RIC 2005
Session T-C2
PWR Sump Performance

How Generic Safety Issues *Should* be Handled

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PWR Sump Performance Mishandled by NRC

- **GSI-191 resolution schedule way too long**
- **Unresolved GSI-191 issue wrongfully ignored in the interim**
- **Generic safety issues like GSI-191 must be integrated into <u>ALL</u> regulatory decision-making processes**

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Schedule: Stopped instead of Stop Watch

TIME is a factor in risk, but not in NRC's risk analysis:

09/1996 – NRC initiates GSI-191

12/2007 – NRC plans to close GSI-191 ➔ 11 ¼ years!!!

11/04/2002 – FirstEnergy notifies NRC of degraded sump

05/21/2003 – FirstEnergy informs NRC of modified, fixed sump

04/10/1998 – Calvert Cliffs license renewal application submitted

03/23/2000 – Calvert Cliffs license renewal issued

10/14/1966 – Indian Point Unit 2 construction permit issued

08/01/1974 – Indian Point Unit 2 in commercial operation

05/25/1961 – President Kennedy challenges nation to put man on the moon.

07/20/1969 – Apollo 11 lands on the moon

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Schedule: Stopped instead of Stop Watch

03/28/1979 – Accident at Three Mile Island Unit 2

06/19/1990 – Last of TMI-2 core debris transported to INEEL

12/02/1942 – First sustained chain reaction at Chicago Pile 1

07/16/1945 – First atomic bomb exploded in Trinity test

12/07/1941 – Pearl Harbor: US enters World War II

08/14/1945 – V-J Day in US celebrates end of World War II

04/20/1931 – US Gov't authorizes construction start of Hoover Dam

10/26/1936 – Hoover Dam begins generating electricity

NRC's pace is slower than Mission to the Moon, Manhattan Project, and WWII.

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Unresolved GSI-191 Ignored by NRC

NRC initiated GSI-191 after determining that clogged PWR containment sumps might impair the post-LOCA safety functions of core and containment cooling.

In subsequent regulatory decisions, such as what to do about PWR CRDM nozzle cracking in 2001, the NRC failed to consider GSI-191.

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Unresolved GSI-191 Ignored by NRC

09/1996 – NRC initiates GSI-191 on PWR containment sump problem

08/2001 – NRC issues Bulletin 2001-01 on PWR CRDM nozzle cracking (i.e., potential for increased challenge to PWR containment sumps)

11/2001 – NRC allows Davis-Besse to continue operating with suspect CRDM nozzles based, in part, on compensatory measures to manually align post-LOCA recirculation without any consideration of GSI-191.

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GSI-191 Risk Partially Addressed

Risk = Probability * Consequences

In June 2003, NRC issued Bulletin 2003-01 recommending measures to mitigate PWR containment sump clogging (consequences).

This bulletin DID NOT address measures to lessen the likelihood of a pipe break (probability).

Risk informed regulatory actions must consider the probability AND the consequences, not just whichever one is most convenient at the moment.

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GSI-191 Sidebar (Thanks, Judge Ito)

NRC & industry claim not to know enough to undertake plant-specific analyses.

How did FirstEnergy analyze Davis-Besse?

NRC claims Los Alamos' parametric study was based on obsolete, non-plant specific information and the results cannot be used to show individual plants are unsafe.

If the available information is too old and too vague to show plants are unsafe, what information shows they are safe enough until GSI-191 is fixed?

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GSI-191: What Should Have Been

Early in the process for a new generic safety issue, the NRC must:

① **Determine which reactors might be affected by the generic safety issue.**

② **Assign each potentially affected reactor a △CDF value for the best-estimate risk posed by the unresolved generic safety issue.**

The NRC cannot make meaningful risk-informed decisions without accounting for the potential risk from unresolved generic safety issues.

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GSI-191: What Should Have Been

Had a △CDF value for the best-estimate risk posed by the unresolved containment sump issue been determined for each potentially affected PWR in September 1996 or shortly thereafter and that risk factored into all applicable risk informed decision-making by the plant owners and the NRC, then the 11 year resolution schedule for GSI-191 would still have been too long, but at least it could have been justified by appropriate consideration of risk during the interim period. ***That did not happen.***