SAN ONOFRE
COMMUNITY
ENGAGEMENT
PANEL

CEP Regular Meeting

SONGS Strategic Plan Update and Decommissioning Status

Thursday, November 19, 2020

5:30 - 8:30 p.m.

Virtual Meeting for Social Distancing

THIS MEETING IS BEING RECORDED

Agenda Topic	Presenter(s)	Time
CEP and SCE opening comments	David Victor Doug Bauder	5:30 – 5:40
CEP general community updates	David Victor Dan Stetson Martha McNicholas	5:40 – 5:50
SONGS decommissioning update • The big picture • Dismantlement update – timeline and current work activities • Dry cask storage monitoring – radiological survey results • Sea-level rise and monitoring – status and overview	Doug Bauder Vince Bilovsky Randall Granaas/Eric Goldin Ron Pontes	5:50 – 5:55 5:55 – 6:05 6:05 – 6:15 6:15 – 6:25
Strategic plan to relocate spent fuel offsite • Overview of alternatives assessment, overarching findings, potential actions, key takeaways, and next steps	Elizabeth Helvey Tom Isaacs Joe Hezir Manuel Camargo	6:25 – 7:05
Break		7:05 – 7:10
General public comment period		7:10 – 8:10
Facilitated public dialogue	Dan Stetson Martha McNicholas	8:10 – 8:25
SCE and CEP closing comments	Doug Bauder David Victor	8:25 – 8:30

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Welcome and Opening Comments

David Victor and Doug Bauder

Thank you

SAN ONOFRE COMMUNITY ENGAGEMENT PANEL

Rich Haydon

State Park Superintendent III
and CEP Member

Paul Wyatt

Dana Point City Council Member
and CEP Member

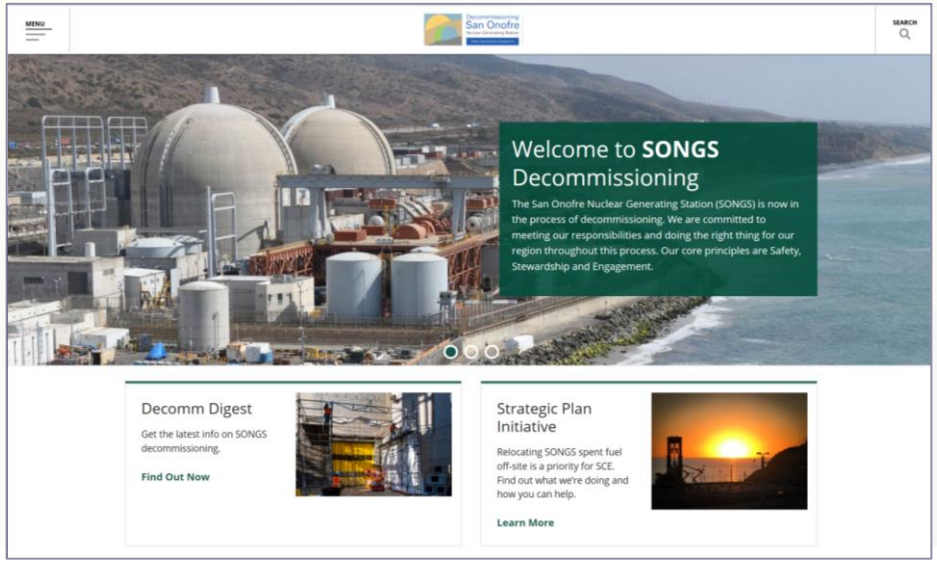
Opening Comments
David Victor

1. **Directions for submitting questions and sign-up for public comment on Nov. 19 meeting webpage**
   - https://www.songscommunity.com/community-engagement/meetings/community-engagement-panel-meeting-via-skype-20200831

2. **Public comment and facilitated dialogue**
   - Sign up for public comment via the question form at https://on.sce.com/cep
   - Questions submitted in advance via NUCCOMM e-mail addressed first
   - Dan Stetson and Martha McNicholas will review comments and facilitate discussion

Opening Comments
Doug Bauder

- COVID-19 update
- Decommissioning information on www.songscommunity.com



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CEP General Community Updates

General Updates

1. **August 20 CEP public question regarding Native American cultural resources at the *EnergySolutions* disposal facility in Clive, Utah**
   - Inventory performed by prior owner and summarized in NUREG 1476
   - Final EIS to construct and operate facility, Reference Section 4.8 pages 4-32 and 4-33 available on-line and here

2. **Letter from Dr. Kris Singh of Holtec clarifies comments from 2014 CEP meeting**
   - Letter available online and here

3. **Response from NRC regarding ISFSI security rulemaking available online and here**

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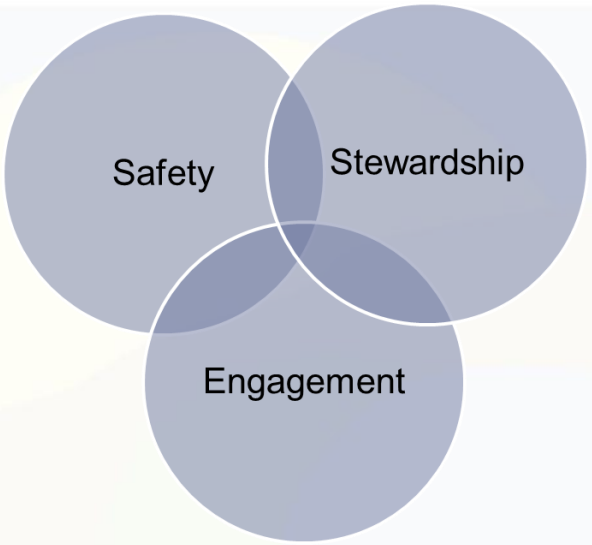
Decommissioning
San Onofre
Nuclear Generating Station

SONGS
The Big Picture

Doug Bauder
Chief Nuclear Officer and
VP Decommissioning

Decommissioning Principles



Safe and prompt **deconstruction**

Defense-in-depth for **on-site storage** of spent nuclear fuel

Take action in an effort to **relocate spent fuel** off site

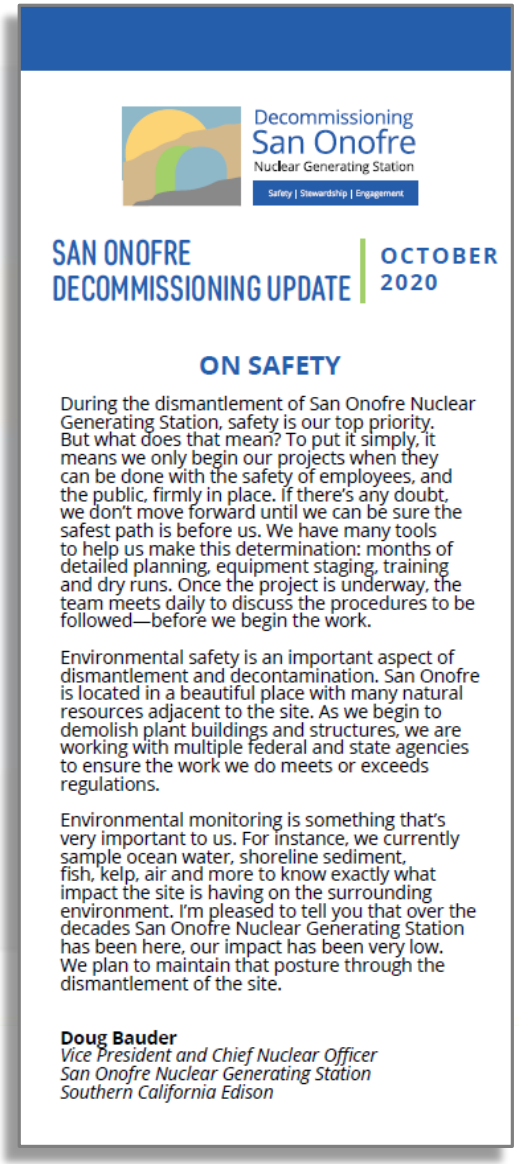
Big Picture

- First enclosed railcars with solid waste shipped
- Ensuring safe on-site storage
  - Monitoring sea-level rise
  - Horizontal storage radiation surveys (video)
- Strategic Plan to relocate spent fuel
  - Update today
  - Final plan to be released in 1Q 2021

Quarterly Update

- Latest tri-fold mailed in October
- Posted online:

  https://www.songscommunity.com/about-decommissioning/decommissioning-san-onofre-nuclear-generating-station



Decommissioning San Onofre Nuclear Generating Station

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SAN ONOFRE DECOMMISSIONING UPDATE | OCTOBER 2020

ON SAFETY

During the dismantlement of San Onofre Nuclear Generating Station, safety is our top priority. But what does that mean? To put it simply, it means we only begin our projects when they can be done with the safety of employees, and the public, firmly in place. If there's any doubt, we don't move forward until we can be sure the safest path is before us. We have many tools to help us make this determination: months of detailed planning, equipment staging, training and dry runs. Once the project is underway, the team meets daily to discuss the procedures to be followed—before we begin the work.

Environmental safety is an important aspect of dismantlement and decontamination. San Onofre is located in a beautiful place with many natural resources adjacent to the site. As we begin to demolish plant buildings and structures, we are working with multiple federal and state agencies to ensure the work we do meets or exceeds regulations.

Environmental monitoring is something that's very important to us. For instance, we currently sample ocean water, shoreline sediment, fish, kelp, air and more to know exactly what impact the site is having on the surrounding environment. I'm pleased to tell you that over the decades San Onofre Nuclear Generating Station has been here, our impact has been very low. We plan to maintain that posture through the dismantlement of the site.

Doug Bauder
Vice President and Chief Nuclear Officer
San Onofre Nuclear Generating Station
Southern California Edison

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Decommissioning
San Onofre
Nuclear Generating Station

SONGS Decommissioning Update

Vince Bilovsky
Director, Decommissioning Project

Decommissioning San Onofre Nuclear Generating Station

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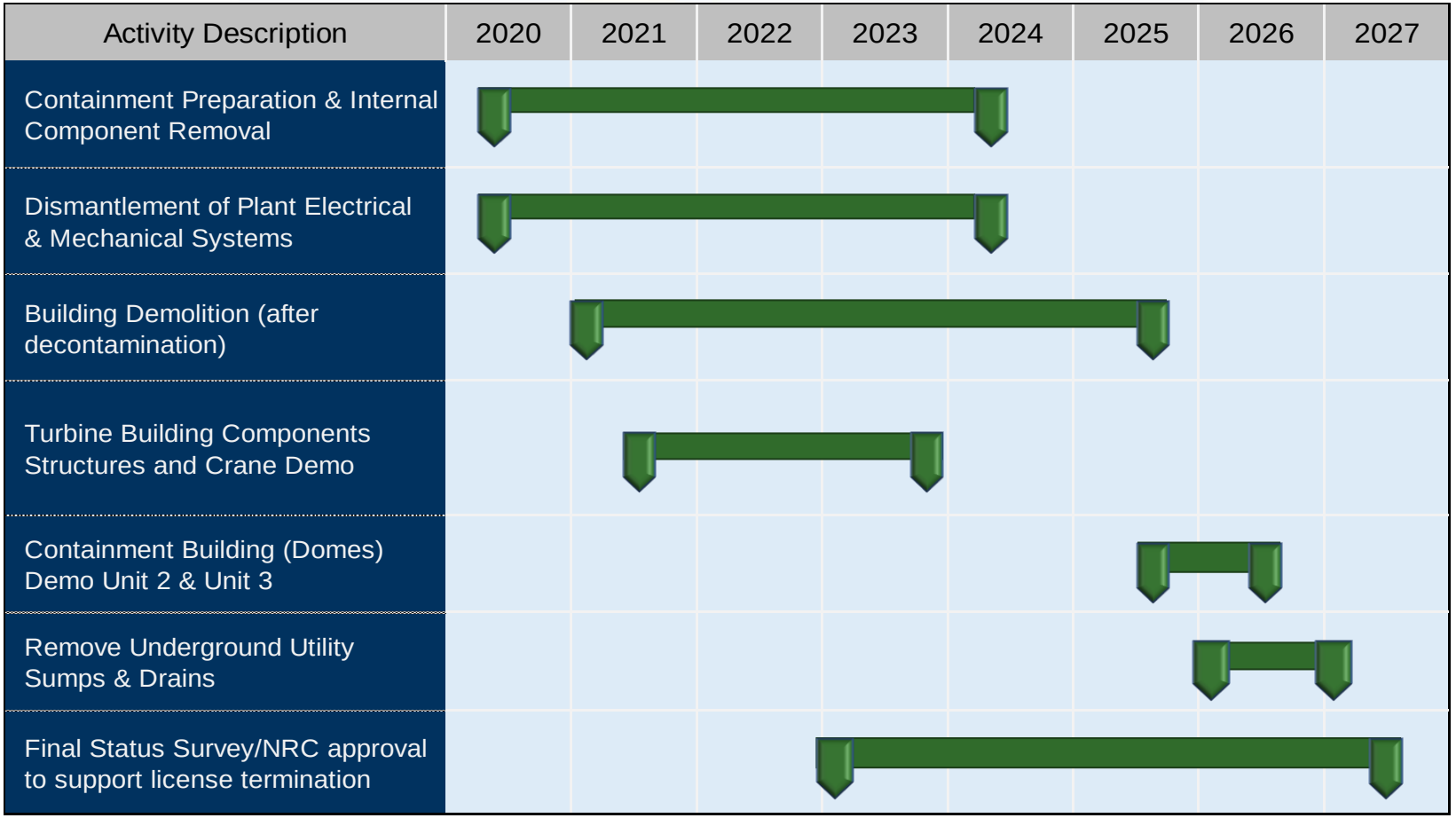
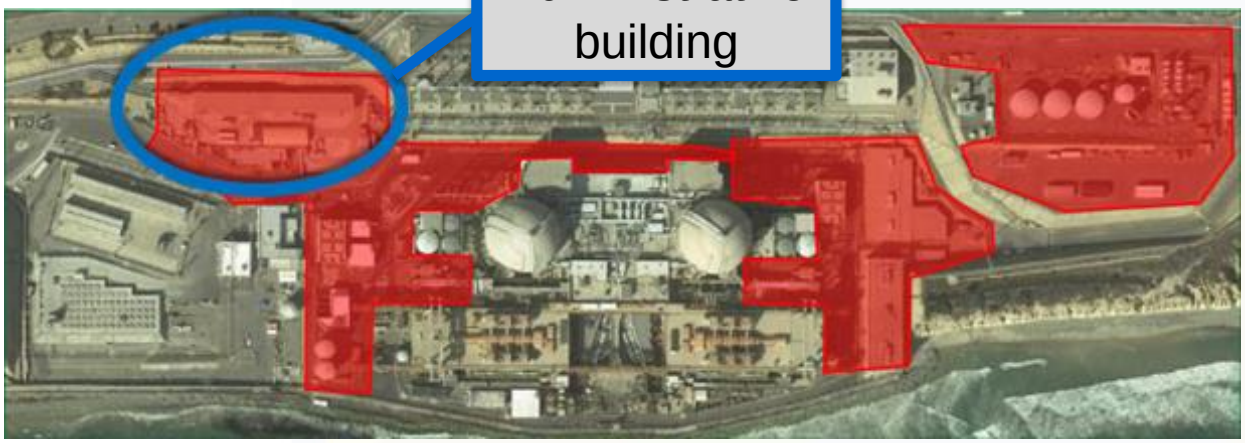
Major Work Streams



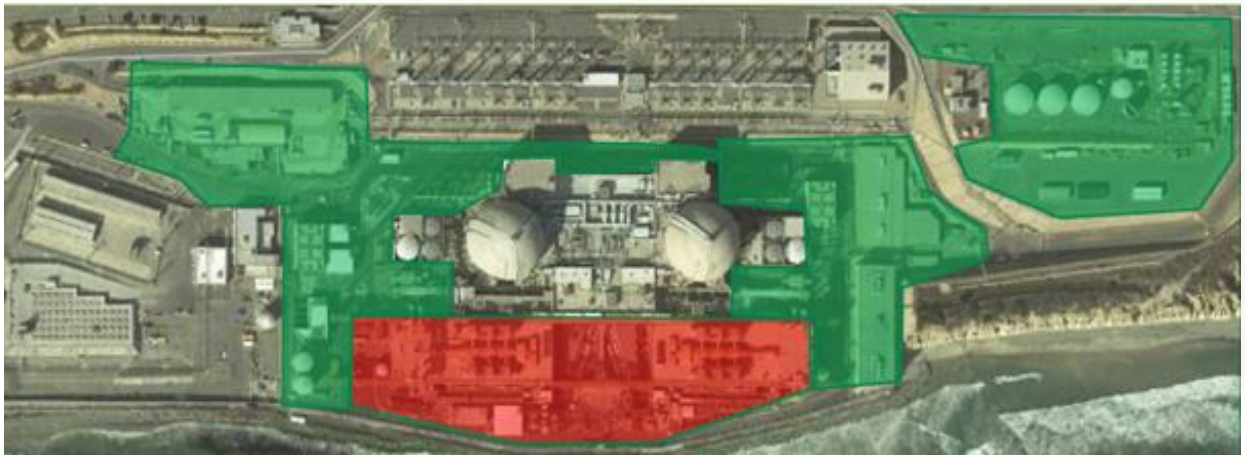
Dismantlement Overview

- Recently completed activities
  - Asbestos removal in power block complete
  - Unit 2 tendon removal complete
  - Extension of operational rail line
- Current activities:
  - Removal of piping systems and cable trays
  - Containment building modifications (e.g., widening equipment hatch)
  - Delivery and staging of specialized tooling and waste containers

Phased Structural Demolition



Technical Phase 1
Red



Technical Phase 2
Red

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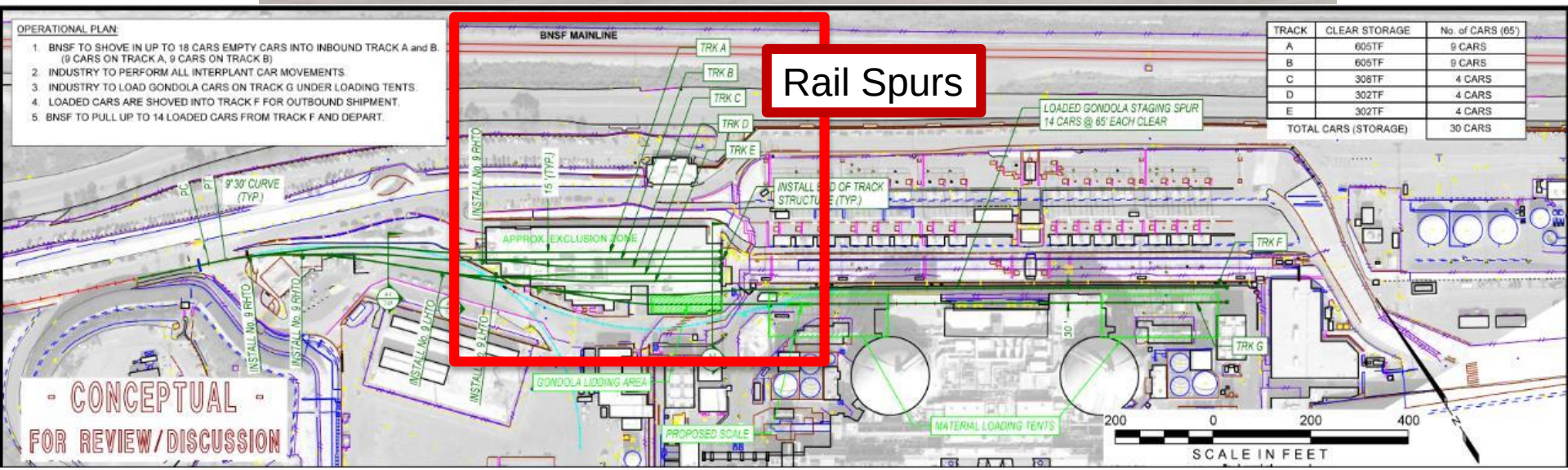
Rail Upgrades



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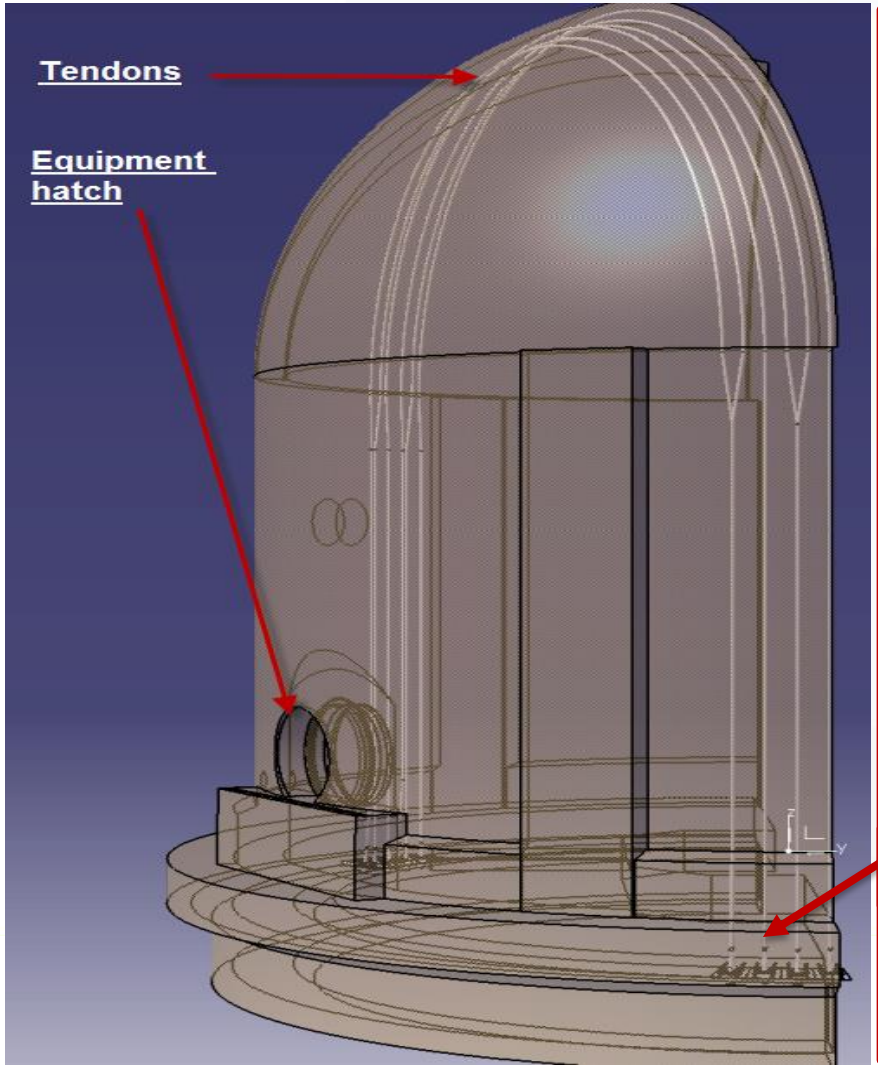
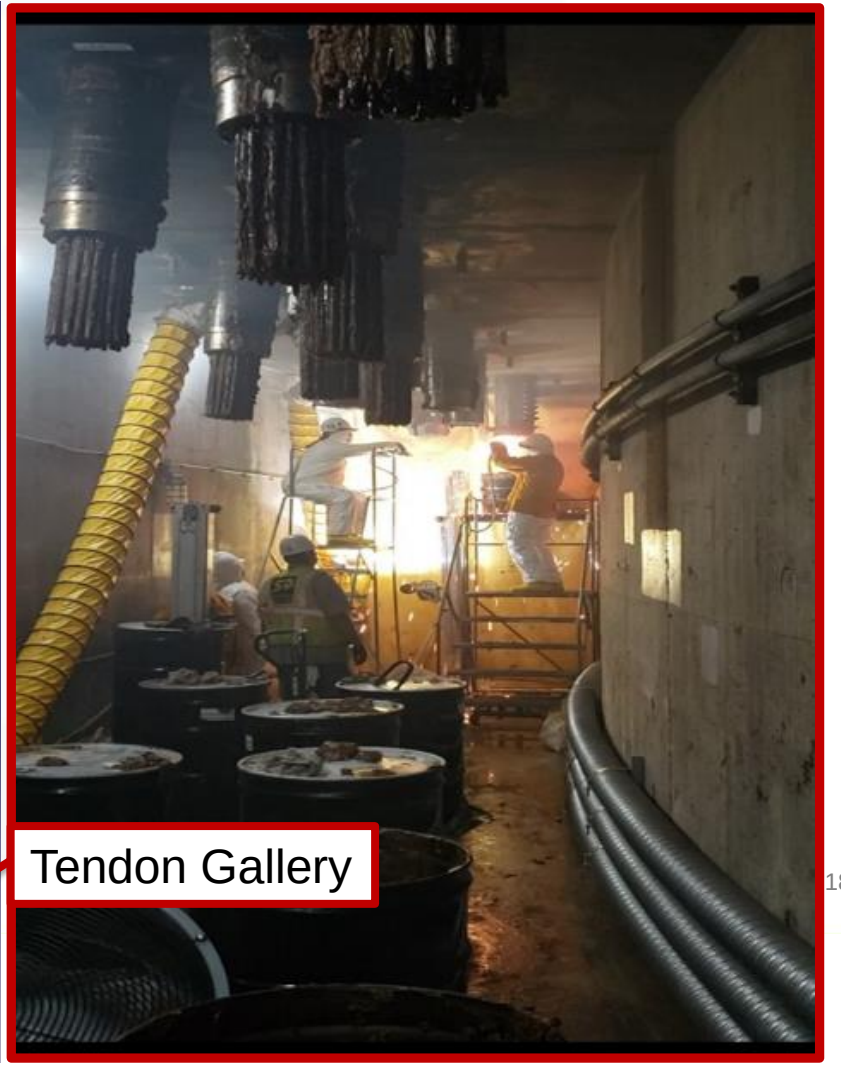
Removing Tendons from Containment Domes





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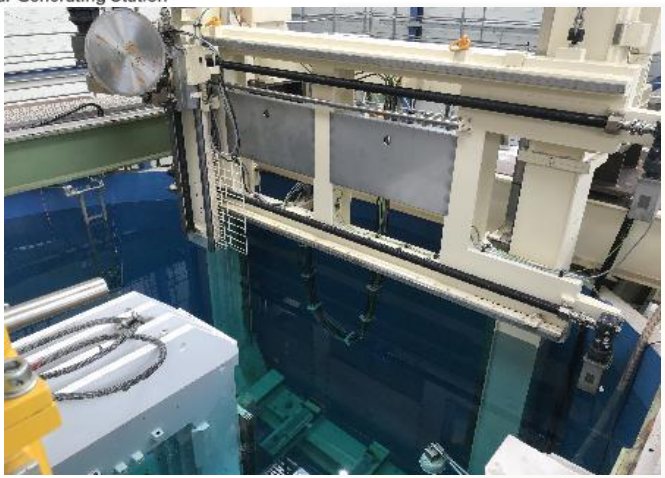
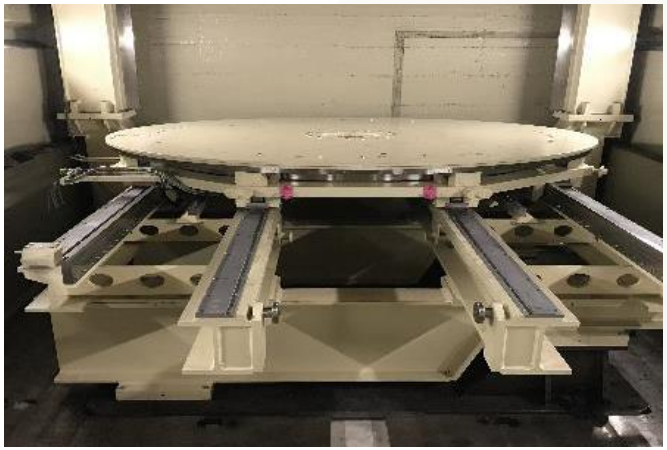
Removal of Interferences Inside Containment Domes

Preparations for Cut-up of Reactor Vessel Internals





Tooling to be used in segmentation (“cut-up”) process has been delivered

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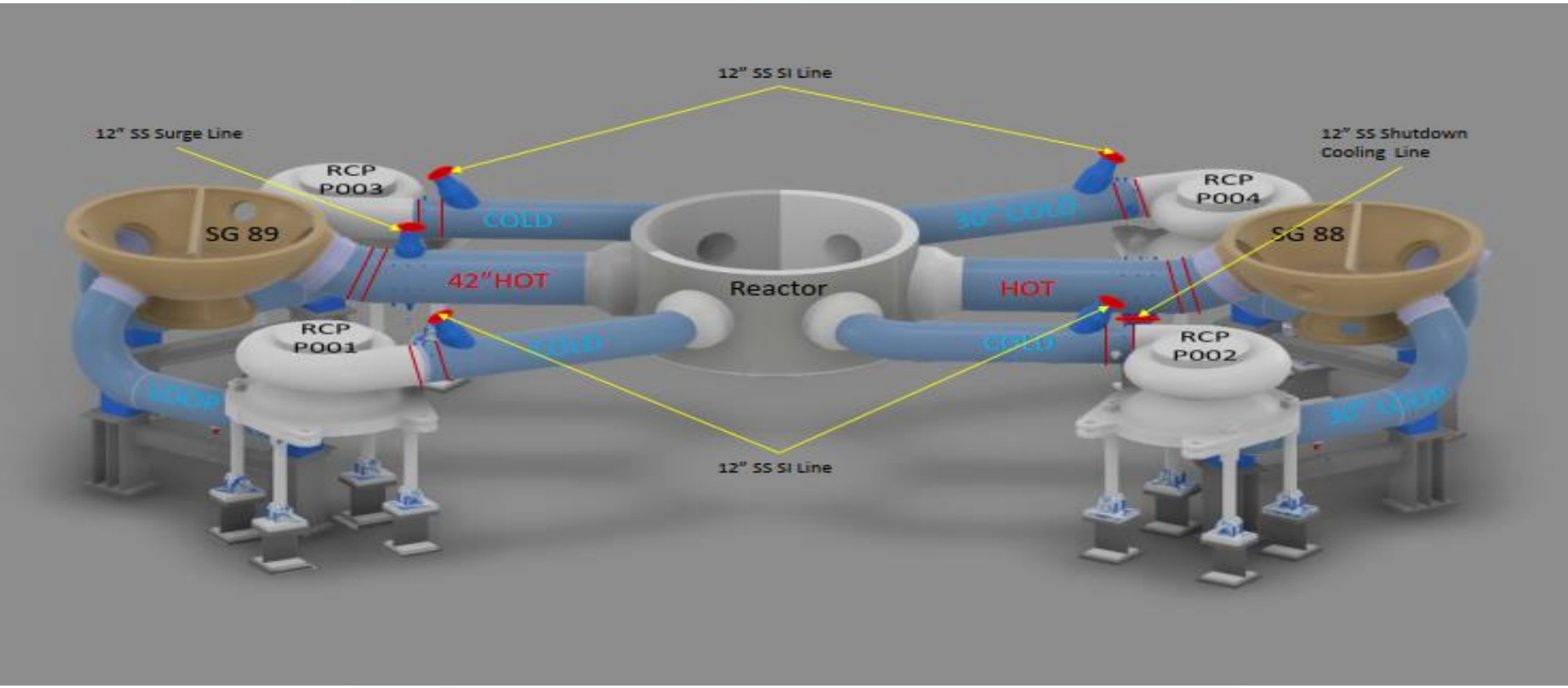
Cutting and Isolation of Piping Prior to Flooding



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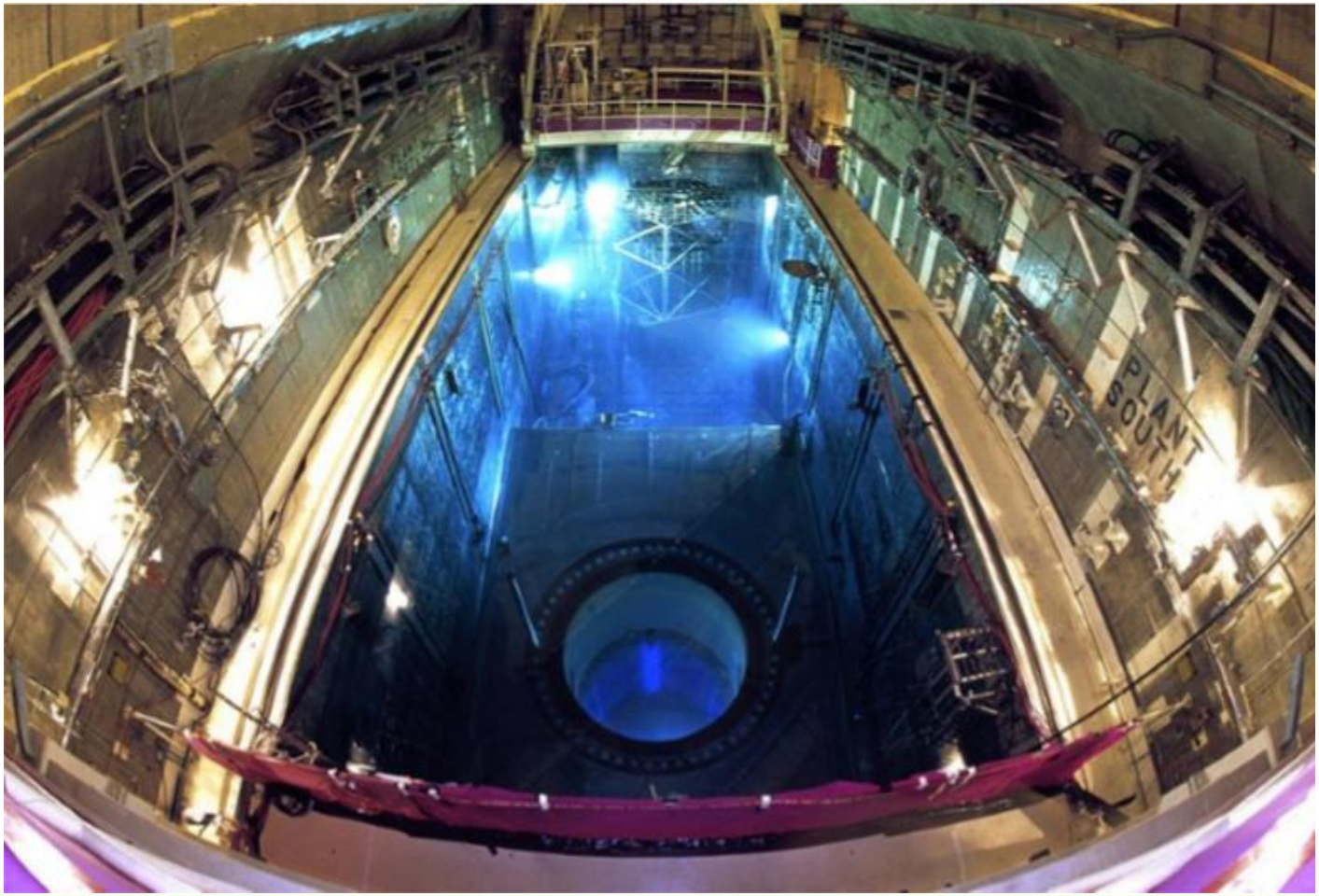
SONGS Reactor Cavity Flooded with Water



Maintaining Radiological Safety

- Radiation annual dose limits
  - Federal occupational dose limit — 5000 millirem
  - (Lower) SONGS worker dose limit — 1500 millirem
  - NRC and SONGS limits for the public — 100 millirem
  - EPA limit for public dose — 25 millirem

- Limits set to safe levels by NRC and recommended by various national and international agencies[1]

[1] *Safe levels are recommended by the National Council on Radiation Protection & Measurements and the International Commission on Radiological Protection*

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Dry Cask Storage Monitoring

Randall Granaas, PE
SCE Nuclear Fuel / ISFSI Engineer

Eric M Goldin, PhD
Certified Radiation Protection Professional

Why Survey Outlet Vents?

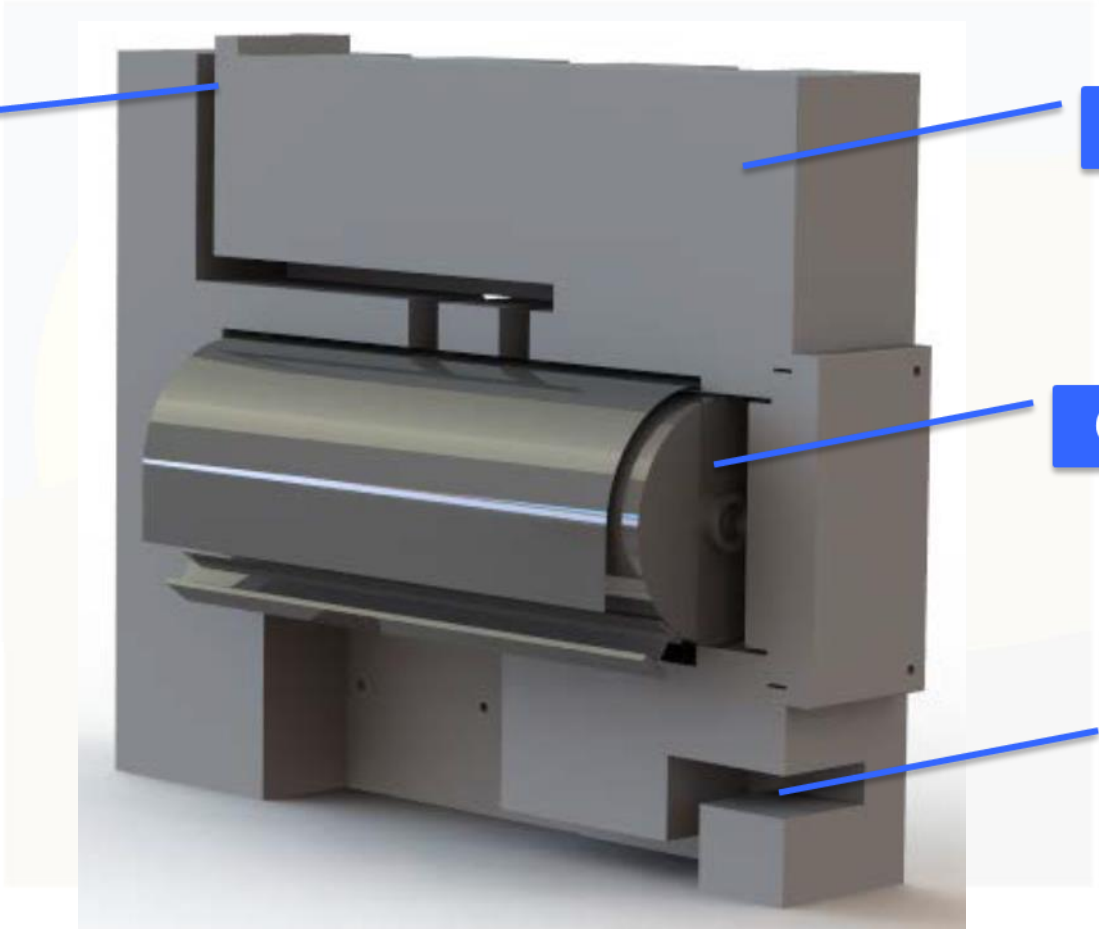
- During the August 20 CEP meeting, Donna Gilmore asked about a survey of the outlet air vents of the NUHOMS dry spent fuel storage modules.

- From her website, the contention is: “The NRC and Southern California Edison continue to refuse to provide the radiation levels from the outlet (rooftop) air vents of the aging Areva NUHOMS thin-wall canister systems at San Onofre. The San Onofre canisters are only 5/8″ thick and some are already 17 years old. What are they hiding?”

- Measuring the outlet air vents not necessary because surveying areas accessible from ground level will identify radioactive contamination in the unlikely event of canister leakage, with lower industrial safety risk to workers.

- We decided to survey the outlet vents to put to rest this contention about the NUHOMS dry fuel storage system.

Orano (AREVA) NUHOMS Storage Module and Canister



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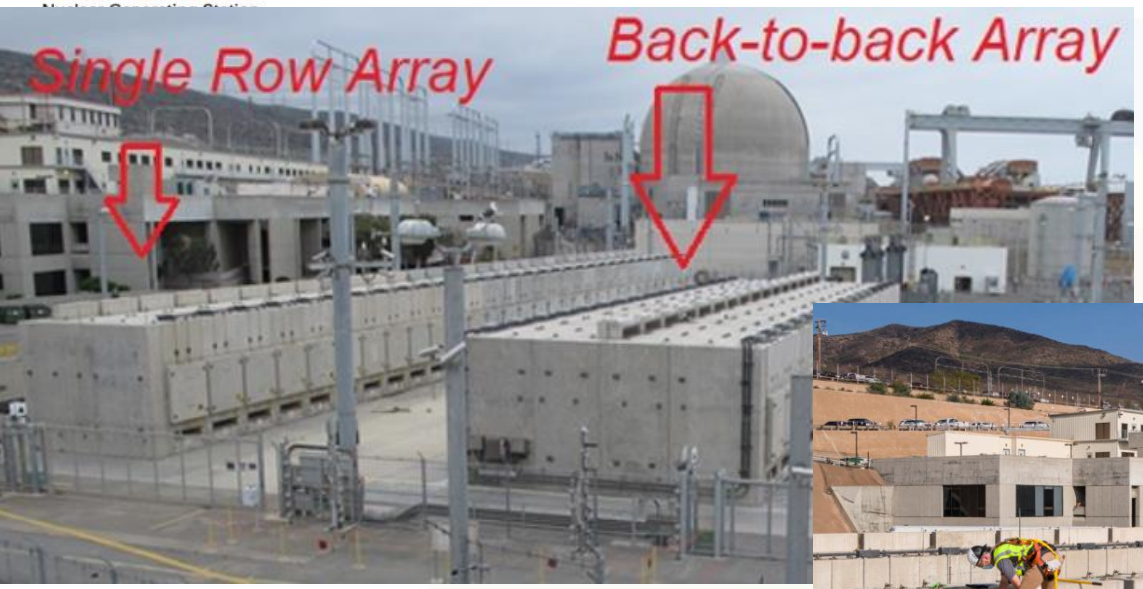
Special Survey of NUHOMS Storage Module Outlet Vents



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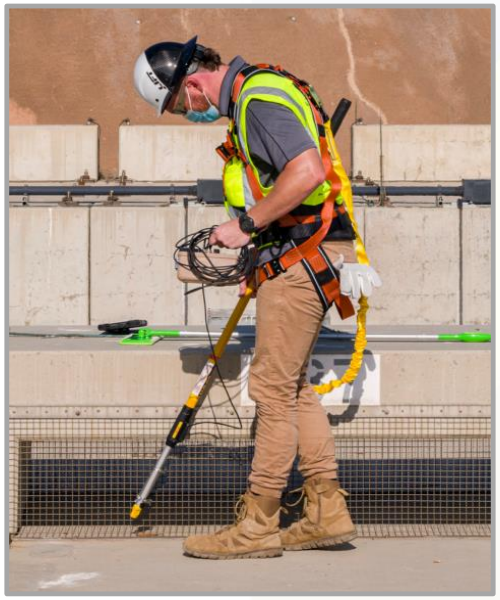
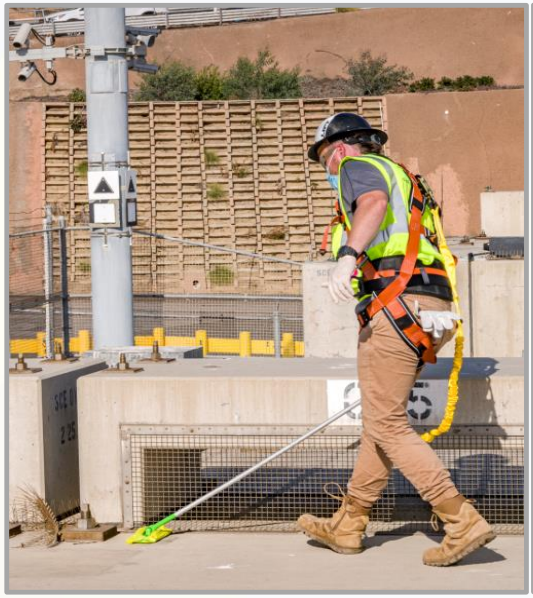
Independent Radiation Surveys Performed by Philotechnics Ltd.





All Modules Surveyed for Radiation and Contamination

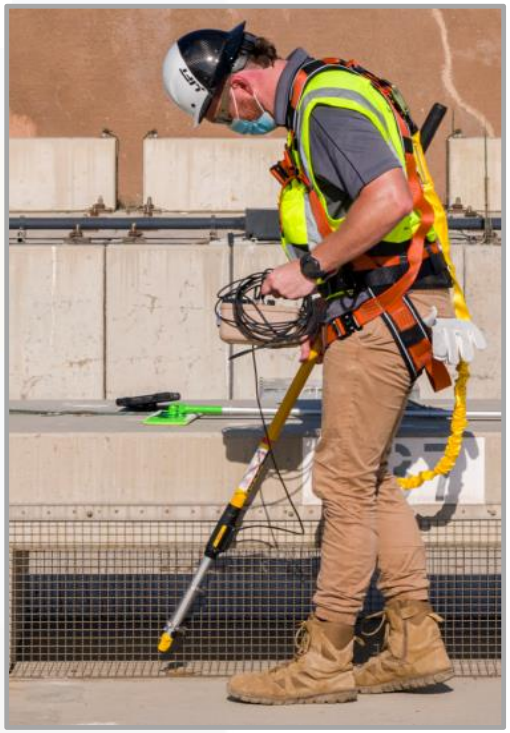
- Radiation readings were taken at each outlet vent on all 51 NUHOMS modules
  - Survey meter measures down to background levels
  - Assayed for any airborne radioactivity
- Contamination assessment done at each outlet vent using large area smear surveys

AHSM #	Lowest Dose Rate in µR/hr (closed)	Highest Dose Rate in µR/hr (closed)
1	40	50
2	20	40
3	25	55
4	20	50
5	40	45
6	40	45
7	40	50
8	40	50
9	45	40
10	45	50
11	40	55
12	40	60
13	45	45
14	30	40
15	20	
16	30	

Full data in appendix and online click here

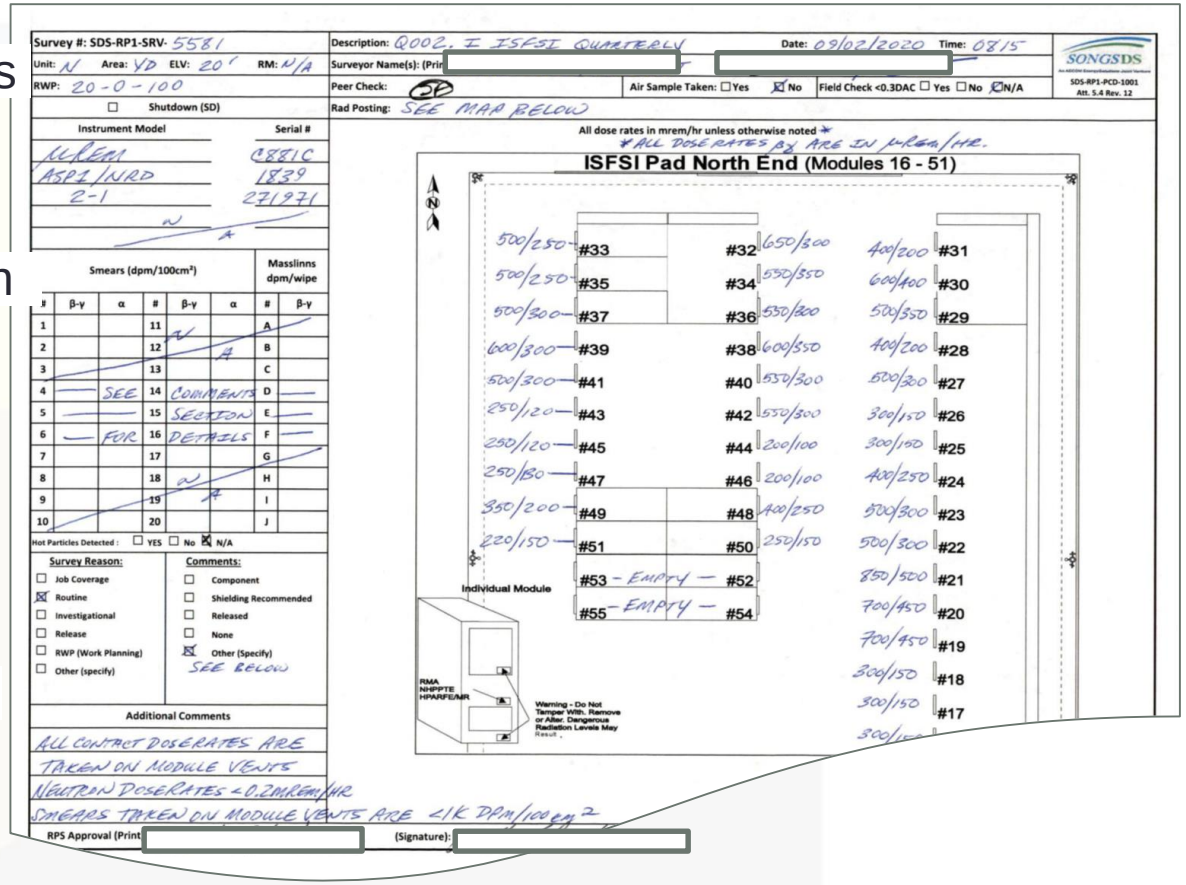
Results Show Outlet Vent Readings Lower than Inlets

- Single Row Modules ~0.040 to .060 mrem/hr (millirem per hour) at outlet vents
- Double Row Modules ~0.050 to 0.300 mrem/hr at outlet vents (double row modules combine radiation from shared outlet vent and have slightly less shielding due to adjacent outlet air vents)
- Inlet vent readings, while quite low, are higher than outlet vent readings as expected based on storage module design (greater shielding at outlet vent)
- No contamination found on any of the outlet vents
- No indication of airborne radioactivity at any module



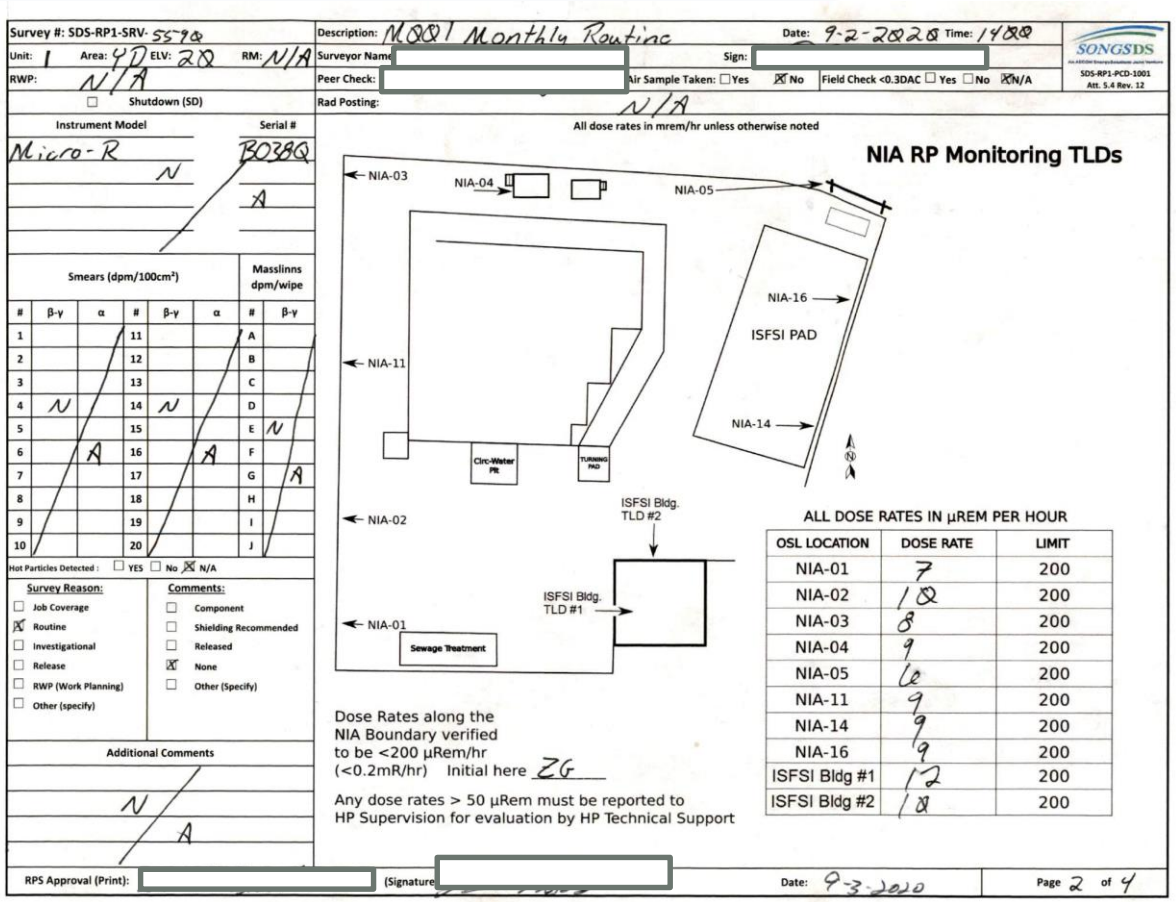
SCE Quarterly Survey of NUHOMS Inlet Vents

- Radiation levels at inlet vents from ~0.2 to 0.85 mrem/hr
- No radioactive contamination detectable on modules
- Low levels do not require Radiation Area posting
- Note this quarterly survey is in units of microrem/hr (= 0.001 mrem/hr)



SCE Monthly Surveys Show the Spent Fuel is Safely Stored

- ~0.010 mrem/hr at publicly accessible boundaries
- Background in the SONGS vicinity is ~0.010 mrem/hr
- Federal limit is 25 millirem per year (mrem/yr) above background; annual reports show <1 mrem/yr



Survey #: SDS-RP1-SRV-5590 Description: M001 Monthly Routine Date: 9-2-2020 Time: 1400
Unit: 1 Area: YD ELV: 20 RM: N/A Surveyor Name: Sign:
RWP: N/A Peer Check: Air Sample Taken: ☐ Yes ☒ No Field Check <0.3DAC ☐ Yes ☐ No ☒ N/A
☐ Shutdown (SD) Rad Posting: N/A
SONGSDS SDS-RP1-PCD-1001 Att. 5.4 Rev. 12

Instrument Model: Micro-R N Serial #: B038Q A

Smears (dpm/100cm²) / Masslinns dpm/wipe

#	β-γ	α	#	β-γ	α	#	β-γ
1			11			A	
2			12			B	
3			13			C	
4	N		14	N		D	
5			15			E	N
6		A	16		A	F	
7			17			G	A
8			18			H	
9			19			I	
10			20			J	

Hot Particles Detected: ☐ YES ☐ No ☒ N/A

Survey Reason: ☐ Job Coverage ☒ Routine ☐ Investigational ☐ Release ☐ RWP (Work Planning) ☐ Other (specify)

Comments: ☐ Component ☐ Shielding Recommended ☐ Released ☒ None ☐ Other (Specify)

Additional Comments: N A

All dose rates in mrem/hr unless otherwise noted

NIA RP Monitoring TLDs

ALL DOSE RATES IN µREM PER HOUR

OSL LOCATION	DOSE RATE	LIMIT
NIA-01	7	200
NIA-02	10	200
NIA-03	8	200
NIA-04	9	200
NIA-05	6	200
NIA-11	9	200
NIA-14	9	200
NIA-16	9	200
ISFSI Bldg #1	12	200
ISFSI Bldg #2	10	200

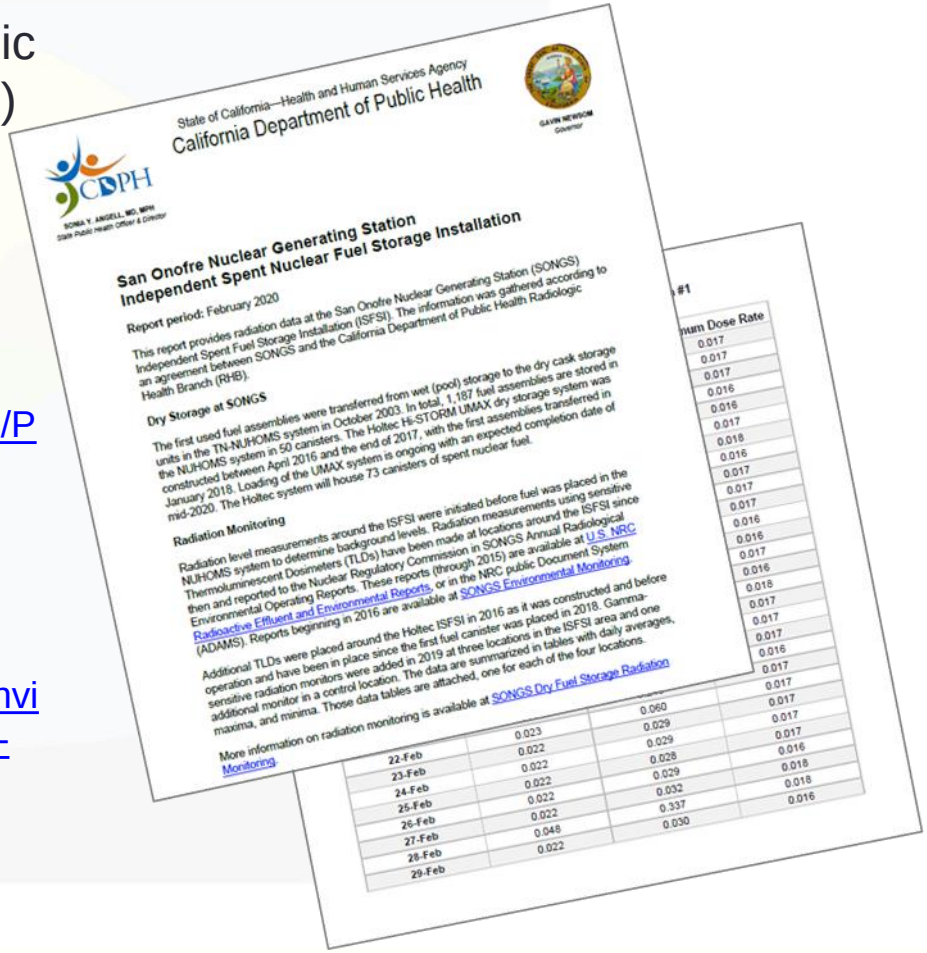
Dose Rates along the NIA Boundary verified to be <200 µRem/hr (<0.2mR/hr) Initial here ZG

Any dose rates > 50 µRem must be reported to HP Supervision for evaluation by HP Technical Support

RPS Approval (Print): (Signature) Date: 9-3-2020 Page 2 of 4

ISFSI Radiation Monitoring Monthly Reports Available Online

- Data streamed to CA Department of Public Health, Radiologic Health Branch (CDPH)
  - Publishes monthly reports
  - Provides high, low, and average radiation levels at each monitor
- CDPH publicly available online
  - https://www.cdph.ca.gov/Programs/CEH/DRSEM/Pages/RHB-Environment/SONGS-ISFSI-reports.aspx
- SONGS website provides contextual information and a link to CDPH reports
  - https://www.songscommunity.com/stewardship/environmental-monitoring-around-san-onofre/dry-fuel-storage-radiation-monitoring



State of California—Health and Human Services Agency
California Department of Public Health

San Onofre Nuclear Generating Station
Independent Spent Nuclear Fuel Storage Installation

Report period: February 2020

This report provides radiation data at the San Onofre Nuclear Generating Station (SONGS) Independent Spent Fuel Storage Installation (ISFSI). The information was gathered according to an agreement between SONGS and the California Department of Public Health Radiologic Health Branch (RHB).

Dry Storage at SONGS

The first used fuel assemblies were transferred from wet (pool) storage to the dry cask storage units in the TN-NUHOMS system in October 2003. In total, 1,187 fuel assemblies are stored in the NUHOMS system in 50 canisters. The Holtec Hi-STORM UMAX dry storage system was constructed between April 2016 and the end of 2017, with the first assemblies transferred in January 2018. Loading of the UMAX system is ongoing with an expected completion date of mid-2020. The Holtec system will house 73 canisters of spent nuclear fuel.

Radiation Monitoring

Radiation level measurements around the ISFSI were initiated before fuel was placed in the NUHOMS system to determine background levels. Radiation measurements using sensitive Thermoluminescent Dosimeters (TLDs) have been made at locations around the ISFSI since then and reported to the Nuclear Regulatory Commission in SONGS Annual Radiological Environmental Operating Reports. These reports (through 2015) are available at U.S. NRC Radioactive Effluent and Environmental Reports, or in the NRC public Document System (ADAMS). Reports beginning in 2016 are available at SONGS Environmental Monitoring.

Additional TLDs were placed around the Holtec ISFSI in 2016 as it was constructed and before operation and have been in place since the first fuel canister was placed in 2018. Gamma-sensitive radiation monitors were added in 2019 at three locations in the ISFSI area and one additional monitor in a control location. The data are summarized in tables with daily averages, maxima, and minima. Those data tables are attached, one for each of the four locations.

More information on radiation monitoring is available at SONGS Dry Fuel Storage Radiation Monitoring.

22-Feb	0.023	0.060	0.017
23-Feb	0.022	0.029	0.017
24-Feb	0.022	0.029	0.017
25-Feb	0.022	0.028	0.016
26-Feb	0.022	0.029	0.016
27-Feb	0.022	0.032	0.017
28-Feb	0.048	0.337	0.018
29-Feb	0.022	0.030	0.018
			0.016

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San Onofre
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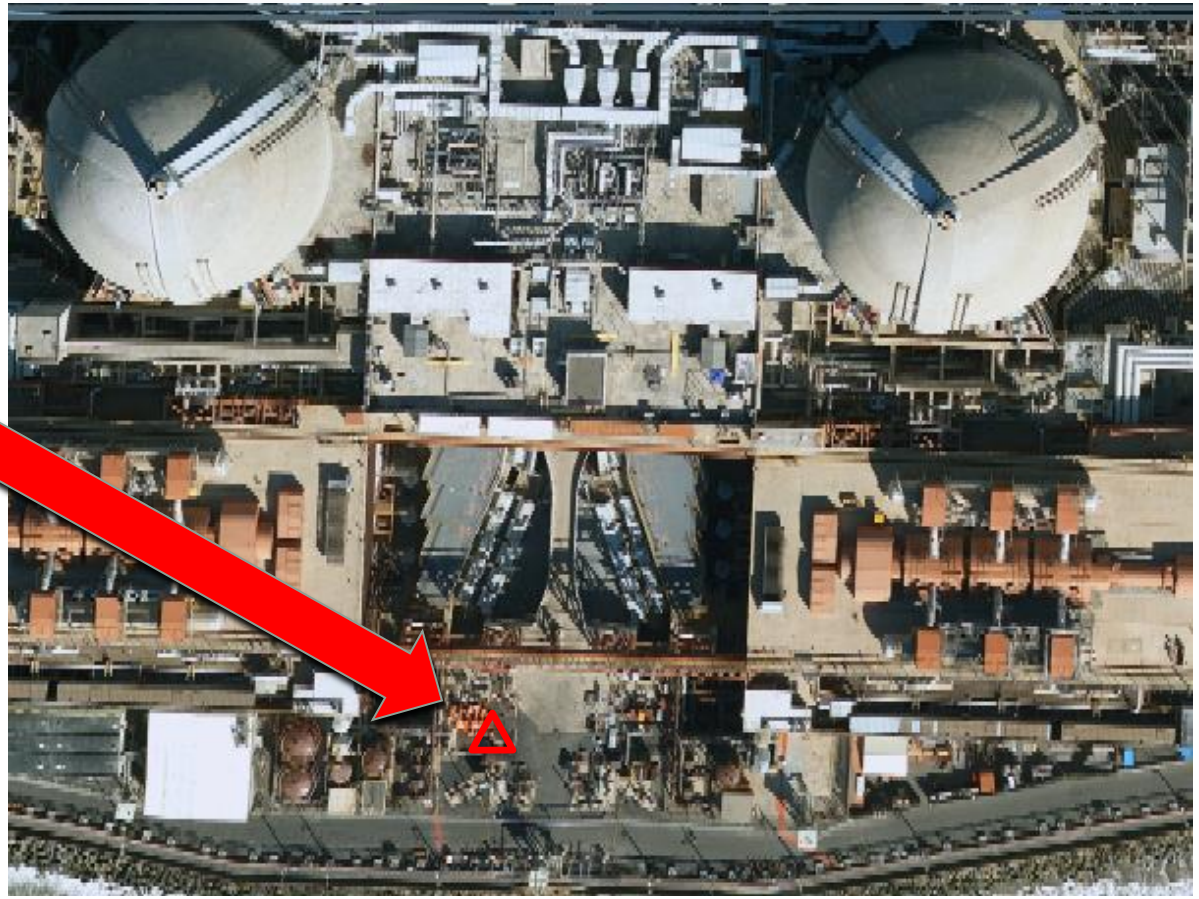
Trace Radioactive Contamination Addressed at Unit 2 Outfall

Ron Pontes
Manager Environmental, Waste and Radiation Protection

Trace Radioactive Contamination Addressed at Unit 2 Outfall

Trace contamination found here in late August



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San Onofre
Nuclear Generating Station

Sea-level Rise and Monitoring

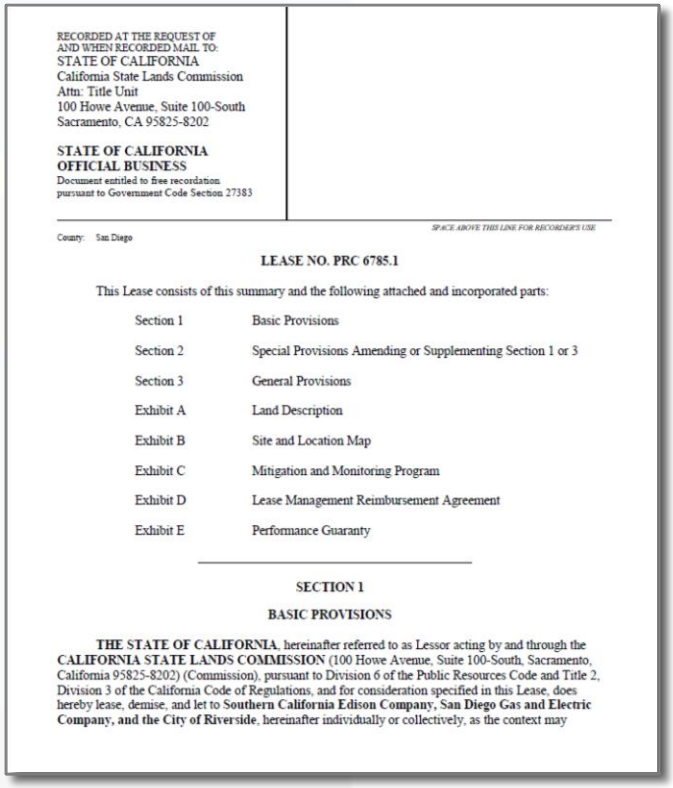
Ron Pontes
Manager Environmental, Waste and Radiation Protection

Sea Level Rise Monitoring

- During the 2020 2nd Quarter CEP meeting questions were raised about the potential impact of Sea Level Rise (SLR) on the SONGS site
- SCE assesses and reports the potential impact of SLR using California Ocean Protection Council (OPC) SLR guidance
- 2019 assessments and reporting conclude that
  - Revetment (aka “rip-rap”) is in good condition and able to withstand extreme SLR through at least 2050
  - Beaches fronting SONGS have narrowed to pre-construction widths
  - Holtec ISFSI support foundation remains above the groundwater table through 2050

SLR Monitoring Requirement

- CA State Lands Commission Lease Provision 14 requires preparation of an annual report to assess SLR vulnerability, structural integrity, and adaptation capacity for the SONGS site based on
  - Ocean Protection Council (OPC) Medium-high and H^{++} extreme SLR projections combined with annual, 20-year and 100-year-storm events, as well as King Tides and,
  - Quarterly ground water elevation data collected from onsite monitoring wells



RECORDED AT THE REQUEST OF
AND WHEN RECORDED MAIL TO:
STATE OF CALIFORNIA
California State Lands Commission
Attn: Title Unit
100 Howe Avenue, Suite 100-South
Sacramento, CA 95825-8202

STATE OF CALIFORNIA
OFFICIAL BUSINESS
Document entitled to free recordation
pursuant to Government Code Section 27383

SPACE ABOVE THIS LINE FOR RECORDER'S USE

County: San Diego

LEASE NO. PRC 6785.1

This Lease consists of this summary and the following attached and incorporated parts:

Section 1	Basic Provisions
Section 2	Special Provisions Amending or Supplementing Section 1 or 3
Section 3	General Provisions
Exhibit A	Land Description
Exhibit B	Site and Location Map
Exhibit C	Mitigation and Monitoring Program
Exhibit D	Lease Management Reimbursement Agreement
Exhibit E	Performance Guaranty

SECTION 1

BASIC PROVISIONS

THE STATE OF CALIFORNIA, hereinafter referred to as Lessor acting by and through the **CALIFORNIA STATE LANDS COMMISSION** (100 Howe Avenue, Suite 100-South, Sacramento, California 95825-8202) (Commission), pursuant to Division 6 of the Public Resources Code and Title 2, Division 3 of the California Code of Regulations, and for consideration specified in this Lease, does hereby lease, demise, and let to **Southern California Edison Company, San Diego Gas and Electric Company, and the City of Riverside**, hereinafter individually or collectively, as the context may

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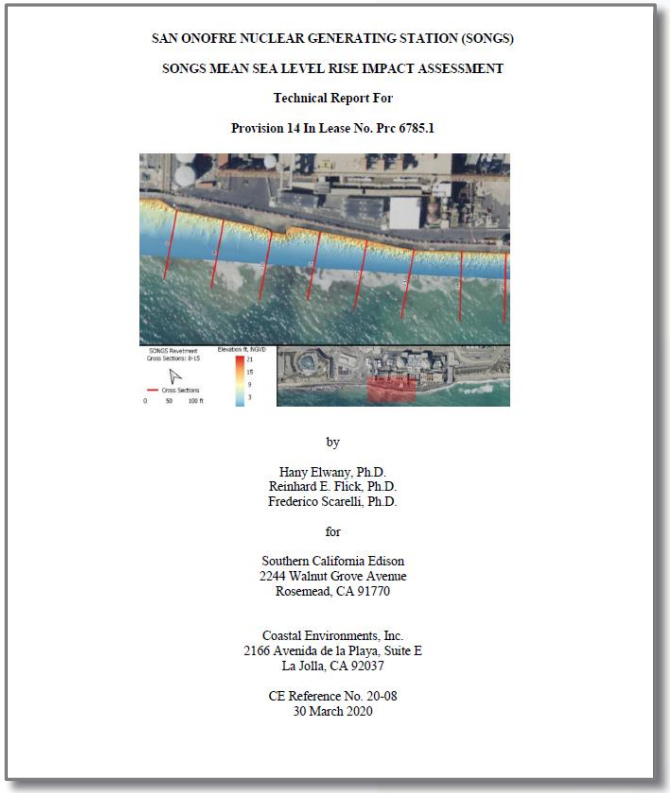
Decommissioning San Onofre Nuclear Generating Station

Sea Level Rise Impact Assessment Report



SAN ONOFRE NUCLEAR GENERATING STATION (SONGS)

SONGS MEAN SEA LEVEL RISE IMPACT ASSESSMENT

Technical Report For

Provision 14 In Lease No. Prc 6785.1

by

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CE Reference No. 20-08
30 March 2020

- Prepared annually and provided to the CA State Lands Commission (CSLC)
- Posted on SONGS website
- Assesses impact of SLR through year 2050 on SONGS
  - Revetment stability
  - Seasonal beach profile changes
  - Ground water elevation

Link: 2019 SLR Impact Assessment

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Revetment (Rip-Rap) Stability Analysis

- Performed laser scan survey to produce digital elevation model (DEM) of revetment
- Compared 21 modeled transects to historical data
- Measured rocks to produce detailed estimation of rock weights
- Revetment stability calculated based on measured data and design wave estimates for SLR medium-high and H^{++} projections for years 2020 and 2050
- *Revetment stability analysis indicates that the rocks are of sufficient size and weight to withstand at least the median expected combined design wave height and maximum sea level expected between now and 2050*

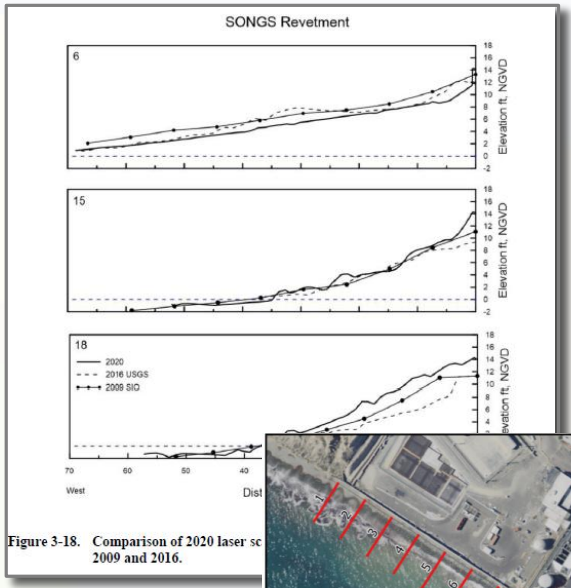

Figure 3-18. Comparison of 2020 laser sc
2009 and 2016.

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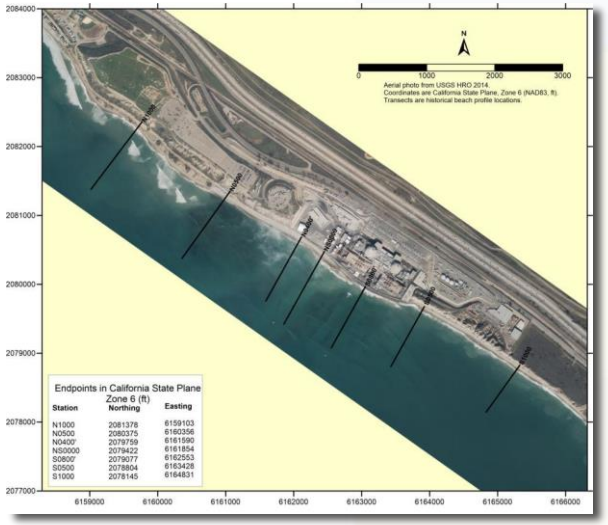
Seasonal Beach Profile Assessment



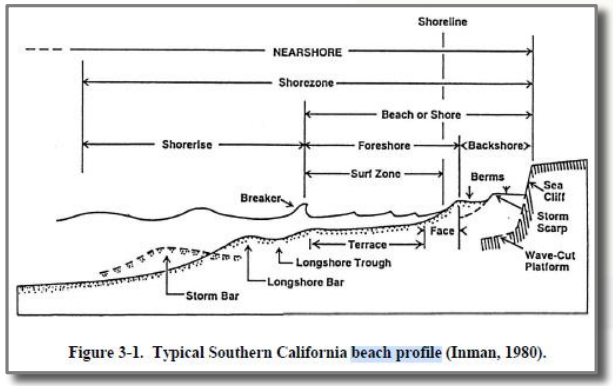


Figure 3-1. Typical Southern California beach profile (Inman, 1980).

- Quarterly beach profile surveys started in March 2017
- 2019 assessment based on 12 seasonal surveys performed through October 2019
- Each survey covers seven transects
- Standard survey methods used onshore and digital acoustic echo sounder used for offshore
- Onshore & offshore data integrated on a laptop computer to create a profile for each transect
- Profiles compared to historical data to estimate seasonal cycles and long-term trends in beach width

Seasonal Beach Profile Assessment

Conclusions

- Construction activities at SONGS over the 20-years from 1965 to 1984 resulted in substantial increases in beach width adjacent to and north of the plant
- Since the removal of the Units 2/3 laydown pad in 1985, the beaches have narrowed and returned to their pre-construction configuration
- From 2000 to 2019 beaches have narrowed due to limited sand supply from the surrounding creeks and rivers since the last wet period in 1998
- The average seasonal beach width fluctuation from 2017 to 2019 is about 26 feet

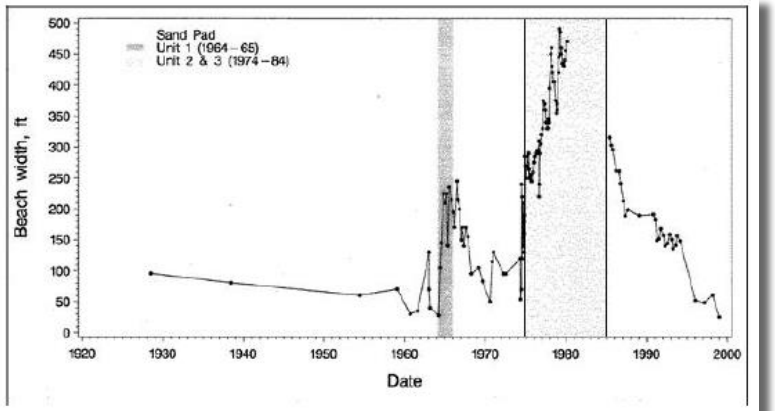


Figure 7-5. Historical beach width adjacent to Unit 1, 1928-2000. Vertical columns show periods when laydown pads were present.

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Ground Water Elevation Monitoring

Figure 2-2. Locations of Group 1 SONGS groundwater wells.

- Quarterly water level data from SONGS site groundwater monitoring wells collected and trended against tidal data
- Each of the wells was assigned to one of three groups based on their elevation and location within SONGS
- Group 1 wells occupy the lowest ground surface elevation and are located between the shoreline and Holtec ISFSI
- Groups 2 and 3 wells occupy the middling and higher ground elevations on the site
- Group 1 data used to determine the distance between groundwater level and the Holtec ISFSI support foundation

Correction 11/23/20: concrete vertical width changed from 15ft to 10ft

Ground Water Elevation Monitoring

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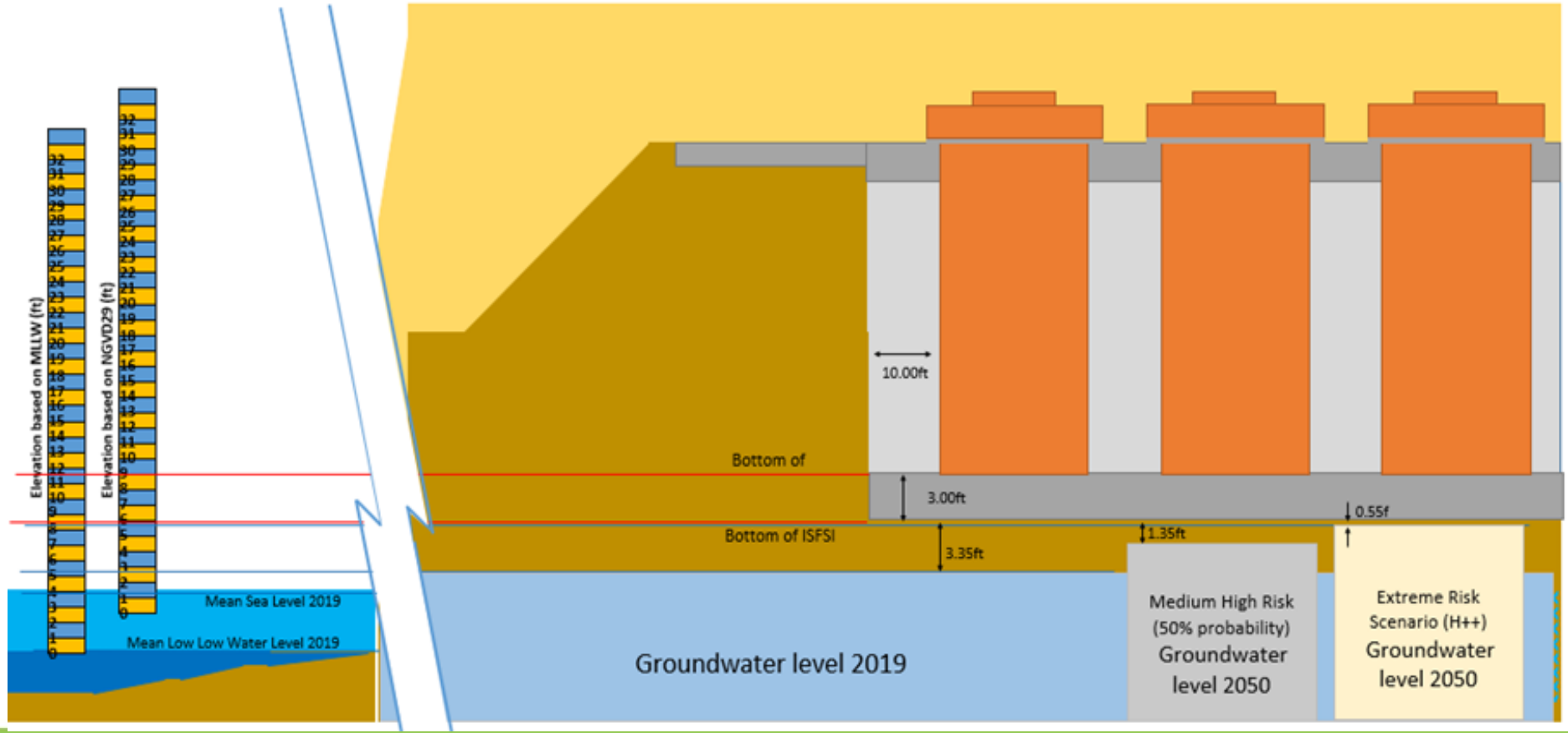
Groundwater Level Based on OPC-2018 SLR Projections



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Summary

- Revetment is in good condition and able to withstand H^{++} SLR through at least 2050
- The beaches fronting SONGS have narrowed to pre-construction widths and are mainly influenced by dry weather conditions since the early 2000s
- Even considering H^{++} SLR scenario, the Holtec ISFSI support foundation remains above the water table through 2050

STRATEGIC PLAN FOR THE RELOCATION OF SONGS SPENT NUCLEAR FUEL TO AN OFFSITE STORAGE FACILITY OR REPOSITORY

SONGS Community Engagement Panel

November 19, 2020

Outline

1. Context and “how did we get here?”
2. Why develop a Strategic Plan?
3. Team and process
4. Off-site alternatives and ongoing assessment
5. Preliminary path forward
6. Legislative agenda
7. Next steps and timing

Historical Context: How Did We Get Here?

- Congress focused U.S. spent nuclear fuel (SNF) disposal on Yucca Mountain
- Utilities paid for disposal, $989M from SCE customers; NWF holds $41B
- DOE failed to start disposal of SNF in 1998 as required by contract
- Yucca Mountain project halted since 2010 and dismantled
- DOE disposal organization has been defunded and disbanded
- Leaders of both parties have pledged not to further pursue Yucca Mountain
- Instead, utilities are reimbursed for on-site storage through Judgment Fund

Currently, no off-site facility can accept SONGS SNF

Status of Legislation and Appropriations

Nuclear Waste Administration Act of 2019 (S. 1234)

Sponsored by Senator Murkowski (R-AK) and co-sponsored by Alexander (R-TN) and Feinstein (D-CA), to establish a new organization to manage nuclear waste, provide a consensual process for siting nuclear waste facilities, and ensure adequate funding for managing nuclear waste

Nuclear Waste Policy Act Amendments of 2019 (H.R. 2699)

Sponsored by Rep. McNerney (D-CA), it mandates resumption of licensing for Yucca Mountain and authorizes a CIS program linked to Yucca Mountain milestones. Companion bill, S. 2917, introduced by Senator Barrasso (R-WY)

Clean Economy Jobs and Innovation Act (H.R. 4447)

Includes a 5-year $508M authorization for research, development, demonstration and commercial application of a variety of options for SNF storage, use and disposal; Incorporates bills introduced by Rep. Levin (D-CA), H.R. 8258; and by Reps. Lamb (D-PA) and Newhouse (R-WA), H.R. 6097

Multi-agency Appropriations Act for FY 2021 (H.R. 7617)

Includes $20M in appropriations from the Nuclear Waste Fund for CIS, directs DOE "…to move forward under existing authority to identify a site for a federal interim storage facility…" using a "…consent-based approach..." Accompanying House Report encourages "…planning for the removal of spent nuclear fuel from sites located near cities…" and "…site preparation activities at stranded sites…"

Recent Federal, State, and International Developments

- ✓ On February 6, 2020 President Trump committed to respect Nevada's opposition to Yucca Mountain and instead explore "innovative approaches"
- ✓ Both the New Mexico and Texas governors have written letters opposing the consolidated interim storage facilities in their states
  - States cannot block NRC licensing but can pose impediments
  - In similar situations, circumstances have changed over time
- ✓ International progress
  - Sweden and Finland
  - Structure of siting organization and siting process

Case Study and Insights

Waste Isolation Pilot Plant (WIPP)

A federal underground disposal facility in NM for transuranic waste (TRU); development took 30+ years, required navigating windows of opportunity

Summarized Sequence of Events

- ✓ Mining economy in Carlsbad, NM went bust
- ✓ Local political and influence leaders initiated an interest in a repository
- ✓ Initially intense opposition at state level, some NGOs, and some at the local level
- ✓ Over time, a win-win-win was fashioned through trust-building and compromises:
  - ➢ A TRU[1] repository was approved
  - ➢ The Environmental Evaluation Group (EEG), set up with federal funds, conducted independent technical evaluations of the Waste Isolation Pilot Plant (WIPP) and published their findings
  - ➢ DOE agreed that SNF could not be brought to WIPP
  - ➢ A by-pass was built around Santa Fe among other commitments
- ✓ Local community generally supports WIPP and some want its mission expanded

[1]Material contaminated with transuranic elements—artificially made, radioactive elements, such as neptunium, plutonium, americium, and others—that have atomic numbers higher than uranium in the periodic table of elements. In the U.S., TRU is produced by using plutonium to fabricate nuclear weapons

Why Develop a Strategic Plan for SONGS SNF?

A requirement and an opportunity

*A **requirement** of a settlement agreement regarding implementation of interim on-site SNF storage…*

*And an **opportunity** to –*

- Find a commercially reasonable pathway to more promptly relocate SNF offsite
- Consider the restart a national program for interim storage and timely permanent disposal of SNF to meet national needs and commitments
- Provide new and unique insights on SNF disposition issues from a utility and a customer perspective – informed by local stakeholder input
- Establish an SNF disposition framework that readies the utility to act as circumstances warrant

The Strategic Plan Team and Process

In order to develop an analytically-grounded Strategic Plan, SCE assembled a team of nationally recognized experts

- ✓ An "Experts Team" comprised of six nationally recognized experts provided independent review and advice to SCE on Strategic Plan development
- ✓ North Wind, a leading DOE nuclear waste management company, organized a team of subject matter experts to conduct the analysis, identify and assess alternative pathways for offsite disposition of SONGS SNF
- ✓ A stakeholder interview component was built into the Plan development to feed input into the analysis
- ✓ An internal SCE team is reviewing the ongoing North Wind analysis, and with input from the Experts Team, is formulating a Spent Fuel Action Plan

The Strategic Plan Framework

Goal:

Safe, commercially reasonable relocation of SONGS spent nuclear fuel (SNF) to another facility, restore the site, and return the land to the Navy

- ✓ Timely off-site disposition of SNF
- ✓ Satisfy current DOE contractual requirements
- ✓ Prevent incremental costs due to continued inaction given that nuclear utility customers have pre-paid for SNF disposal
- ✓ Avoid unrecoverable costs to SCE customers
- ✓ Protect SCE customers from residual liability risk once SNF leaves SONGS

Cast a Wide Net for Alternatives

Representative pathways for permanent disposal and interim storage were identified for assessment; each pathway may contain multiple variations

Federal Permanent Geologic Repository

- Yucca Mountain or new site

Consolidated Interim Storage Facility (CISF)

- Federal CISF
- Federally-supported non-federal CISF
- Various forms of public/private arrangements
- Non-federal CISF

Other Alternatives Identified by Stakeholders

- Multi-utility storage (e.g. moving SONGS SNF to Palo Verde)
- Moving the current SONGS ISFSI (e.g. elsewhere on Camp Pendleton)

Reconnaissance of other concepts beyond current policy and regulatory framework

- Deep borehole disposal, for example

Assessment Factors Guiding the Analysis

A comprehensive set of assessment factors were developed to analyze representative alternative pathways.

- ✓**Technical, Safety, and Regulatory Feasibility**
- ✓**Commercial Reasonableness**
- ✓**Timeliness of Offsite Disposition**
- ✓**Implementation Feasibility**

Assessment Factors Guiding the Analysis

Technical, Safety and Regulatory Feasibility

Key Questions:

- ✓ Has the disposition alternative been technically proven? What are the residual technical risks?
- ✓ Is the necessary NRC regulatory framework in place to enable the disposition alternative to obtain necessary approvals?
- ✓ What is the level of regulatory preparation required to obtain necessary approvals?

Examples Emerging from Current Analysis:

- The private CISF projects in New Mexico and Texas have been in regulatory development for years and are well positioned to obtain NRC licenses
- Moving the current SONGS ISFSI to any new site will take many years of technical planning and regulatory review
- Deep borehole disposition, while an interesting innovative concept, poses technical issues that do not match up well with current licensing criteria

Assessment Factors Guiding the Analysis

Schedule Considerations for Offsite Disposition

Key Questions:

- ✓ What are the major factors affecting implementation schedule? What is the degree of uncertainty in those factors?
- ✓ How soon can the alternative be implemented?
- ✓ To what extent is implementation governed by the timeline for Congressional action on new federal legislation?
- ✓ What steps are needed to prepare the SONGS site for SNF transportation readiness?

Examples Emerging from Current Analysis:

- While needed, the path forward for the development of a permanent geological repository will be much longer and more highly uncertain than other alternatives
- Notwithstanding current socio-political issues, past experience and current plans suggest offsite consolidated interim storage alternatives can be implemented sooner
- Current federal policy regarding the prioritization of shipments of SNF could stretch out the offsite shipments of SONGS SNF over several decades

Assessment Factors Guiding the Analysis

Commercial Reasonableness

Key Questions

- ✓ What are the likely costs? What are the major cost uncertainties?
- ✓ Will the Federal Government fund the costs through the Nuclear Waste Fund? What is the likelihood of appropriations?
- ✓ Can the costs be reimbursed from the Judgment Fund?
- ✓ Would it be prudent to use Decommissioning Trust Funds to pay for certain costs?

Examples Emerging from Current Analysis:

- Requiring the federal government to perform its statutory and contractual responsibility to take title and possession of SONGS SNF at the fence line will avoid additional costs to utility customers
- Private CISF providers will charge fees for storing SONGS SNF, but the full costs of transport and storage may not be fully reimbursable from the Judgment Fund, and more importantly, utility customers may not be fully shielded from liability for SONGS SNF at private storage facilities absent federal government intervention

Assessment Factors Guiding the Analysis

Implementation Feasibility

Key Questions

- ✓ Are changes in federal law required? What are current prospects?
- ✓ What socio-economic-political factors might impact successful implementation?
- ✓ What can SCE do to improve prospects for successful implementation?

Examples Emerging from Current Analysis:

- Federal reimbursement from the Judgment Fund for some or all costs of relocating SONGS SNF to a private CISF will require new federal policy guidance that ultimately may need to be incorporated into settlement agreements
- Assumption of liability by the federal government for SONGS SNF stored at a private CISF liability will require new federal legislation
- Resolution of these issues likely will have to be industry-wide, requiring collective support across the nuclear industry and broad coalition support for federal action

Preliminary Path Forward

Federal action is needed, but the prospects and timing are uncertain; SCE will need to maintain optionality and flexibility to take advantage of opportunities as they arise

- ✓ **Re-establish federal leadership**
  - Re-start the national program and secure funding
  - Leverage approaches advanced by members of the CA Congressional delegation to pursue a clear consensus approach
  - Build alliances with other stakeholders to amplify advocacy efforts
- ✓ **Maintain optionality and flexibility**
  - Monitor potential off-site CISF alternatives, be prepared as situation warrants
- ✓ **Continue to implement the current Decommissioning Plan safely and effectively**
  - Safely store SNF via inspection and maintenance and other programs
  - Pursue readiness actions to be prepared once a destination becomes available

National Legislative Agenda

Establish aspirational policy and legislative objectives, building from nuclear industry-wide principles

Strategic Programmatic Objectives:

1. Appropriations to restart the national program
2. A national consolidated interim storage program – either as a federal program or in cooperation with non-federal entities
3. Re-establish a program for a permanent geologic repository, including stakeholder engagement and consent of state, local and tribal governments
4. Streamline and prioritize SNF transportation scheduling, improving schedule efficiency and cost effectiveness while cognizant of the problem of stranded SNF

Final Plan will be Three Documents

Strategic Plan for Disposition of SONGS SNF

- Addresses alternative pathways and offers findings regarding the offsite relocation of SONGS SNF

SONGS SNF Conceptual Transportation Plan

- Identifies on-site preparations needed to prepare SONGS SNF for transport

SCE Action Plan

- Outlines follow-up steps by SCE to catalyze action based on findings in the Strategic and Conceptual Transportation Plans

Completion of Strategic Plan

Current Status

Alternatives analysis is being completed, stakeholder input is being integrated, and drafting is underway

Next Steps

- Complete Strategic Plan, Conceptual Transportation Plan, and Spent Fuel Action Plan in 1Q 2021
- Publish documents in February/March 2021
- Pursue actions identified in the Action Plan

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BREAK

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Public Comment

Submit written comments to nuccomm@songs.sce.com

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CLOSING COMMENTS

DAVID VICTOR AND DOUG BAUDER

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KEY TAKEAWAYS

DAVID VICTOR

2021 CEP Meetings

Focus Topics	Dates
1Q CEP Meeting SONGS Strategic Plan Implementation	~March 2021
2Q CEP Meeting Dismantlement Overview by Decommissioning General Contractor	~May 2021
3Q CEP Meeting Topic TBA	~Aug. 2021
4Q CEP Meeting Topic TBA	~Nov. 2021

Subject to Change

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Thank you
Stay safe and healthy

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Decommissioning San Onofre Nuclear Generating Station

Acronyms

AMP	Aging Management Program
C&D	Cold & Dark
CAP	Corrective Action Program
CCC	California Coastal Commission
CDP	Coastal Development Permit
CEC	Cavity Enclosure Container
CEP	Community Engagement Panel
CEQA	California Environmental Quality Act
CIS	Consolidated Interim Storage
CISCC	Chloride-Induced Stress Corrosion Cracking
CPUC	California Public Utilities Commission
CSLC	California State Lands Commission
D&D	Decontamination & Dismantlement
DA	Decommissioning Agreement; Decommissioning Agent
DCE	Decommissioning Cost Estimate
DDT	Decommissioning & Dismantlement Team
DGC	Decommissioning General Contractor
DID	Defense-in-Depth
DOD	Department of Defense
DOE	Department of Energy
DON	Department of Navy
DSAR	Defueled Safety Analysis Report (replaces FSAR)
DSC	Dry Storage Canister
D-SEIS	Draft Supplemental Environmental Impact Statement
D-SER	Draft Safety Evaluation Report
DTF	Decommissioning Trust Fund
EIR	Environmental Impact Report
EP	Emergency Plan
EPRI	Electric Power Research Institute
FIER	Final Environmental Impact Report
FTO	Fuel Transfer Operations
GEIS	Generic Environmental Impact Statement
HI-PORT	Holtec International – (Engineered Low Profile) Transporter
HI-TRAC	Holtec International – Transfer Cask

IFMP	Irradiated Fuel Management Plan
ISFSI	Independent Spent Fuel Storage Installation
LAR	License Amendment Request
LOED	Large Organism Exclusion Device
MAPS	Managing Aging Programs in Storage
MARSSIM	Multi-Agency Radiation Survey Site & Investigation Manual
MOU	Memorandum of Understanding
NAHC	Native American Heritage Commission
NDCTP	Nuclear Decommissioning Cost Triennial Proceeding
NDE	Non Destructive Examination
NDTF	Nuclear Decommissioning Trust Fund
NEI	Nuclear Energy Institute
NEPA	National Environmental Policy Act
NGS	Nuclear Generating Station
NOP	Notice of Preparation
NPP	Nuclear Power Plant
NRC	Nuclear Regulatory Commission
OC	Orange County
PDEP	Permanently Defueled Emergency Plan
PDTS	Permanently Defueled Technical Specifications
PSDAR	Post-Shutdown Decommissioning Activities Report
Q&A	Questions & Answers
REIR	Request for Environmental Impact Review
SCE	Southern California Edison
SD	San Diego
SDG&E	San Diego Gas & Electric
SDS	SONGS Decommissioning Solutions
SFP	Spent Fuel Pool
SFPI	Spent Fuel Pool Island
SLC	State Lands Commission (CA)
SLR	Sea Level Rise
SONGS	San Onofre Nuclear Generating Station
TBA	To Be Announced
VCT	Vertical Canister Transporter
ZCAP	Zion Community Advisor Panel

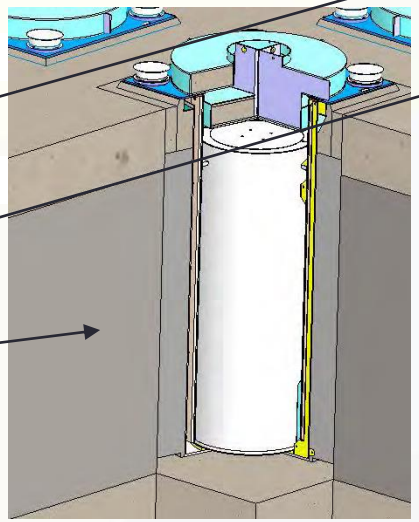
APPENDIX

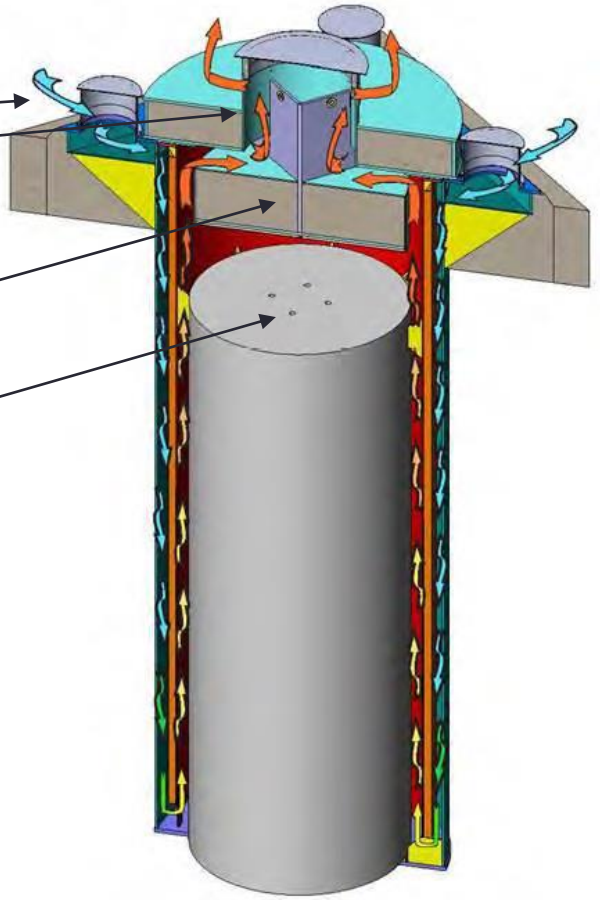
Holtec Dry Cask Storage

- Inlet Vent
- Outlet Vent

- 35,000 lb steel/concrete closure lid
- 9 ½ inch stainless steel welded plate

- Concrete monolith





Full NUHOMS Radiation Readings

AHSM #	Lowest Dose Rate in µR/hr (closed)	Highest Dose Rate in µR/hr (closed)	Lowest Dose Rate in µR/hr (open)	Highest Dose Rate in µR/hr (open)	Large Area Wipe
1	40	50	40	50	≤ BKGD
2	20	40	20	40	≤ BKGD
3	25	55	25	55	≤ BKGD
4	20	50	20	50	≤ BKGD
5	40	45	40	45	≤ BKGD
6	40	45	40	45	≤ BKGD
7	40	50	40	50	≤ BKGD
8	40	50	40	50	≤ BKGD
9	45	40	45	40	≤ BKGD
10	45	50	45	50	≤ BKGD
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12	40	60	40	60	≤ BKGD
13	45	45	45	45	≤ BKGD
14	30	40	30	40	≤ BKGD
15	20	25	20	25	≤ BKGD
16	30	50	30	50	≤ BKGD
17	40	50	40	50	≤ BKGD
18	40	45	40	45	≤ BKGD
19	45	55	45	55	≤ BKGD
20	50	55	50	55	≤ BKGD
21	45	50	45	50	≤ BKGD
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23	50	55	50	55	≤ BKGD
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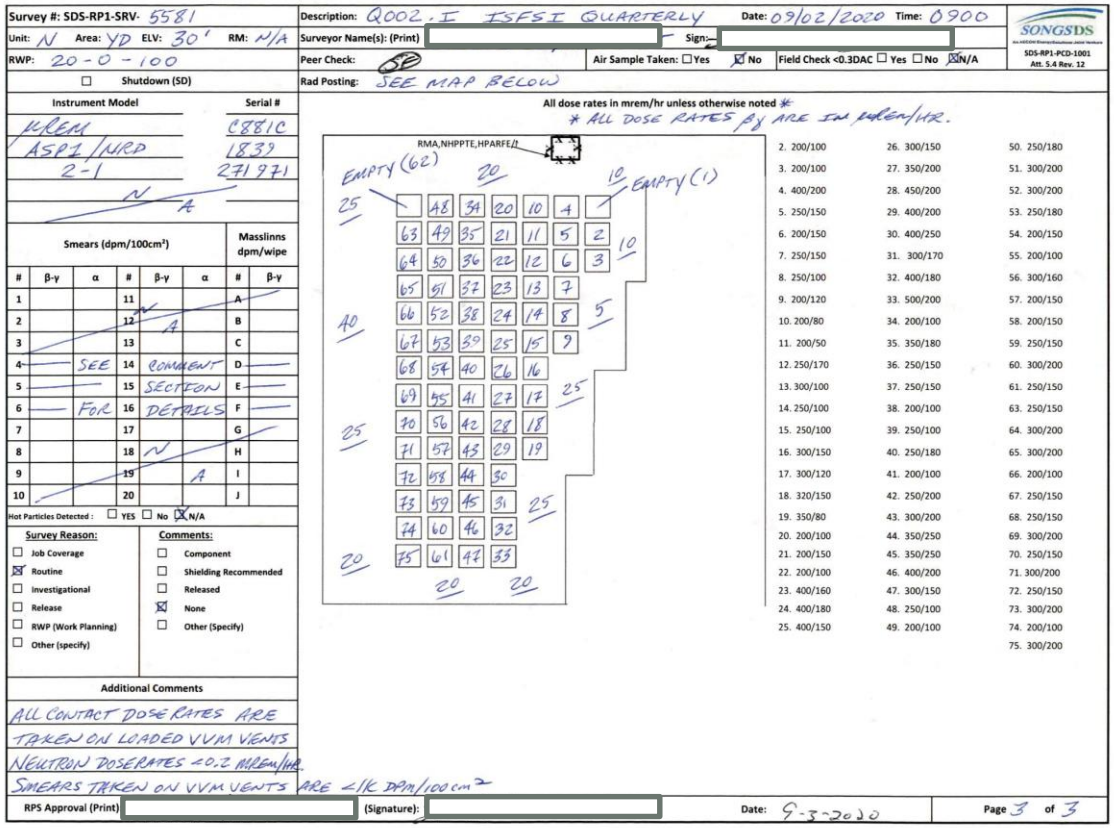
25	45	50	45	50	≤ BKGD
26	35	40	35	40	≤ BKGD
27	40	45	40	45	≤ BKGD
28	45	45	45	45	≤ BKGD
29	45	45	45	45	≤ BKGD
30	40	40	40	40	≤ BKGD
31	40	45	40	45	≤ BKGD
32	110	200	110	200	≤ BKGD
34	120	200	120	200	≤ BKGD
36	120	250	120	250	≤ BKGD
38	50	260	50	260	≤ BKGD
40	140	300	140	300	≤ BKGD
42	100	240	100	240	≤ BKGD
44	80	150	80	150	≤ BKGD
46	80	160	80	160	≤ BKGD
48	100	155	100	155	≤ BKGD
50	180	220	180	220	≤ BKGD
51	180	250	180	250	≤ BKGD
49	120	160	120	160	≤ BKGD
47	100	120	100	120	≤ BKGD
45	100	140	100	140	≤ BKGD
43	100	140	100	140	≤ BKGD
41	200	250	200	250	≤ BKGD
39	180	200	180	200	≤ BKGD
37	180	200	180	200	≤ BKGD
35	150	170	150	170	≤ BKGD
33	120	190	120	190	≤ BKGD

Routine Survey of Holtec Dry Cask Storage

- Radiation levels at inlet and outlet vents ~0.2 mrem/hr
- No radioactive contamination idetectable on modules/vents
- Survey units in mrem/hr



Survey #: SDS-RP1-SRV- 5581
Description: Q002.I ISFSI QUARTERLY Date: 09/02/2020 Time: 0900
Unit: N Area: YD ELV: 30' RM: N/A
Surveyor Name(s): (Print) Sign:
RWP: 20-0-100
Peer Check: SP Air Sample Taken: ☐ Yes ☒ No Field Check <0.3DAC ☐ Yes ☐ No ☒ N/A
☐ Shutdown (SD)
Rad Posting: SEE MAP BELOW
SONGSDS — SDS-RP1-PCD-1001 Att. 5.4 Rev. 12

Instrument Model	Serial #
KRem	C881C
ASP1/NRD	1839
2-1	271971

All dose rates in mrem/hr unless otherwise noted *
* ALL DOSE RATES AS ARE IN MREM/HR.

Smears (dpm/100cm²) / Masslinns dpm/wipe

#	β-γ	α	#	β-γ	α	#	β-γ
1			11			A	
2			12			B	
3			13			C	
4	SEE		14	COMMENT		D	
5			15	SECTION		E	
6	FOR		16	DETAILS		F	
7			17			G	
8			18	N		H	
9			19		A	I	
10			20			J	

Hot Particles Detected: ☐ YES ☐ No ☒ N/A

Survey Reason: ☐ Job Coverage ☒ Routine ☐ Investigational ☐ Release ☐ RWP (Work Planning) ☐ Other (specify)

Comments: ☐ Component ☐ Shielding Recommended ☐ Released ☒ None ☐ Other (Specify)

Additional Comments
ALL CONTACT DOSE RATES ARE TAKEN ON LOADED VVM VENTS
NEUTRON DOSERATES <0.2 MREM/HR
SMEARS TAKEN ON VVM VENTS ARE <1K DPM/100cm²

RPS Approval (Print) (Signature): Date: 9-3-2020 Page 3 of 3

2. 200/100	26. 300/150	50. 250/180
3. 200/100	27. 350/200	51. 300/200
4. 400/200	28. 450/200	52. 300/200
5. 250/150	29. 400/200	53. 250/180
6. 200/150	30. 400/250	54. 200/150
7. 250/150	31. 300/170	55. 200/100
8. 250/100	32. 400/180	56. 300/160
9. 200/120	33. 500/200	57. 200/150
10. 200/80	34. 200/100	58. 200/150
11. 200/50	35. 350/180	59. 250/150
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14. 250/100	38. 200/100	63. 250/150
15. 250/100	39. 250/100	64. 300/200
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17. 300/120	41. 200/100	66. 200/100
18. 320/150	42. 250/200	67. 250/150
19. 350/80	43. 300/200	68. 250/150
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23. 400/160	47. 300/150	72. 250/150
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25. 400/150	49. 200/100	74. 200/100
		75. 300/200

ISFSI Radiation Monitoring System

- Radiation monitoring:
  - Added in response to public interest; SCE exceeds NRC requirements
  - ISFSI radiation data streamed to offsite agencies
  - Monthly public reports published by CA Department of Public Health, Radiologic Health Branch

Safety | Stewardship | Engagement

Decommissioning San Onofre Nuclear Generating Station

ISFSI Radiation Monitoring System