

## PRA Evaluation for Heavy Loads Drop

1. Use the NUREG-0612 methodology (fault tree)
2. Based on NUREG-0612 range of incidents is  $10^{-4}$  to  $10^{-5}$  per movement

NEI provided data for cask loading data indicates, at 50% confidence level,  
 $1.6 \times 10^{-4}$  per movement for LWRs  
 $6.2 \times 10^{-5}$  for LWRs + GCR

3. Use new (1996 to 1999) Navy data and 100 lift per year to revisit NUREG-0612 evaluation for a single-failure proof crane and Phase I of NUREG-0612

Mean crane failure leading to dropper load:  $3.1 \times 10^{-5}$  per year  
(NUREG-0612 mean value  $5.0 \times 10^{-5}$  per year)

4. Use new Navy data and WIPP "Trudock" crane report to estimate rigging failure leading to a dropped load (for 100 lifts)

Mean rigging failure leading to a dropped load:  $5.8 \times 10^{-6}$  per year  
(NUREG-0612 mean value  $1.5 \times 10^{-5}$  per year)

5. Assume only 10% of path is critical such that a drop may result in significant damage to the pool floor

Mean loss-of-inventory from a dropped load:  $4.0 \times 10^{-6}$  per year.

6. Reduce incident rate by a factor of 10 to add additional credit for single-failure proof crane and procedures, training, maintenance, etc

(3) Mean crane failure leading to dropper load:  $4.8 \times 10^{-6}$  per year  
(4) Mean rigging failure leading to a dropped load:  $5.8 \times 10^{-6}$  per year  
(5) Mean loss-of-inventory from a dropped load:  $1.1 \times 10^{-6}$  per year.

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