Staff Comments on Illustrative Examples

3c. Debris Characteristics

- Overall comment: the example provides all of the information we are looking for in the format of the content guide
- Detailed comment:

  Regarding the discussion of Kaowool, while the final conclusion (in this case) seems reasonable that the Kaowool size distribution should be similar to Nukon, the logic of correlating damage to bulk density is not always valid. One example of this is in the SONGS' audit report discussion of mineral wool characteristics, where evidence was presented that this material, though denser than Nukon, is apparently more fragile (Section 3.3.2.1). Some of the physical differences in this case which could cause a difference in debris size distribution are that Kaowool is ceramic fiber that is stitched together as opposed to Nukon, a glass fiber which is fabricated with an organic binder. Also, it also may be useful to consider additional materials that have been tested that may be more similar in certain respects to a given plant-specific material than Nukon (e.g., K-Wool in this case).

3e. Debris Transport

- Organization of example followed the format of the content guide.
- Two General Comments:
  - It will help the staff to conduct efficient reviews of supplemental responses if issues that have not been previously reviewed in audit reports (or other forums) could be discussed in more detail than those issues which are commonplace. The staff understands that individual licensees may not have a thorough understanding of what the staff has and has not reviewed, but to the extent possible, providing more detail on unreviewed approaches would speed up the review process. The specific example in the transport section which prompted this comment was the discussion of debris capture in ice condensers.
  - If a licensee's approach is the same as or similar to an approach that the staff previously reviewed during an audit and declared to be an open item, it would be beneficial to conducting an efficient review if licensees would address the concerns raised by the staff in the open item. Again, not all licensees may be aware of each open item in each audit report, but to the extent possible, addressing these items up front will speed up our reviews. The particular example which prompted this point is the discussion on page 11, item 3.e.2.4, which is the discussion of Stokes' Law. The staff has raised questions on this approach in a number of audit reports and pilot audit reports (e.g., SONGS, Millstone) due to questions on benchmarking, turbulence effects, non-spherical corrections.
- On page 11, 3.e.2.1: The argument is made that, since all debris washes outside the bioshield wall, the break location does not significantly affect debris transport. An additional statement is needed to complete this argument – for example, [there is only one flowpath exiting to the annulus] or [the flow conditions in the

annulus are such that the distribution of the flow exiting into the annulus from various loop compartments does not affect the debris transport fractions].

- Not all of the sections of the template were filled in with illustrative examples. An obvious example of this is on page 12, 3.e.4: For the second approach, which is crediting interceptors based upon previous NRC-sponsored testing, the generic template is reasonable, but the staff would expect that plant-specific applications discuss specific debris types and sizes as well as the references for the specific testing, rather than a general statement that curbs tend to intercept debris.
- In light of the earlier comment made concerning the Stokes' Law approach and settling of fine debris, one point in Section 3.e.6 that stands out is that the transport percentage for Thermo-Lag fines in the illustrative example is 0%. I realize there is a disconnect between the transport summary data and some of the earlier non-plant-specific information in this section which could account for the seeming lack of justification on this point, but it is another example of an assumption in an area that the staff has previously declared open items that the staff would expect to see more detailed justification in the supplemental response to address previous concerns expressed on this subject.
- Tables 1, 2, and 3 provide the summarized information the staff is looking for. If licensees prefer to paste in transport logic trees from their transport calculations in lieu of providing the information in Table 2 in tabular form (there is potentially one table each for blowdown, washdown, pool-fill, and pool recirculation modes of transport), that would speed up the staff's review but obviously the information density would be somewhat lower (i.e., response may require more pages). Either format would be reasonable in the end.

NPSH

- The information provided in this area is consistent with the content guide request and clearly written.
- General comment:
    - Formatting the input more along the lines of the bullets of the content guide will generally add efficiency to the staff's review; however, the format of the given example would also be okay.