From: Farouk Eltawila, RES
To: Gary Holahan, John Hannon, Richard Barrett, NRR
Date: Fri, Apr 21, 2000 11:51 AM
Subject: SFP

Ha ha to you too Richrad.

Based on our meeting, attached is some suggestions of what could be done to support your efforts. Please let me know if you agree at least for the short, and intermediate term efforts. Thanks.

CC: Schaperow, Jason, Tinkler, Charles

E18

April 21, 2000

Research Plan for Spent Fuel Pool Accident Consequence Assessment

As part of the agency's effort to develop a rule for decommissioning reactors, RES performed an assessment of the effect of one year of decay and early evacuation on spent fuel pool accident consequences. This assessment also investigated the effect of potentially large ruthenium releases in air. The assessment was based on earlier BNL assessments for 30 and 90 days of decay performed as part of the resolution of Generic Issue 82. The ACRS, in its letter of April 13, 2000, raised a number of issues concerning the consequence analysis in the areas of source term, plume, and acceptance criteria. In the source term area, the issue is the release fractions of cesium, ruthenium, and fuel fines for high burnup fuel in air. In the plume area, the issues are plume energy and spreading. In the area of acceptance criteria, the ACRS questioned the appropriateness of early fatalities as the measure of accident severity. NRR also has raised questions concerning the percentage assumed for early evacuation within the Emergency Planning Zone. In addition, other issues were raised by the expert elicitation on MACCS uncertainties. The plan below identifies tasks as short term (ST), intermediate term (IT), and long term (LT).

Source Term

Cesium and Ruthenium: Revise the best-estimate releases for cesium and ruthenium based on NUREG-1465. (IT)

Fuel Fines: Perform sensitivity studies with MACCS to investigate the sensitivity of the consequences to fuel fine releases. (IT)

Review results of completed CODEX and VERCORS experiments for insights into the effect of air ingression and high fuel burnup on releases of cesium, ruthenium, and fuel fines. (IT)

Conduct expert elicitation on spent fuel pool accident source term. Document results, including distributions for cesium, ruthenium, and fuel fines release fractions, in a NUREG/CR. (LT)

Review results of planned PHEBUS experiments for insights into the effect of air ingression and high fuel burnup on releases of cesium, ruthenium, and fuel fines. (LT)

Plume Model

Modify MACCS plume spreading based on the results of the expert elicitation on MACCS uncertainties. (IT)

Perform sensitivity studies with MACCS to investigate the sensitivity of the consequences to plume energy. (IT)

Review the thermal-hydraulic basis for the plume energy. (IT)

Emergency Planning Zone Modeling/Consequence Criteria

Perform MACCS calculations with 95% evacuation. (ST)

Re-examine the evacuation percentage. (IT)

Reexamine short-term and long-term relocation criteria. (IT)

Other Issues

Follow up on issues that were raised by the expert elicitation on MACCS uncertainties. (LT)