

**From:** Diane Jackson *NRN*  
**To:** Jason Schaperow  
**Date:** Tue, Sep 7, 1999 2:09 PM  
**Subject:** Fwd: CONSEQUENCES

Please look over EP comments to see if there is any discussion or clarification -

Diane

*m/40*

**From:** James O'Brien *JOB*  
**To:** Diane Jackson *DJ*  
**Date:** Thu, Aug 26, 1999 11:20 AM  
**Subject:** CONSEQUENCES

Diane,

I have done a little bit of reading up on NUREG-1150 to see what has been looked at as far as EP effectiveness. Chapter 11 of NUREG-1150 has some information that seems pertinent to our work.

Note that Table 11.6 of NUREG-1150 shows that there are 0 early fatalities at a probability level of  $10^{-6}$  (and 0 at  $10^{-7}$  for BWRs). Section 13.2.6 is also a good reference.

I have attached a file which list some additional consequence calcs I would like to see and provides comments on RES report

**CC:** Thomas Essig

## Additional Calculations

1. Consequences of spent fuel fire at 0 days after shutdown.

Inventory: One Full core  
Full pool.

EP assumptions: No EP  
same as base case

Output: Consequences within the following distances

- 10 miles
- 50 miles
- 100 miles

Reason: Provides baseline for effects due to full inventory of shortlived radioisotopes. This will provide an understanding in the relative decrease in the consequence contribution to risk as a function of time.

2. Report on consequences within the 10 mile EPZ
3. Run sensitivity analysis on EP assumptions. Consider the following parameters
  - modify relocation criteria for early phase to the PAG levels to 2 rem in the first year
  - modify evacuation time to 2 hours before release and 4 hours before release
  - half the assumed evacuation speed

## Comments on May 25, 1999 Evaluation

1. *to compare with earlier assessments*  
Don't understand why cases 2 and 3 were run. For this analysis it may be better to run a case where only one core is affected since that is probably the most applicable case (i.e. full core offload). Running cases where only 1/3 of the core is offloaded does not apply to permanently shutdown reactors.
2. *insignificant effect*  
I am not sure that the inventory used is appropriate. Does this inventory consider higher burnups? If not, what would be the effect of the higher burnups? Should this be discussed in the report?

*Why?*

- ✓ 3. The energy of the plume should be discussed. What is the impact of a highly energetic plume? It seems as if close-in doses would be reduced. Is the energy of release input in the code runs applicable to a zirconium fire?
- ✓ 3. Recommend leaving out the conclusion that long-term consequences are controlled by emergency response action. Although this may be true, no study was performed to determine the effectiveness of the emergency response actions. The conclusion seems to infer that consideration should be made to modifying emergency response actions. If you wanted to keep something like this in the report, I would recommend you change the words to "assumptions on the levels of exposure at which the public is relocated from contaminated areas."
- OK
4. The statement that early evacuation has very little impact on long-term consequences should include the qualifier "outside of the 10-mile evacuation zone."
- OK
5. Should discuss selection of start time of plume. A plume will not start 1 hour after accident initiation. (This won't have an affect on consequences (which are controlled by the delta time between start of time and evacuation) but may be misinterpreted)
- OK
6. Conclusion c should include the caveat "considering only the magnitude of the release. Additional time available to take protective actions would be available"

*0-10 mile results for base case*