



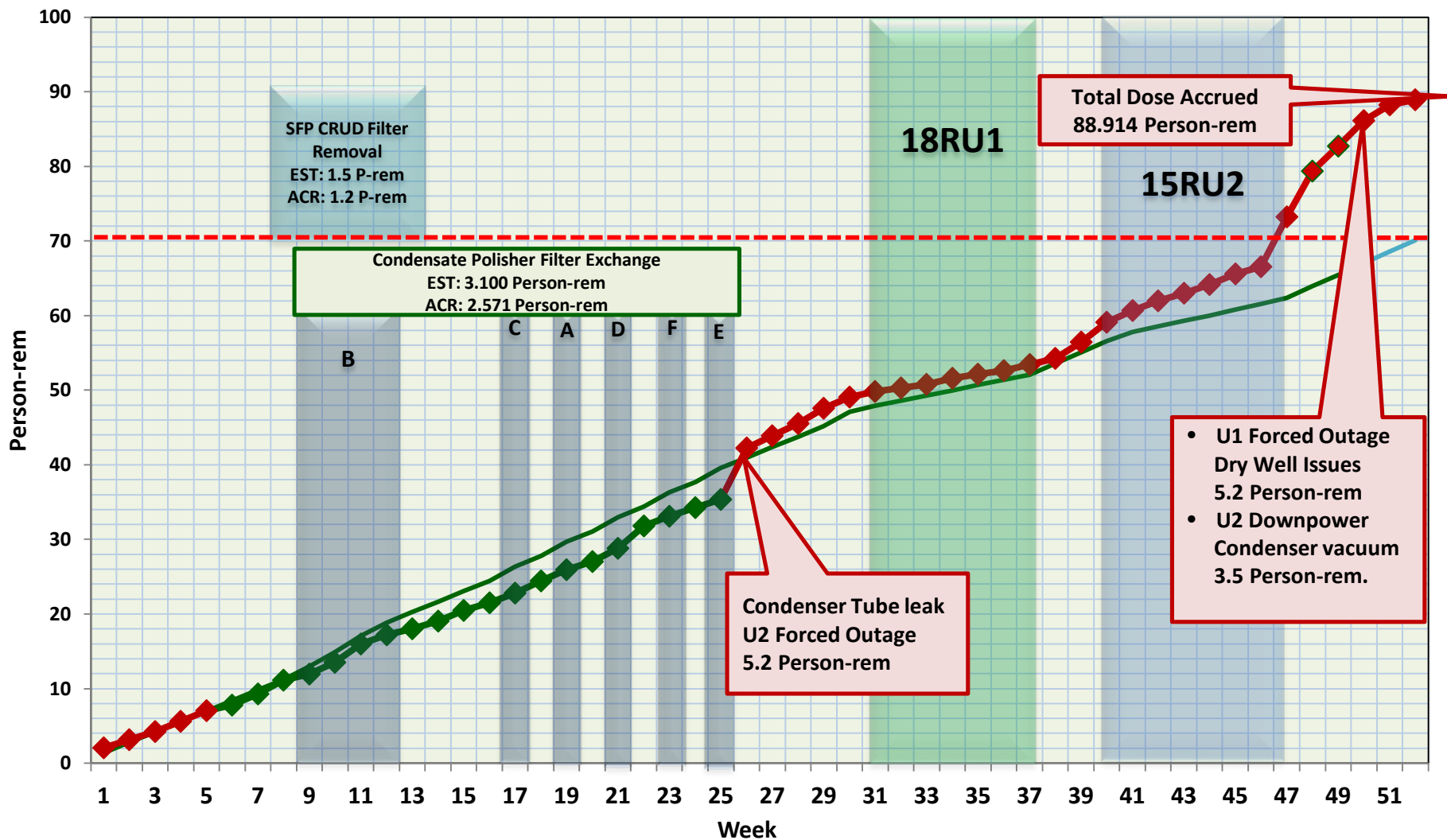
Gerencia de Centrales Nucleoeléctricas

2017 Laguna Verde NPP Dose Results

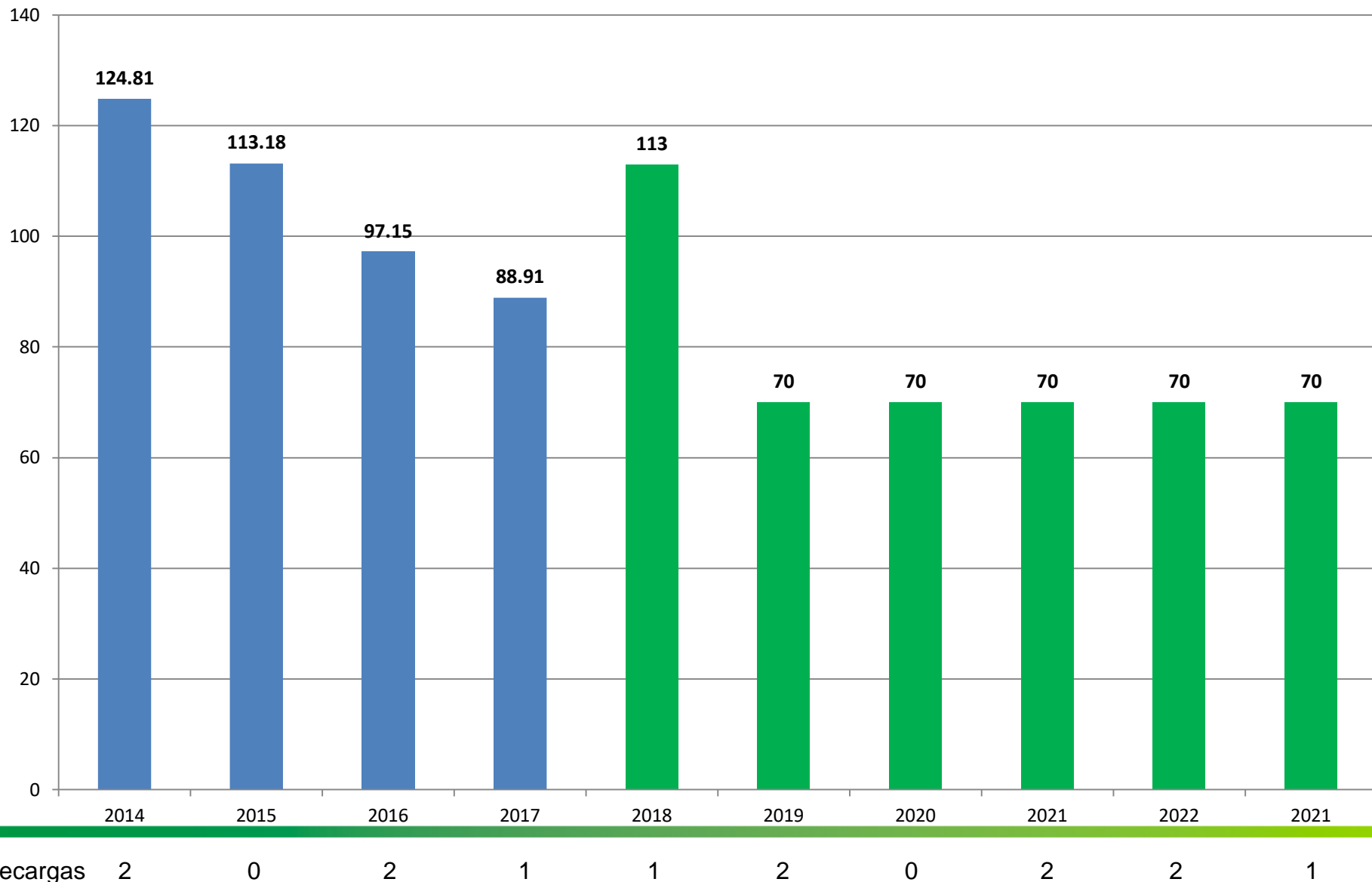
January 2018

Online Dose

Initial Dose Goal: 70 Person -rem / Final Projection: 89 Person-rem



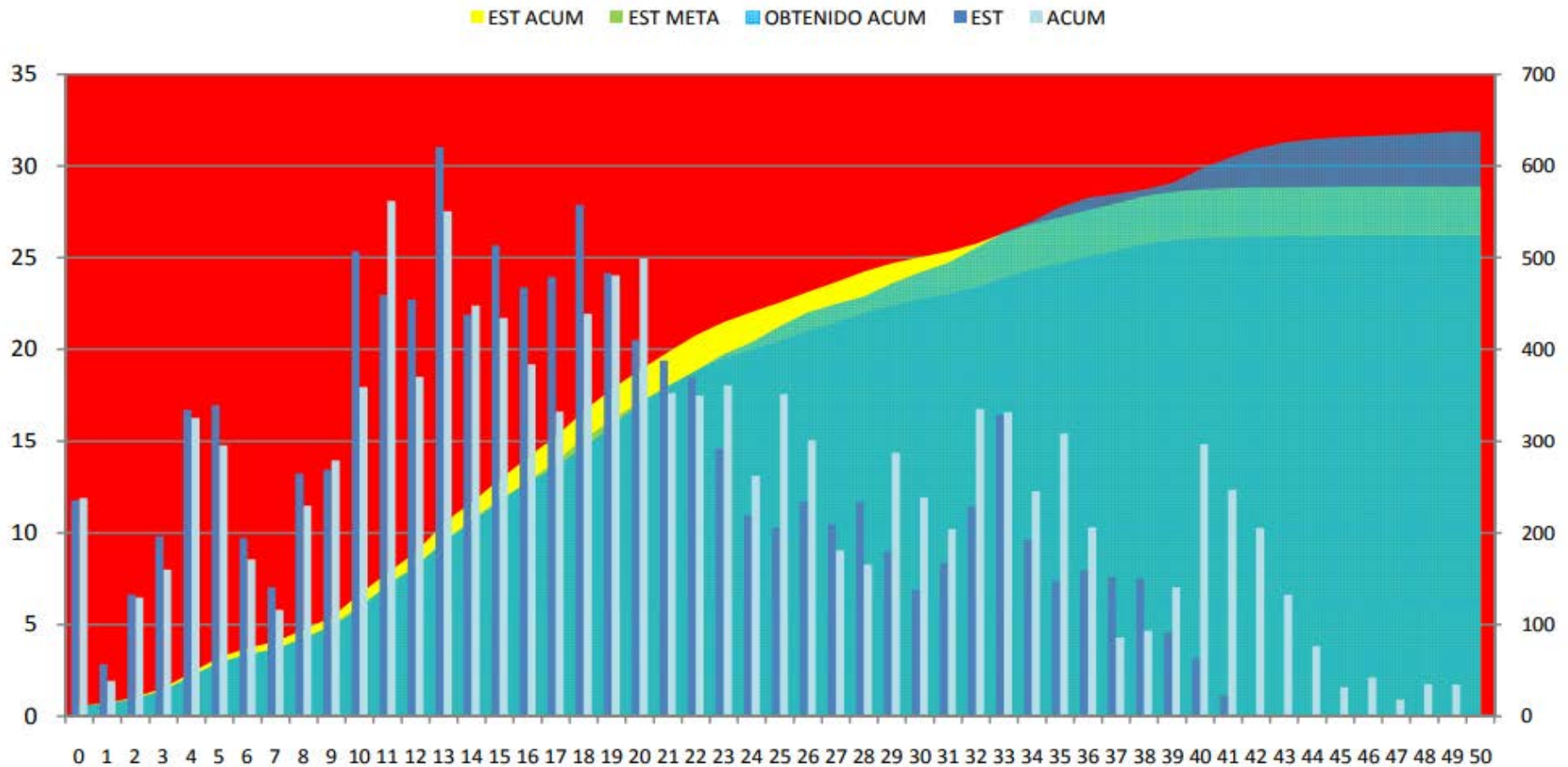
ONLINE DOSE



Outage Dose

Estimated Dose: 524 Person-rem
Dose Goal: 489 Person-rem

Accrued Dose: 642 Person-rem



17RU1

Radiation fields to estimate dose

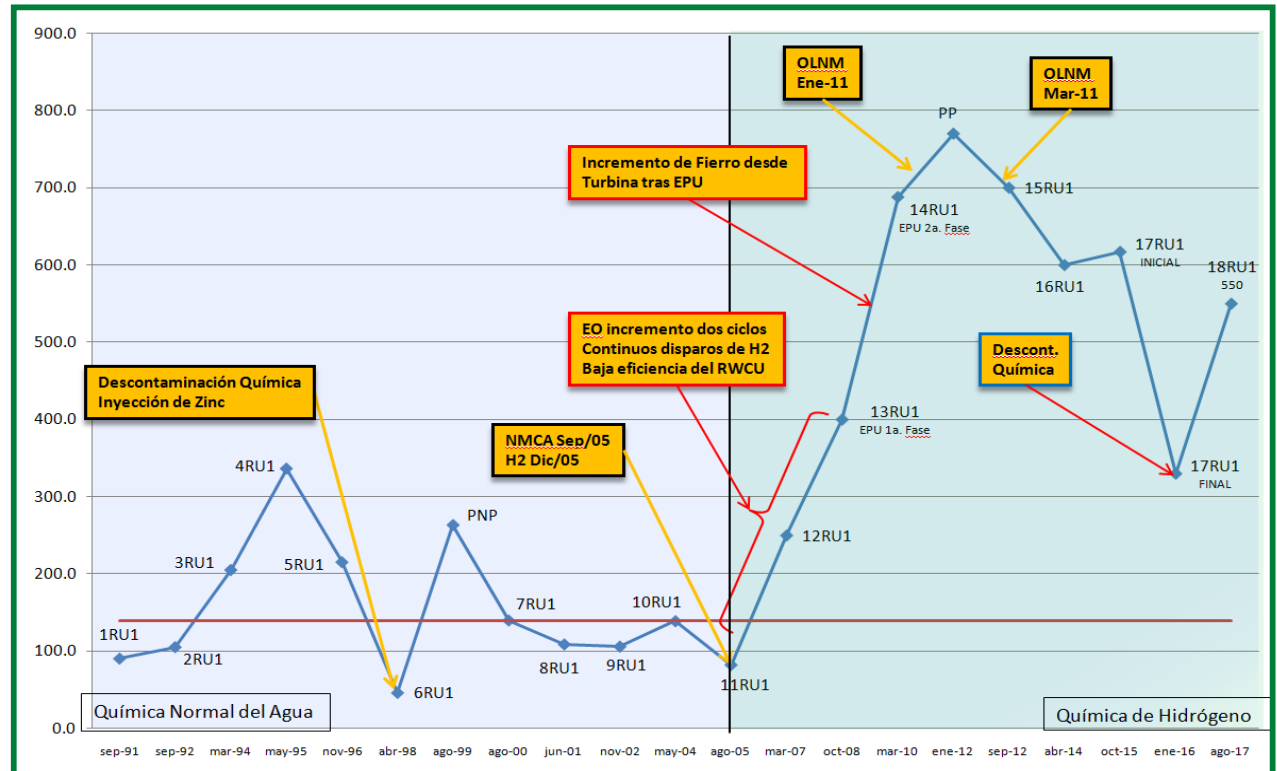
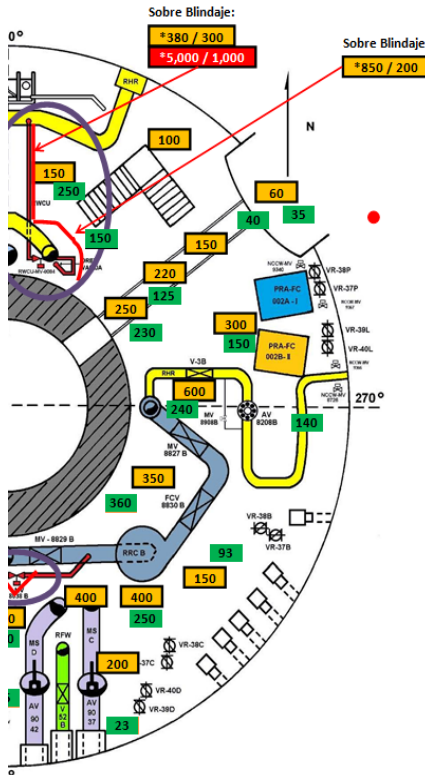
18RU1

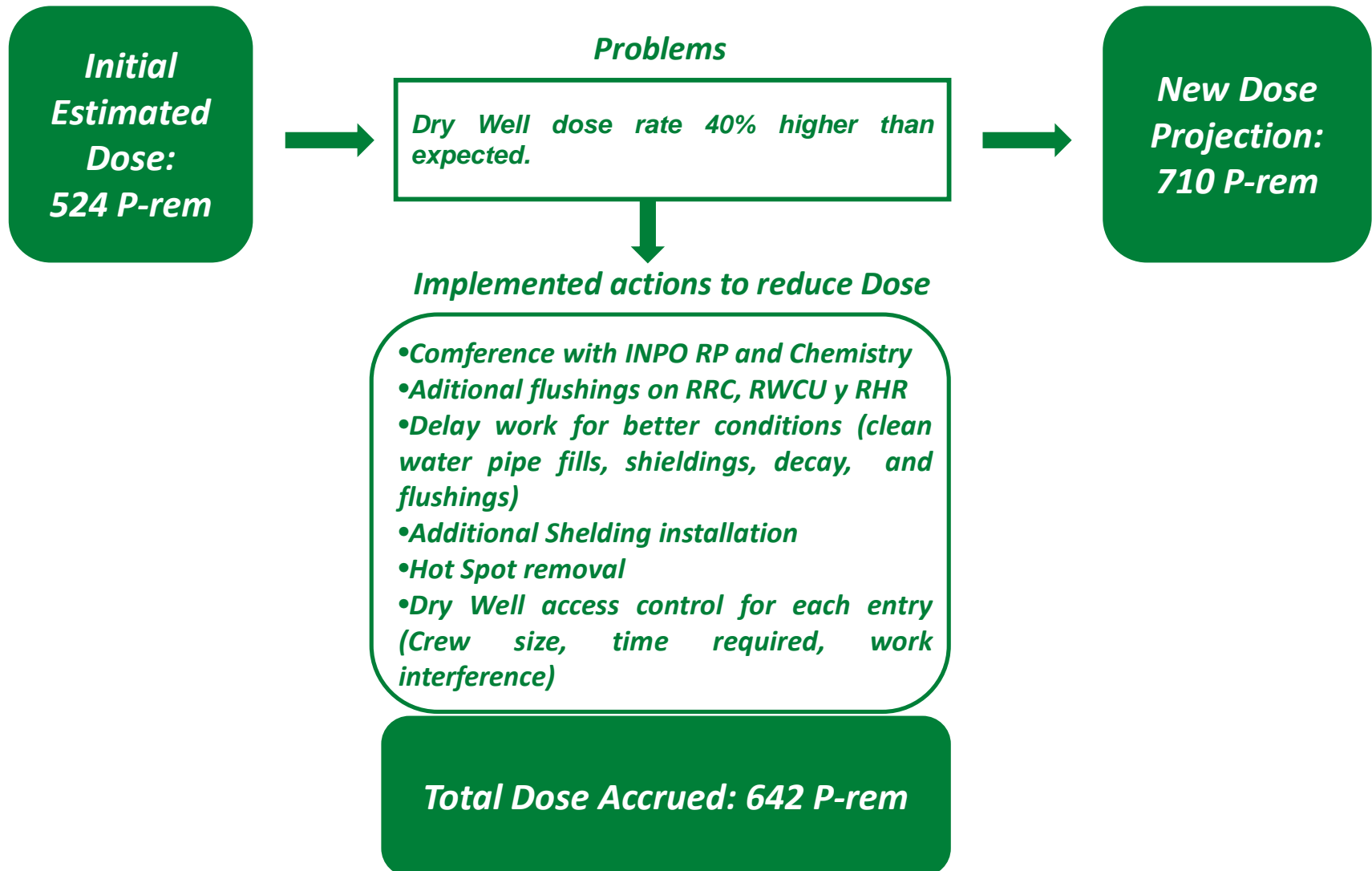
Radiation fields found

Dry Well dose rate 40% higher than expected.

Contributing within 30 days before Outage 2 SCRAMS occurred July 4 and 22

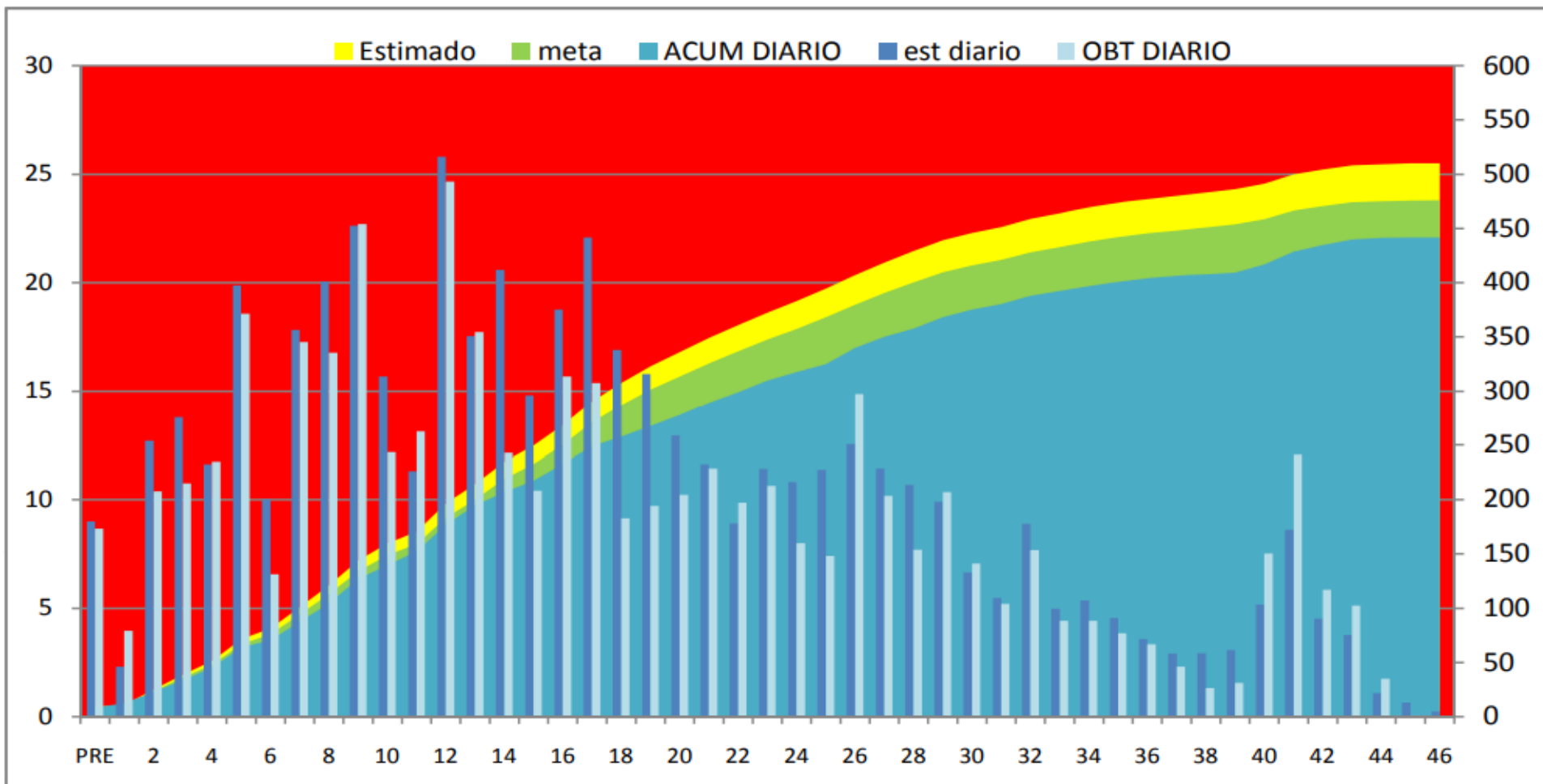
New Dose Projection:
710 P-rem





Estimated Dose: 510 Person-rem
Dose Goal: 477 Person-rem

Accrued Dose: 447 Person-rem



14RU2

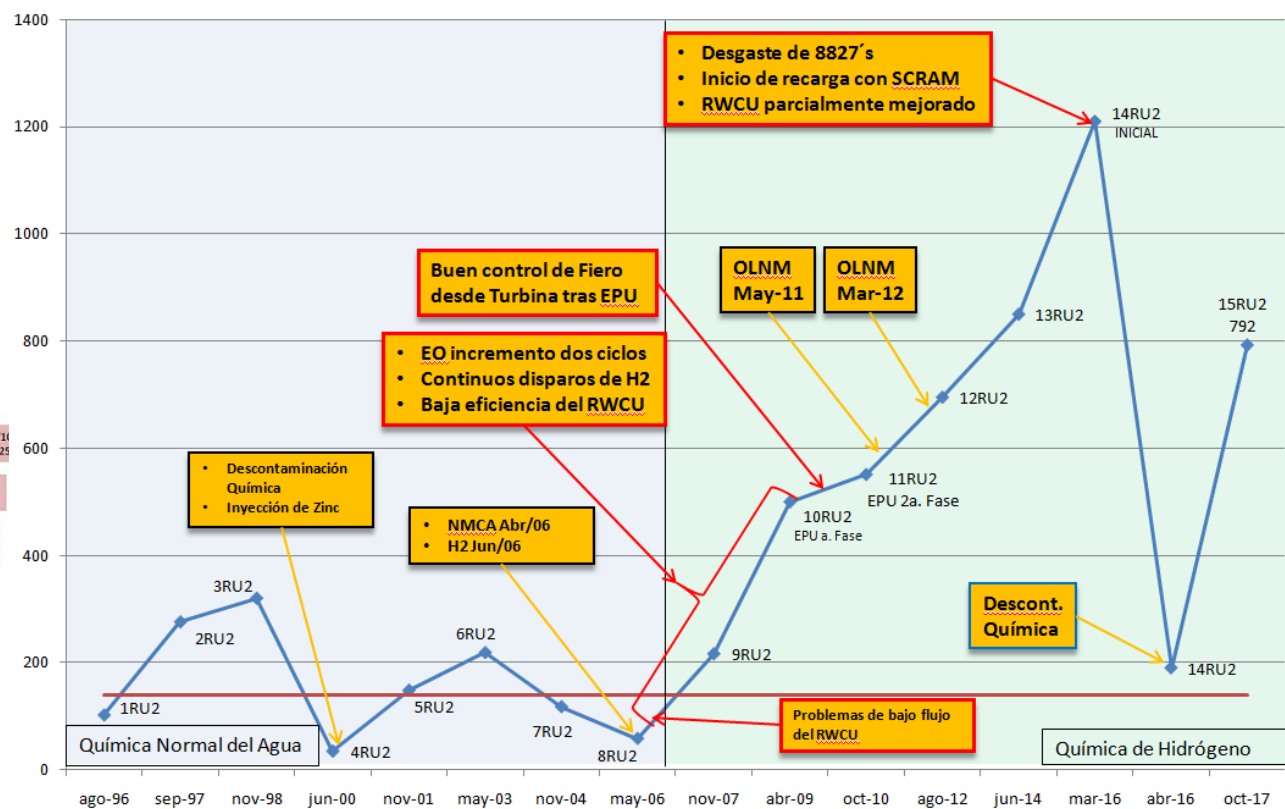
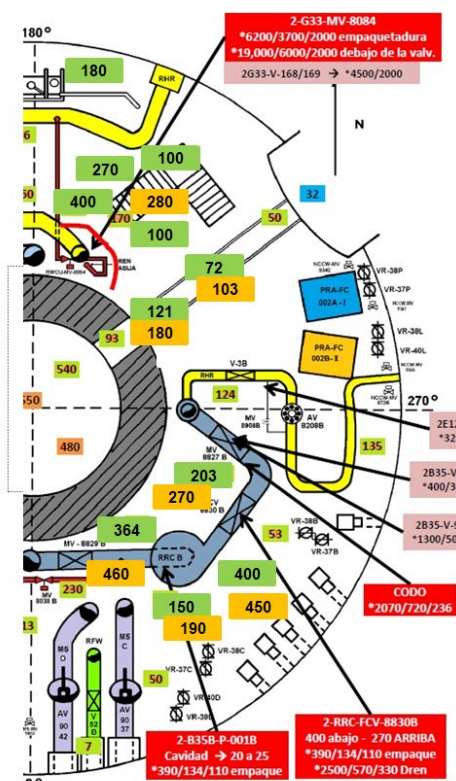
Radiation fields to estimate dose

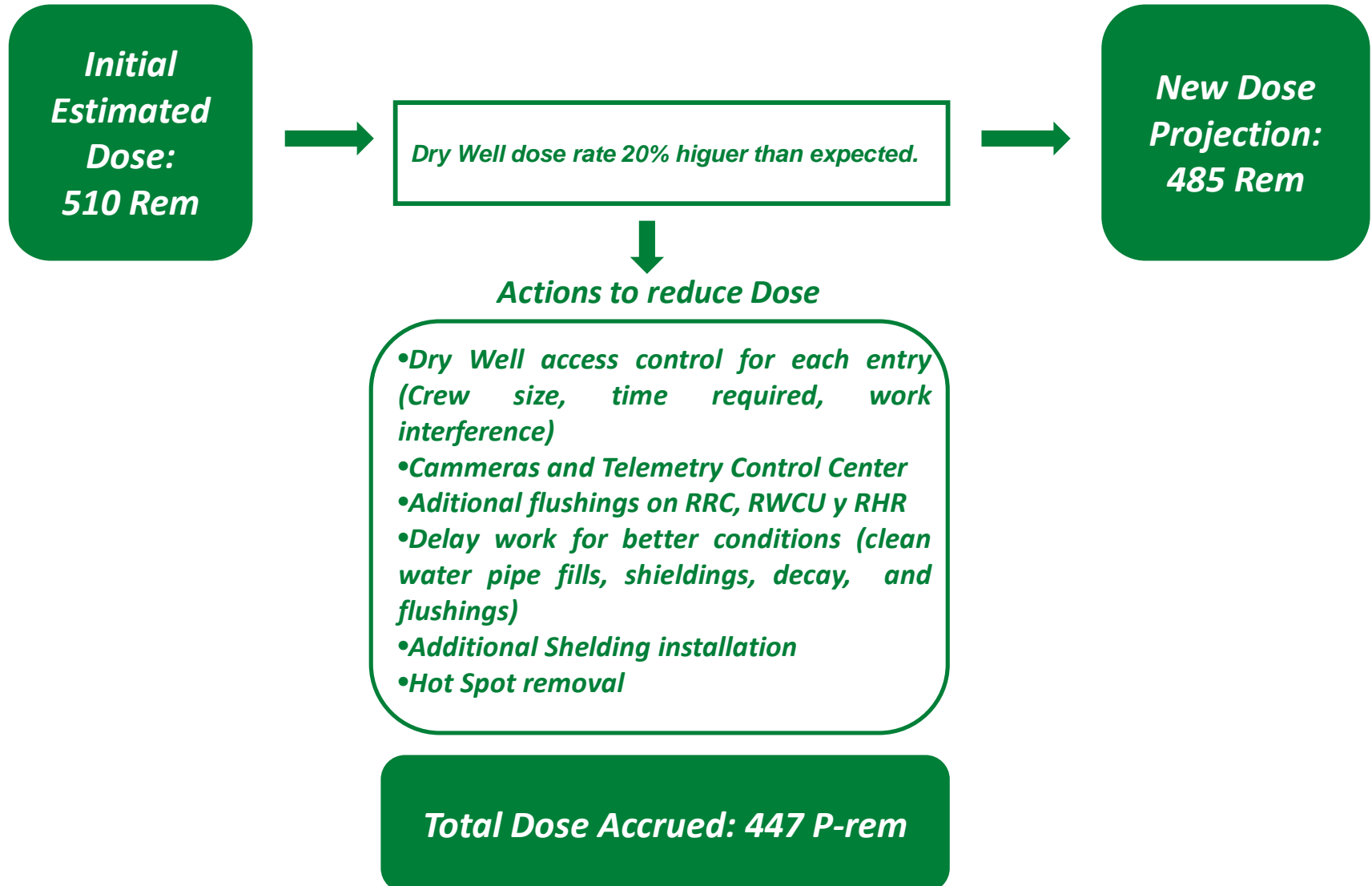
15RU2

Radiation fields found

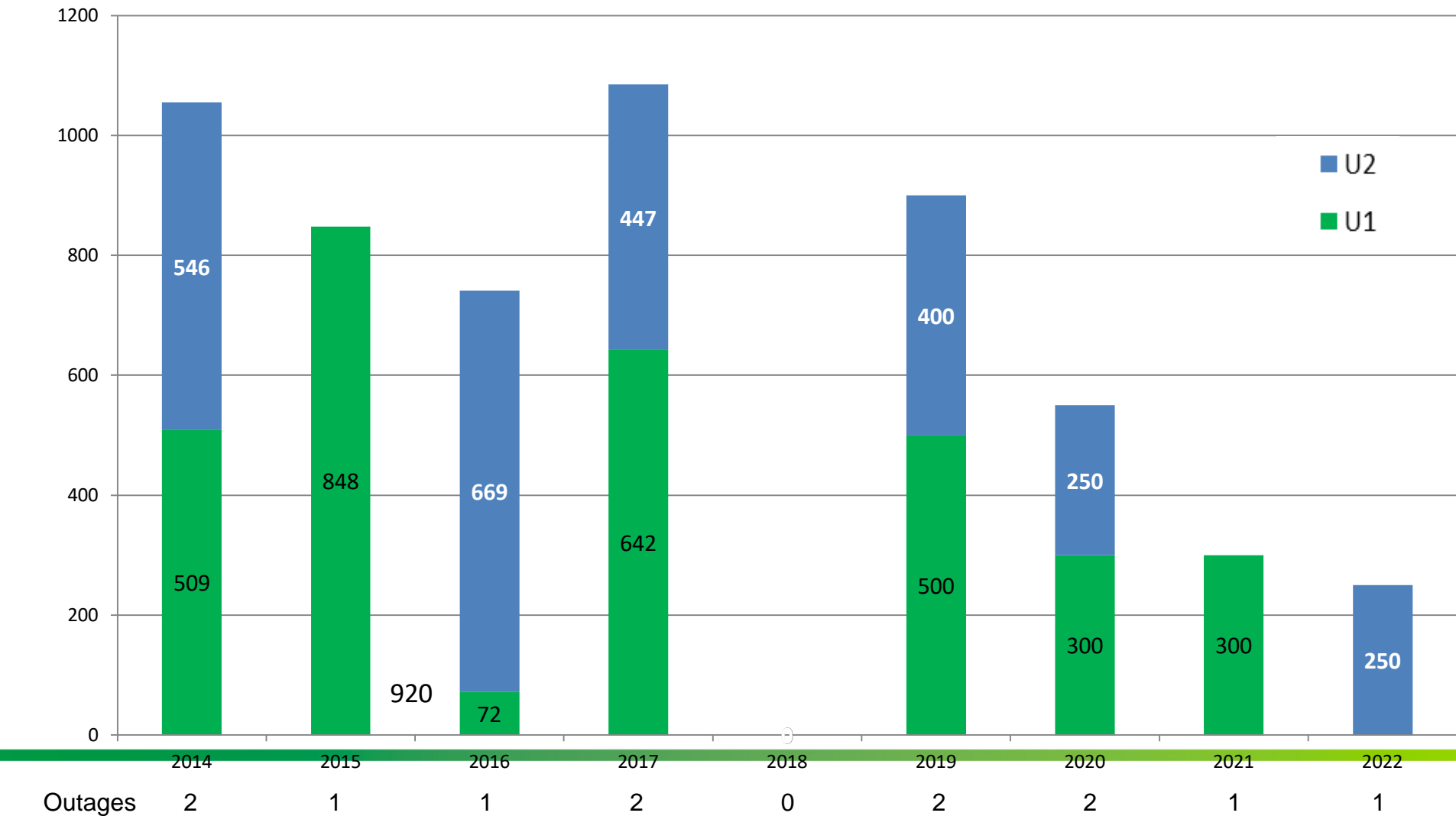
*Dry Well dose rate 20% higher than expected.
No SCRAMS contributing*

**New Dose
Projection :
485 P-rem**





OUTAGE DOSE TO 2022



SOURCE TERM REDUCTION IMPLEMENTED ACTIONS

- ***Chemical decontamination + Pasivation.***
- ***Valves elemental cobalt removal after maintenance activities.***
- ***Out core stellite components replacements (Feedwater Valves).***
- ***In core stellite components replacements (Jet Pump Wedges).***
- ***DTS filtration system during outage. (LaSalle benchmark)***
- ***Submersible Demineralizer Filters During Outage.***

SOURCE TERM REDUCTION PLANNED ACTIONS

- *Ultrasonic fuel cleaning next 2019 outage for both 19RU1 y 16RU2. (LaSalle benchmark).*
- *Chemical decontamination next 2020 for both 20RU1 y 17RU2.
(working to get it done on 2019 with HE-UFC)*
- *Suppression pool vacuuming next 2019 outage for both 19RU1 y 16RU2.*

Continue benchmarking Industry

COBALT 58 CONTRIBUTION

During previous cycles 18C1 y 15C2 Co-58 was detected on reactor water, during 2017 outages the contribution of Co-58 on oxide layer was as much as 40%.

On 2010-2011 the Cross Under pipes were recovered with Inconell-625 to reduce wearing issues. The Inconell-625 is a nickel-chromium alloy, nickel once activated decays on Co-58.

Engineering starts analyzing actions to stop incorporating nickel to reactor water for source term and fuel reliability concerns.

Gamma Scan will be perform this week

Questions
