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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

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MEMORANDUM FOR: Roger J. Mattson, Director, Division of Systems Safety

FROM: Harold R. Denton, Director, Division of Site Safety and Environmental Analysis

SUBJECT: COMMENTS ON ATWS REPORT

We have reviewed the subject report in response to your October 19 request. While all of our technical comments are not yet prepared and will be provided later, we do have some comments of substance on the Impact-Value (I-V) analysis, which is the primary subject of this memorandum. Our bottom line regarding I-V is that this subject should be discussed in a meeting between the appropriate persons, since it is an important issue that does not appear to be adequately treated.

Without getting into detailed comments on the I-V analysis, we find that the methodology used heavily emphasizes the values and downplays possible impacts. If a full-range sensitivity analysis were presented it would not appear that the I-V analysis would support modifications to accommodate ATWS. Examples of the apparent bias noted in the draft are listed below.

1. Pages 5-6 and 5-7 - From the discussion on these two pages it appears that the ATWS core melt frequencies discussed in subsequent pages might be weighted towards those existing at low core burnups. If so, then these frequencies should be adjusted to smaller values so as to reflect a more accurate probabilistic assessment. For example, in the case of B&W it appears that 4,500 psi peak pressure is critical, and this is the 80th percentile; however, the ATWS frequency of 2×10^{-4} per Rv was only reduced to 1×10^{-4} for ATWS events that involve excessive primary pressure. On a straight ratio basis, it would appear that the frequency should be 4×10^{-5}. If one then applies the factor of 0.2 (for doses exceeding 10 CFR Part 100, page 5-8), the resultant core melt plus higher dose frequency would be 0.8×10^{-5} instead of 2×10^{-5}. This apparently weights the "value" by a factor of 2.5 (at least for the B&W and CE plants).

2. Page 5-10 and Table 5.1 - It appears that all cost estimates are for plants not yet designed. It is acknowledged in the draft that for redesign the costs would be somewhat higher, and for operating plants there would be additional costs due to modifications, downtime, and

replacement power. These costs would all markedly affect the "impact" side of the I-V balance, particularly for operating plants. Also, contrary to the statement provided, we do have reconnaissance level information available to make crude estimates of many of these impacts.

3. Page 5-12 - If the "value" were appropriately discounted, the I-V ratio would be increased.

4. Page 5-12 - A value of $1,000 per man-rem is used in calculating dollar equivalence for radiological exposure. If a perhaps more realistic value of approximately $250 per man-rem were used, the combined "RSS/ALARA" costs per core melt would be reduced to 40% of the value used in the subject draft (from $350,000 per Ry to $140,000).

5. Table 5 1 and 5.2 - The BWR-4 and -5 impacts were reduced to $10 million from $33 million and $28 million respectively, primarily because the staff did not believe the vendor numbers. There should be more substantiation for the staff position, although perhaps there is such substantiation in the details of the report. As noted before, the BWR numbers do not include redesign, modification, or shutdown costs.

In summary, considering the above five points, it appears that the I-V conclusions suggested in subsection 5.6.2 could be seriously in error. In the worst case, the "value" could perhaps be biased by more than a factor of 10 compared to the impacts, not even considering discounting of benefits or the fact that the "impacts" of design changes, modifications, and plant shutdowns were not included.

A final point is that it is stated that the expense in time and resources for detailed risk assessment studies are not warranted. This may be true, but this position would not be as valid for better analyses of "impacts" or for a sensitivity analysis of values and impacts. Even if one assumes the very low staff estimates of costs, the total cost to the country would be well in excess of $1 billion. In the public interest, it would seem that this magnitude of impact warrants better analyses.

Harold R. Denton

Harold R. Denton, Director
Division of Site Safety and
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cc: See next page.

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