

SW GW Issue – Miscellaneous Comments/Questions

Review of SPAR SW Fault Tree

- Assumed configuration of A & B SW pumps running and C & D in standby. Comment only.
- DG-ESW-MDP1A (&B) discharge check valve should have a different failure to open probability than pumps which are not running (latent failure of the check valves which are normally closed).
- Gates DG-ESW-ESW, ESW-B-ESW and ESW-A-ESW should be 3 of 4 pumps failing – if two pumps are running isolation of the non-essential SW or other Essential SW Division is not required. (Observation – changing this gate did not seem to have significant effect on CDF)
- Gate ESW-B7 on Fault Tree page 41 should have a basic event for ESW-XVM-CC-194 instead of ESW-XVM-CC-193.
- Operation of all manual ESW valves are given the same event ESW-XHE-XM-VALVE. Shouldn't they be separate events? The probability (0.1) seems high.
- Why are DG failures included in the DG-ESW fault tree.

Review of Results from SRA Sequences (from emailed spreadsheet, CDF=1.74E-08/hr)

- Using latest SPAR model received from INEEL through Pat O'Reilly, input changes to match fax from SRA.
- Reviewing SW IE change in SPAR model.
 - SRA indicated increase by a factor of 13.6
 - Increase using ratio from SPAR model for DG-ESW with and without GW dependency = factor of 6.8 ($2.839E-2 / 4.165E-3$)
 - Using duplicate fault trees in Cafta (created from faxes), increase by factor of 11.6. ($1.30E-2 / 1.12E-3$)
- Attempted to approximate the SPAR sequences from emailed spreadsheet,
 - Required an increase of SW IE by $\sim 34 \times$ ($3.75E-6/\text{hr}$), (with GW recovery of 0.4), and
 - Increased failure probability to restore ACP ?
 - ACP-XHE-NOREC-30
 - ACP-XHE-NOREC-4H
 - ACP-XHE-NOREC-90

Remove DG Failures from DG-ESW-MDP1A – 1D

- DG-ESW (without GW dependency) = $4.738E-5$
- DG-ESW (with GW dependency) = $8.815E-5$
- Indicates change in SW IE < factor of 2

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Insights from Running CNS PRA Model with SRA Inputs

- Used IE frequencies from SPAR model – TSW higher and TDC lower. Also, HEP to recover SW GW from Div II at 0.4.
- New CDFNRC = $1.79E-5$ /yr (This would be the base CDF without the GW dependency condition)

Large Early Release Frequency Results

