC’s risk-informed regulatory initiatives? NRC has already determined there to be little risk of release from a shipping cask under the existing regulatory framework. Because the PPS will not involve development of new regulations, it is not clear how PPS results can be considered relevant to risk-informed regulatory initiatives. In fact, is it not possible that undertaking the PPS serves to undermine (by implying some deficiency with existing analytical models) the validity of NRC risk-informed initiatives?
10. Page 1, 1st paragraph – How does a 9 meter drop compare to actual accident histories?
11. Page 1, 1st paragraph – How does 30 minute, 800 degree fire compare to Baltimore Tunnel fire conditions?
12. Page 1, 3rd paragraph – Is there a detailed schedule and budget for the six-year work plan? Given that Yucca Mountain licensing may be concluded prior to the six-year timeframe and that there may be only seven years until the first Yucca Mountain related shipments, will the results be available in time for effective use in “risk-informed” decision making by NRC?
13. Page 2, Section 1.1 – In addition to “raising a number of technical issues about the performance of spent fuel packages during extreme accidents”, NUREG/CR-6672 also concluded that the risks of transporting SNF/HLW were also lower than estimated in previous NRC studies. Will new data from the PPS further reduce what NRC has already determined to be acceptable levels of risk? Given this situation, is the PPS really needed?
14. Page 4, Section 1.2 – Is finite element analysis currently used by NRC for cask certification? If not, why is NRC considering use of finite element analysis and is NRC consider switching its method of analysis? If finite element analysis is currently utilized for cask certification, are there deficiencies in current models?
15. Page 4, Section 1.2 – What information, to whom, in what timeframe and where will the public outreach objective be accomplished?
16. Page 4, Section 1.2 – What is NRC’s expectation regarding resulting estimates of risk from incorporation of empirical data or new or updated transport statistics?
17. Page 5, 1st paragraph – Will detailed test plans be revised to reflect NAS comments?
18. Page 5, Section 1.3 – How will casks to be tested be selected for test and by whom? How will NRC guard against apparent bias in the selection/manufacturing of test casks? To enhance public confidence in the testing program, would NRC consider selecting casks for testing that have already been certified and are now in service? Would NRC consider a random selection of casks for testing from among those now in service?
19. Page 7, 1st paragraph – Is finite element analysis currently used by NRC in modeling cask performance and/or in cask certification proceedings? If not, what is the current analytical framework and why is not the current system being evaluated? If finite element models are in use by NRC was not a determination that such models are accurate reached previously by NRC as a means to support their past use by NRC?

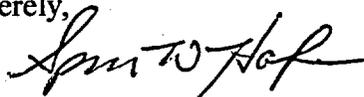
20. Page 9, 4th paragraph – Any new drop facility and unyielding target should be constructed and operated at the Nevada Test Site. How does NRC intend to allow stakeholders to observe the tests?
21. Page 11, 2nd paragraph – What degree of uncertainty will be associated with the PPS and how will NRC manage and communicate uncertainty? Uncertainty will erode public confidence in test results. Opponents of SNF/HLW transportation will highlight uncertainty in test results to erode public confidence in the PPS.
22. Page 11, 3rd paragraph – How frequently is or will the MPC be used in SNF/HLW rail and truck transportation? Does incorporation of the MPC reflect the most common transportation scenario for the future? Is there merit in considering a non-MPC scenario?
23. Page 12, 5th paragraph – Has NRC considered utilizing existing certified casks which are in service for the tests?
24. Page 12, 5th paragraph – How will NRC model various aspects of uncertainty?
25. Page 15, 2nd full paragraph – What is the design operational relationship (relational performance) of the contents and the canister, the canister and inner shell, the lid and the cask body, and the cask body and the impact limiter? Has NRC considered said operational relationship in specifying assumptions regarding friction?
26. Page 15, 2nd full paragraph – For which aspects of the problem is neglecting friction not conservative?
27. Page 16, 2nd paragraph – Will a more detailed bolt model result in a better model for assessment of bolt bending?
28. Page 16, 2nd paragraph – Is bolt bending a source of lid displacement (both vertical and horizontal)?
29. Page 16, 3rd paragraph – Does the analysis consider displacement of re-alignment of sealing surfaces?
30. Page 19 1st paragraph – What was the maximum final thickness following crushing?
31. Page 22, 1st paragraph – Does NRC have any estimate of the extent to which bolt preload would be expected to reduce the closure lid gap resulting from the 96 kph CG-over-corner impact?
32. Page 23, Figure 12 – Is the pre-test lid seal gap 0mm? Does this figure suggest closure lid gap separation around the entire circumference of the lid? Why is not the lid seal gap for the 180-360 degree portion of the lid shown on Figure 12?
33. Page 23 – The data here suggests that CG-over-corner impacts pose the greatest risk of closure lid seal gap. Has NRC considered methods to reduce the frequency of CG-over-corner impacts as a means to reduce risk?
34. Page 29, 3rd paragraph – Has NRC considered the extent to which the use of modeling assumptions to avoid numerical complications introduces uncertainty and suggests a possible loss of modeling accuracy?
35. Page 48, Section 2.6 – What was the basis of the panel's recommendation to use the Holtec Hi-Star 100 and GA-4 casks? What other casks were considered and why was their use in testing not supported?
36. Page 48, Section 2.7 – Will the actual velocity achieved at impact be known and if so how will said velocity be determined?

37. Page 52, 4th paragraph – After how long did the temperature of the outer surface of the package start to approach the temperature of the fire?
38. Page 53, 3rd paragraph – Has a test of a calorimeter the size of a rail cask ever been conducted before? If so, have the results of such previous studies been considered by NRC in preparing the PPS?
39. Page 53, 4th paragraph – Are either of the rail cask positions to be used in the test the same as that position used for regulatory purposes?
40. Page 53, 4th paragraph – What is the effect of the water layer on heat generation?
41. Page 53, 4th paragraph – Is the heat loss due to the water layer more or less than heat loss associated with soil and pavement?
42. Page 53, 4th paragraph – Why is the truck cask fire test not being conducted over pavement (the likely surface under a cask fire)?
43. Page 54, 1st paragraph – Which if any of the models described here are acceptable for use by NRC for cask certification purposes?
44. Page 55, 3rd paragraph – Has NRC considered introduction of simulated fuel decay heat to the interior of the cask? Will excluding fuel decay heat result in underestimation of time to seal failure?
45. Page 58, 2nd paragraph – Has NRC considered evaluating the temperature of seals and time to seal failure?
46. Page 60, 2nd paragraph - Has NRC considered evaluating the temperature of seals and time to seal failure?
47. Page 64, 4th paragraph – How does NRC plan to perform the improved estimates of seal degradation and rod failure by burst under extreme fire conditions described here?
48. Page A-1, 2nd paragraph – Has the NRC considered the value of the data described here as informing decisions regarding design of high-speed collision tests and engulfing fire tests? When will said data be available? How will NRC involve stakeholders in review of staff decisions regarding beyond-design-basis accident?
49. Page A-2, 1st partial paragraph – The statement regarding consistency with information and views during scoping is not true. How did NRC consider views expressed during scoping that suggested that the PPS was not needed and would not be an effective means for building public confidence in SNF/HLW transportation?
50. Page A-2, 2nd paragraph – How will tested casks be chosen to avoid the appearance of selection bias?
51. Page A-3, 3rd paragraph – Given that the annual probabilities associated with the PPS test protocol impact test compare favorably to the probabilities considered in Part 63 safety or performance assessments, why is NRC proceeding with the PPS given the apparent “acceptable” level of risk associated with extreme transportation accidents?

I trust these questions to be of assistance in framing those issues for which clarification is needed in developing the final spent fuel transportation package performance study

protocols. Should you have any questions regarding these questions, please contact Dr. Mike L. Baughman (775) 883-2051.

Sincerely,

A handwritten signature in black ink, appearing to read "Spencer Hafen". The signature is written in a cursive style with a large initial "S".

Spencer Hafen
Chairman

Cc: Dr. Margaret Chu, DOE OCRWM
Mr. Kevin Phillips, Mayor, City of Caliente