# 2024 Mexican Country Report

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# 2023 Laguna Verde Units Highlights

- Laguna Verde 1 and Laguna Verde 2
- Reactor type: BWR
- Located in Laguna Verde, State of Veracruz, Mexico
- Annual COLLECTIVE DOSE: 2049.65person·mSv
- Average annual collective dose per unit and reactor type: 1024.8 person·mSv/unit

# Laguna Verde, Unit 1 & 2 Annual Dose

- The 2023 total collective dose for Unit 1 was 1216. person mSv.
- The total collective dose for Unit 2 was 833. person mSv.
- The total site dose in 2023 was 2049 person-mSv.

# Laguna Verdi 2024 Doses

- The 2024 annual dose for Unit 1 was 614 person mSv
- The 2024 annual dose for Unit 2 was 828 person- mSv

- The total collective dose for the site was 1442 person- mSv
- The average dose per unit in 2024 was 721 person-mSv

# First ISOEDAT Use of “Entire Year” Category by Mexico

- Cristian, ALARA Supervisor, Laguna Verde, provide detailed normal operating tasks, manhours and crew size
- Data was entered into the ISOEDAT 2022 data files
- Normal operation RWPs which did not have listed tasks in ISOEDAT where collected and will be used in developing more BWR normal operating entire year categories by NATC staff and others perhaps

# Laguna Verde ALARA Challenges

- Laguna Verde's historical collective dose both on-line and during refueling outages is higher than the BWRs average.
- On-line collective dose is high because of failures or shortcomings in equipment reliability.
- Some examples are steam leaks, reactor water clean-up system pumps failures, radwaste treatment systems failures. Refueling outage collective dose is high mainly because the relatively high radioactive source term (Co-60) caused high radiation areas

# BWR Source Term Challenges

- High Co-60 levels originated by the reactor water chemical instability induced in turn by the application of noble metals and hydrogen since 2006 to prevent the stress corrosion cracking of reactor internals.
- High C0-60 levels strongly influencing dose rates at the plant and specifically in the drywell during refueling outages.
- Refueling working areas are between 70 and 80% of the collective dose of the refueling is obtained.

# Major Outage Tasks

- An additional RP control point was implemented on the refueling floor due to the following high dose activities:
- disassembly and assembly of the vessel
- unloading and loading of fuel
- activities with control rods
- nuclear instrumentation
- handling of materials and equipment with high levels of radiation and radioactive contamination

# Previous Dose Reduction Initiatives Maintained

- Installation of shields
- Installation of solid collector filter
- Use of selective Co-60 resin in the demineralization filters implemented for the control and reduction of the source term

# New Co-60 Reduction Steps Implemented in 2019

- **Chemical decontamination:**

**Chemical decontamination was performed on the A/B loops of the recirculation system and on the G33 system in the dry well and reactor building.**

# Questions ?

Gracias