OECD Nuclear Energy Agency
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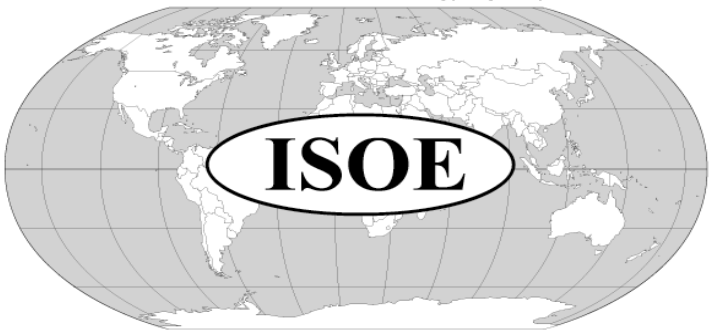

INFORMATION SYSTEM ON OCCUPATIONAL EXPOSURE

North American Technical Center

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ISOE INFORMATION SHEET

North American Technical Center
Information System on Occupational Exposure

NATC NPRE: BWR Refueling Outage Work Scope Deferral Due to Global COVID-19 Pandemic

NATC ISOE Information Sheet No. 2021- 30

NATC ISOE Information Sheet (IFS) No. 2021-30: The ISOE Information Sheet Documents an example of outage work deferral due to the global COVID-19 pandemic. The IFS describes the work deferral and estimated dose savings at a US GE BWR Mark II refueling outage conducted from March 28, 2020 at April 24, 2020.

The Refueling Outage work scope was carefully reviewed due to the impacts of maintaining a health and safe working environment during the global pandemic. The outage legal dose of record was 90.660 person rem. The total outage dose estimate was 110.0 person-rem. The total outage RWP-hrs (Radiation Work Permit) was 150,829.

The Information Sheet details the outage work orders and RWPs that were identified for postponement and deferral to a future outages due to the health and safety considerations due to the global pandemic. US NRC participated in the process of outage work deferral by reviewing and accepting some outage work deferral with justification for worker safety.

1. Outage Dose Breakdown

Final outage dose was 100.566 person-Rem vs. a goal of 98.6 person-Rem. The DLR ED bias for the outage has been calculated to be approximately 10% based on DLR reads of supplemental workers following the end of the outage. Applying this bias to the remaining ED reads from the outage results in a final projected DLR outage dose of 90.666 person-Rem.

The work scope during the U121RIO was reduced part way through the outage due to the impact of the COVID 19 coronavirus, particularly on supplemental work groups at SSES. The supplemental companies could not maintain the budgeted level of qualified employees to meet the outage schedule due to employee choosing to not work at SSES during the outage. At the direction of the Station ALARA Committee, the following evaluation was performed post outage to determine the impact this had on the outage dose. Factored into the evaluation was emergent work that occurred during the outage as well as the effect of dose rates different than expected during the outage. Below is that evaluation as presented to SAC in its entirety:

Challenge From SAC

How did we really perform, in regard to dose, this outage taking the work deferrals into account?

Approach

1. Determine dose estimate for outage work deferrals
2. Determine actual dose for emergent work
3. Determine dose impacts of dose rates different than anticipated
4. Compare the deferred work with the emergent work & work with dose rates different than anticipated

Outage Work Deferrals

Outage management scope stability spreadsheet was used to find deferred WOs.

WORK DEFERRED	EST REM
Drywell/RX FAC/ISI & Associated Support Work	3.465
Feedwater 32B Soft Seat	0.275
RWCU 144008A Repack	0.118
DW Snubbers	0.125
1V415A Motor Replacement	0.300
MSIV Actuator Replacement	0.300
Turbine Building + HPCI Deferrals	0.100
Total	**4.683**

Note 1: Station ALARA Committee (SAC)

Outage Emergent Work

EMERGENT WORK	ACT REM
Drywell Valve Cable Replacements (Broken flex) + Scaffolds	1.172
RWCU Hold Pump Room Hanger Interference With Mod	1.000
FW 10B Hinge Pin Bore Repair/Weld Overlay	0.334
Repair 141F039A	0.327
Snubber DBA101H40 Failure Response	0.218
Undervessel Carousel Repair/Conduit Removal	0.120
Damaged Insulation RWCU Penetration Room	0.090
DW RHR Spring Can Out of Tolerance	0.080
Temporary PIP cables	0.070
DW Leaking Regulator on RHR 50B	0.040
Shield Reactor Head Vent Line	0.040
1A Recirc Pump Union Leak	0.040
MSL100H1 Clamp Rotation	0.040
Rebalance 1V415A	0.030
Total	**3.601**

Dose Estimate Affected By As Found Dose Rates

DOSE RATES DIFFERENT THAN ANTICIPATED	ESTIMATED IMPACT (REM)
Cavity Decon	1.500
Drywell Shielding	0.600
Total	**2.100**

Summary

Outage performance, in regard to dose, was not significantly skewed by the scope deferrals due to COVID-19. The total estimated dose for deferred work is approximately 4.7 rem. The actual dose accrued for emergent work is 3.6 rem. There were two jobs where as-found dose rates were higher than the dose rates used for the estimate. The estimated additional dose accrued for these two jobs is approximately 2 rem. Overall, the emergent work and the jobs with as found dose rates higher than estimated completely offset the scope deferrals from a dose perspective.