INTEGRATED CHEMICAL EFFECTS TESTS (ICET)

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BACKGROUND

- In 2/03 the Advisory Committee on Reactor Safeguards (ACRS) of the US NRC raised a concern that gelatinous material could form in the post-LOCA containment environment, caused by chemical interaction between sump water/containment spray and exposed material inside a containment, thereby creating an additional debris source.

- Evidence cited by ACRS to support the concern was the Gelatinous debris found in the post-LOCA sump pool at TMI 153 days after the 3/28/79 LOCA accident.

- In response to this ACRS concern, NRC/RES sponsored a limited-scope study at LANL/UNM. LANL report LA-UR-03-6415 issued in 11/03.

BACKGROUND (CONTINUE)

- Insights from the NRC/RES sponsored limited-scope chemical effects study

  - If gelatinous material is formed, it can increase head loss across a fibrous debris bed. However, gelatinous precipitation was artificially induced in head loss tests by adding metallic salts to the fluid.

  - Since no integrated tests were performed, the complete progression from metal corrosion to the ultimate formation of precipitation products was not demonstrated, and the study is not sufficient to provide a basis for plant-specific quantitative assessment of the issue.

BACKGROUND (CONTINUE)

- NRC decided that an integrated chemical effects test under representative post-LOCA containment environment need to be performed in order to evaluate the overall chemical effects. The industry reached the same conclusion.

- In order not to duplicate tests, NRC and industry agreed to cooperate on the test, but will conduct data analysis and reach conclusions independently.

- NRC/RES and EPRI will work under a new addendum to the existing MOU on Cooperative Nuclear Safety Research between NRC and EPRI.