Laguna Verde Nuclear Power Plant

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Laguna Verde NPP

Located 70 km north of Veracruz City, Veracruz, Mexico

Approximately 5% of total electricity in Mexico is generated in Laguna Verde NPP
Laguna Verde NPP Summary

- Two BWR 5 Units – Mark II Containment.
- Core Size 444 Fuel Assemblies – 109 Control Rods.
- “C” Lattice.
- Commercial Operation: Unit 1 July 1990, Unit 2 April 1995.
- Unit 1 is running Cycle 19 and Unit 2 Cycle 16.
- Fuel Design: GE14, Unit 1 and 2 full cores.
- Nuclear Instrumentation: SRNM, NUMAC PRNM, OPRM, GAMMATIP.
- Licensed Operating Flexibilities: ICF, MEOD, ARTS, OPTION III, SLO (only analyzed), FWTR (only analyzed).
- License Amendment Request submittal for MELLLA+, DSS-CD, IMLTR Rev. 4, PRIME.
- Full BORAL racks in Spent Fuel Pool with Coupons.
Laguna Verde NPP Summary

<table>
<thead>
<tr>
<th>POWER</th>
<th>Year</th>
<th>MW(th)</th>
<th>MW(e)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Original:</td>
<td>1990 - 1999</td>
<td>1931</td>
<td>654</td>
</tr>
<tr>
<td>Uprate: 5%</td>
<td>1999</td>
<td>2027</td>
<td>682</td>
</tr>
<tr>
<td>Uprate: 20%</td>
<td>2010*</td>
<td>2317</td>
<td>810</td>
</tr>
</tbody>
</table>

* EPU LAR approval: U1 (2016), U2 (2014)
## Laguna Verde NPP
### EPU Implementation Summary

<table>
<thead>
<tr>
<th>BOP Major Changes</th>
<th>No. of Refueling Outages for implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit 1</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>RO13 (August 2008)</td>
</tr>
<tr>
<td></td>
<td>RO14 (March 2010)</td>
</tr>
<tr>
<td></td>
<td>In RO17 (October 2015 Steam Dryer welding’s reinforcement *)</td>
</tr>
<tr>
<td><strong>Unit 2</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>RO11 (September 2010)</td>
</tr>
<tr>
<td></td>
<td>RO12 (July 2012)</td>
</tr>
<tr>
<td></td>
<td>In RO13 (June 2014 Steam Dryer welding’s reinforcement *)</td>
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* Required for getting EPU LAR approval
# Spent Fuel Disposition

## Current Plan

Recovery of the capacity of Spent Fuel Pools in Laguna Verde NPP

<table>
<thead>
<tr>
<th>UNIT</th>
<th>Cells Occupied</th>
<th>% Empty Cells</th>
<th>Total Fuel bundles to transfer in first Campaign</th>
<th>% Empty Cells after first Campaign</th>
<th>% Cells recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV Unit 1</td>
<td>3001 (94.5%)</td>
<td>5.5%</td>
<td>623 (7 MPC)</td>
<td>25.1%</td>
<td>19.6%</td>
</tr>
<tr>
<td>LV Unit 2</td>
<td>2728 (81.3%)</td>
<td>18.7%</td>
<td>534 (6 MPC)</td>
<td>35.5%</td>
<td>16.8%</td>
</tr>
</tbody>
</table>

**LV Unit 1**

- 2104 Spent Fuel Bundles
- 453 Others materials
- 444 Empty Cells For One full Core offload

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**LV Unit 2**

- 1831 Spent Fuel Bundles
- 453 Others materials
- 444 Empty Cells For One full Core offload

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**ISFSI**
Spent Fuel Disposition
Current Plan

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

**Phase 1**

**Goal:** To build the site for dry cask containers and acquire 13 containers (100%)  

**Phase 2**

**Goal:** Licensing the site for Operations (100%)

**Phase 3**

**Goal:** Make a service contract for first campaign (100%)

**Phase 4**

**Goal:** First campaign to transfer spent fuel from SFP to ISFSI (COULD BE IN 2019)

U1: (Sep-18/Oct-18)
U2: (Nov-18/Dic-18)
PHASE 1

✓ Building the ISFSI site according the regulatory framework and approval for the regulator Body (CNSNS), IN PROCESS.

✓ Final testings of the ISFSI site.
Potential Impacts

- Change of Government, December 1\textsuperscript{st} 2018.

- Energy strategy in México.

- No budget for the next campaign of ISFSI for Unit 1.
Mechanisms

❖ Communication
  o Meetings with our contractors.
  o Videoconferences.
  o Letter and emails between operators and regulators.

❖ Information Management
  o Applicable Procedures to documents vault.

❖ Knowledge Management
  o Theoretical Training
  o Field Training
  o Conditional Reports.
THANKS FOR YOUR ATTENTION