Decommissioning Principles

Safety
Stewardship
Engagement

For more information on SONGS visit www.SONGScommunity.com
Enhanced Website

Welcome to SONGS
Decommissioning

The San Onofre Nuclear Generating Station (SONGS) is now in the process of decommissioning. We are committed to meeting our responsibilities and doing the right thing for our region throughout this process. Our core principles are Safety, Stewardship, and Engagement.

About Decommissioning
Learn the story of the San Onofre Nuclear Generating Station (SONGS) and the decommissioning process.

Safe Storage of Used Fuel
Get more information on the process for safely managing and storing used nuclear fuel.

6/27 CEP Meeting - 5:30 - 8:30 p.m.
Casino San Clemente
140 West Avenida Pico
San Clemente, CA 92672.

Learn More
Be Informed
Watch the Livestream
FUEL TRANSFER TO PASSIVE DRY CASK STORAGE
On-site Used Fuel Storage

CURRENT STATE

Spent Fuel Pools

1928
2668 fuel assemblies

Existing ISFSI

50 canisters (1187 fuel assemblies)

EXPANDED ISFSI

73 canisters
(2668 fuel assemblies)
+
Existing 50 canisters
(1187 fuel assemblies)

FUTURE STATE

3855 fuel assemblies in 123 canisters
Transfer Status

Forecast Complete by June 2019

- Gold stars show cavity enclosure containers (CECs) that have been loaded, to date, with spent fuel.
- Each CEC can hold up to 37 fuel assemblies.
### Used Fuel Readiness for Transportation

- Some fuel qualified for transport now
- Remaining fuel qualifies over time

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Decommissioning San Onofre Nuclear Generating Station  Safety | Stewardship | Engagement
California Environmental Quality Act (CEQA)

- Start of major decommissioning requires:
  - Certification of EIR* by California State Lands Commission (CSLC) under CEQA, and
  - Issuance of CDP** by California Coastal Commission (CCC), relying upon EIR* by CSLC

* Environmental impact report
** Coastal development permit
## Anticipated Timeline and Public Hearings

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<td>CSLC prepares and issues draft EIR</td>
<td>Late June, 2018</td>
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<td>Draft EIR public comment period complete (60 day duration)</td>
<td>Late Aug, 2018</td>
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<td>SCE files CCC coastal development permit (CDP) application</td>
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<td>CSLC addresses public comments and issues final EIR</td>
<td>Mid to Late Nov, 2018</td>
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<td>CSLC public meeting to consider certification of EIR and approval of lease (San Diego)</td>
<td>Dec. 11, 2018</td>
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<td>CCC public meeting to consider approval of CDP</td>
<td>1Q 2019</td>
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Decontamination & Dismantlement

Forecast Start 2019

SONGS Decommissioning Solutions
Future State

Today

Late 2020s
FOLLOW-UP TO QUESTIONS
Follow-Up Topics

✓ Passive canister cooling
✓ Basket shims
✓ SONGS Experts Team
✓ Extreme events
✓ Tsunamis & ISFSI protection
✓ ISFSI monitoring
✓ Radiological reports
✓ Insurance
Passive Cooling

Holtec HI-STORM UMAX MPC-37
Follow-Up Topic
BASKET SHIMS
Internal Helium Circulation

MPC-37
Basket Shim Locations

“Honeycomb” Basket for Fuel Assemblies

Tops of Shims
Types
Shims Available at Booth

Monolithic Shim

Standoff Shim Pin

Follow-Up Topic
BASKET SHIMS
4 Loaded Used Fuel Canisters

- **Structural Analysis**
  - Shims continue to provide support for the fuel basket

- **Thermal Analysis**
  - Design limits: 400 °C peak fuel clad temperature (PCT)
  - Original design: 44 KW heat load; 367 °C PCT; 33 °C margin from design temperature limit
  - Licensed heat load limit: 35 KW; 20% margin from design heat load

- **Assuming no helium circulation**
  - 38 KW heat load; 348 °C PCT; 52 °C margin from design temperature limit
  - SONGS canisters loaded at 28 KW; 26% below analyzed heat load

- **Other sites continuing to load using standoff shim pin model**
Conclusions

• Holtec, SCE & 3rd party evaluations affirm 4 canisters with standoff shim pins are safe for storage

• Preloading inspections and loading activities did not indicate any issues with the shim pins in 4 canisters

• Loading below license bases increased margin

• All other SONGS canisters will utilize monolithic shims

• SCE overseeing canister fabrication
## SONGS Experts Team

<table>
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<th>Panelist</th>
<th>Expertise</th>
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<tr>
<td>Kris Cummings</td>
<td>Nuclear engineering</td>
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<tr>
<td>Tom Isaacs</td>
<td>Siting &amp; licensing</td>
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<tr>
<td>Gary Lanthrum</td>
<td>Transportation</td>
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<tr>
<td>Allison Macfarlane</td>
<td>Siting &amp; licensing</td>
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<tr>
<td>Rick Moore</td>
<td>Transportation</td>
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<tr>
<td>Dr. Josie Piccone</td>
<td>Radiation monitoring &amp; detection</td>
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</table>
Experts Team Update

• Experts Team advising SCE on:
  – Facilitating offsite storage of used fuel
  – Transportation of used fuel

• Strategic Plan for Offsite Storage
  – Identifying and advancing alternatives for offsite storage
  – SCE selecting consultant to prepare Plan with input from Experts Team

  **Timing: Plan prepared by late 2019**

• Conceptual Transportation Plan (CTP)
  – Conduct initial planning assuming a site in southwestern U.S.
  – Separate consultant to be retained to prepare CTP
Extreme Events Workshop

- Special CEP workshop
- Explore extreme events / threats
- Guest speakers to be determined
- Opportunity for public dialogue
- Targeting 4Q 2018

More to come…
ISFSI Protection

- Licensing basis is 27 feet for “perfect storm”
- ISFSI protected by 28-foot-tall seawall
- Scripps research suggests additional tsunami margin exists
  - Maximum credible tsunami ~10 feet
  - San Onofre tsunami risk is low
    - Tsunamis originated far away are blunted by underwater geographic structures
    - Nearby underwater structures do not lend themselves to large landslides
- If somehow inundated
  - Holtec system designed to be submerged by 125 feet of water
  - AREVA system designed to be submerge by 50 feet of water
ISFSI Monitoring

- Daily visual inspections of ISFSI and air vents
- Radiological monitoring during fuel transfer operations
- Full radiological survey after every fuel transfer
- Temperature monitoring
- Continuous security monitoring
- Quarterly radiological surveys
Current and Future Radiological Reports

• Current reports
  – Filed annually with NRC
  – Available to public on ADAMS website
  – Newly available via SONGScommunity.com
    https://www.songscommunity.com/stewardship/responsible-stewardship
  – Not written for a general audience

• SCE developing new report
  – Will be posted regularly to SONGScommunity.com
  – Designed for a general audience
Current Radiological Reports

2017 San Onofre Nuclear Generating Station
Annual Radiological Environmental Operating Report

License Numbers:
DPR-13, NPF-10, NPF-15

April 2018

Prepared by:
Chesapeake Nuclear Services
GEL Laboratories

SAN ONOFRE NUCLEAR GENERATING STATION
Annual Radioactive Effluent Release Report
2017
January - December
Current Reports

• Annual Radioactive Effluent Release Report
  – Covers liquid and gaseous effluents released by SONGS

• Annual Radiological Environmental Operating Report
  – Covers radiological impact of SONGS on environment
  – In-field samples on-site and surrounding area
    • Air, water, soil, vegetation, kelp, marine life

• Reports are carryovers from operations to decommissioning

• Provided annually to NRC, available on ADAMS website
### Current Report Example

**Follow-Up Topic**

**RADIOLOGICAL REPORTS**

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*ND = Non Detectable*
Some data from Gene Stone, 12 June
San Diego to Washington DC
On the Flight to DC
On the flight home
Insurance Update

- Nuclear Electric Insurance Limited (NEIL) provides onsite coverage
- American Nuclear Insurers (ANI) provides offsite coverage
  - Exited secondary coverage to avoid exposure due to event at operating plant

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