ZION UNIT 2 CYCLE 12 SHUTDOWN AND EARLY BORATION RESULTS

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Objective: The Commonwealth Edison (CECo) Zion unit 2 reactor had early boration and hydrogen peroxide treatment for the cycle 12 refueling outage. This report summarizes the chemistry and radiological observations from Zion 2 cycle 12 and from the refueling (Z2R12) shutdown.

Comments: Some of the results are as follows:

Zion 2 cycle 12 mid-cycle outage 9-27-91:
* Outage extended beyond original end date to 11-12-91
* De-lithiated to < 0.1 ppm
* Borated to pre-determined shutdown margin (1381 ppm B max)
* Removed 127 curies Co-58 and 7.3 curies Co-60 in the 1st 6 days
* No nickel analyses requested (or performed)
* No radiological problems

Zion 2 cycle 12 mid-cycle outage 4-3-92:
* Outage extended beyond original end date to 6-19-92
* Cool to 175 F and maintain 175 F for 38 days
* 1 RCP operating and letdown demins aligned
* De-lithiated to < 0.1 ppm
* Borated to pre-determined shutdown margin (1273 ppm)
* Removed 1637 curies Co-58 and 34.8 curies Co-60
* Removed 4500-5000 grams nickel
* No radiological problems

Remarks/Potential for dose limitation:
Zion 2 cycle 12 end-of-cycle outage 11-12-92:
* De-lithiated to < 0.1 ppm
* Borated to > 2000 ppm within 12 hours
* Removed 822 curies Co-58 and 8.6 curies Co-60. Small removal compared to previous outages.
* Removed > 4200 grams nickel. Large removal compared to previous outages.
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End-of-cycle outage exposure totals:
* Pre-outage estimate 619 person-rem
* Actual 268.8 person-rem
* 36.6 of 268.8 person-rem was emergent work

Summary:
* Mid-cycle outage cleanup and operating chemistry control combined to contribute to radiological improvements
* May provide justification for chemistry and temperature hold during outages for ALARA purposes.


Duration: from 1991 to 1993
Funding: N/A

Status: Completed Last Update: November 24, 1993