

SAN ONOFRE

San Diego Regional Water Quality Control Board

June 20, 2018

Brought to you
by



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Executive
Director

OVERVIEW

- Why San Onofre failed
- Unreported radiation exposure impacts our environment
- True costs of radiation coverup
- Questionable cans buried above water table
- How San Diego RWQCB's 'Permit to Discharge' endangers the public's water

Edison's “Like for Like” replacements

- Southern California Edison's (SCE) Steam generators wore out
- Reported replacement intent to Nuclear Regulatory Commission (NRC)
- “Like for Like” Replacement Steam Generators (RSG)



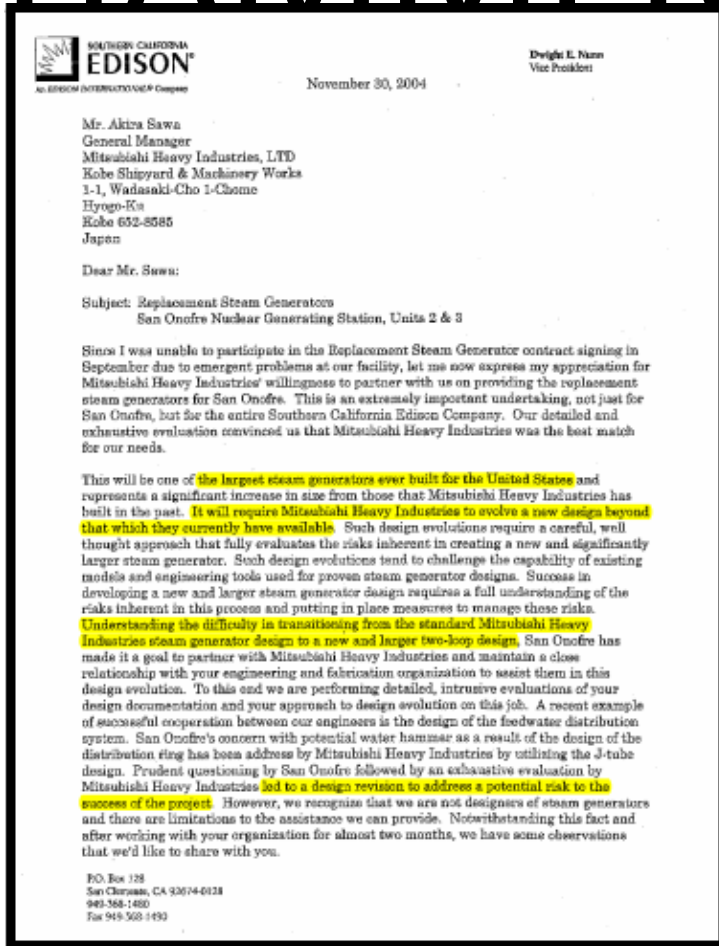
SAFETY

FEATURES

- Eliminated a stabilizing stay cylinder
- Eliminated anti-vibration bars
- Told the NRC they were “improvements”
- ADDED more steam tubes
- Water Hammers shook generators apart
- Radiation Leak withheld from public for 17 days by Southern California Edison

SCE's VP WATER

HAMMER WARNING!



What really happened ...

Old Steam Generator

New Steam Generator



Old Steam Generator, before design modifications



Replacement Steam Generator, after modifications

WHISTLEBLOWER REPORT

Did Edison Electric
REDLINE
its Nuclear
GENERATORS?



DID IT CAUSE THE RADIATION LEAK?

Too HOT, too HARD, too *FAST*

- SONGS, the San Onofre Nuclear Generating Station failed because the operators ignored the instruction manuals (50.59 Screen Orders) for the Replacement Steam Generators (RSGs)

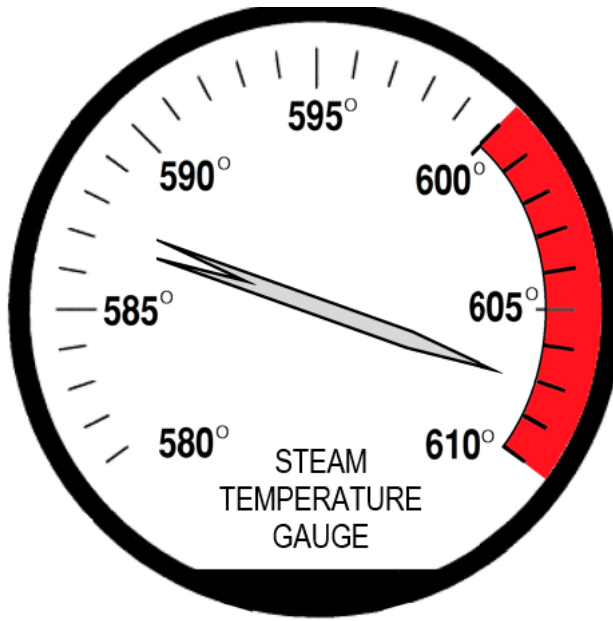
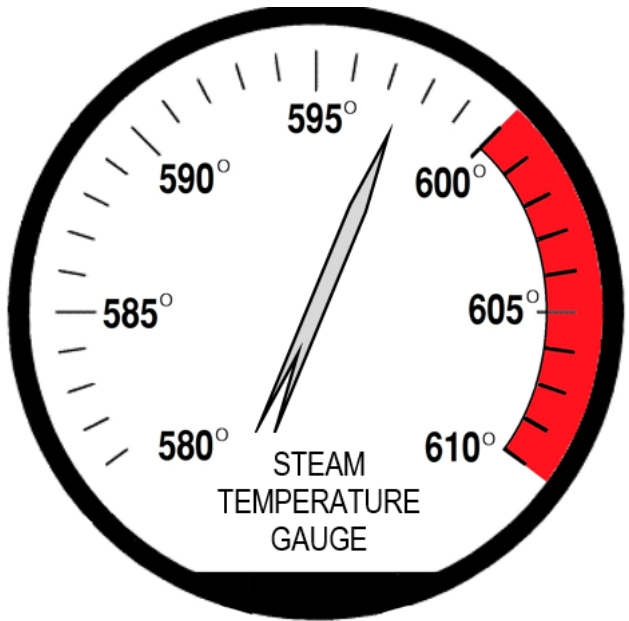
The RSGs are qualified to operate in the T_{hot} range from 598 to 611oF, which corresponds to the T_{cold} range from 541.3 to 555.4oF. However, NECP 800071703 and this 50.59 screen only allows the plant to operate up to $T_{hot} \leq 598oF$, as additional analyses are required to be performed to evaluate the rest of the RCS and support systems' ability to operate above $T_{hot} > 598oF$.

SCE's Operators pushed the Replacement Steam Generators beyond their engineered "redlines" specified in their own Screen Orders. In simple terms, Southern California Edison...

- **Ran the RSGs at steam temperatures that were too high (too hot)**
- **Forced too much steam pressure through the system (too hard)**
- **Created excess steam velocity and pressures (too fast).**

SCREEN ORDERS

VIOLATED



**DANGER
ZONE**

A difference of Degree Steam Temperature too high

STEAM PRESSURE TOO HIGH

- January 31, 2012: radiation sirens blew
- Hot, radioactive dry steam escaped from generator
- Unit #3 vented Radioactive dry steam into our atmosphere
- SCE withheld notice from the public for 17 days
- SCE then claimed 'small leak'
- June 8, 2013 SONGS shuttered
- SCE 'Dilute & Discharge' policy and water quality

CONSEQUENCES

ED



THE COVERUP

- Ex Parte Meetings revealed
- CPUC President met Edison in Warsaw Poland
- Warsaw Notes = What Edison should be paid by the ratepayers for their “losses”
- Determine if Edison was at fault later
- Stalled, stonewalled delayed all hearings until case was settled quietly out of court
- **All Public Hearings circumvented**

RESULTS

- \$4.7 Billion Estimated cost to close San Onofre (SONGS)
- \$3.3 Billion approved by regulators to be paid by customers instead of Edison stockholders
- \$775 Million settlement shaved off \$3.3 Billion customers not to pay in future
- \$2.525 Billion remaining SONG closing costs customers will pay instead of Edison stockholders

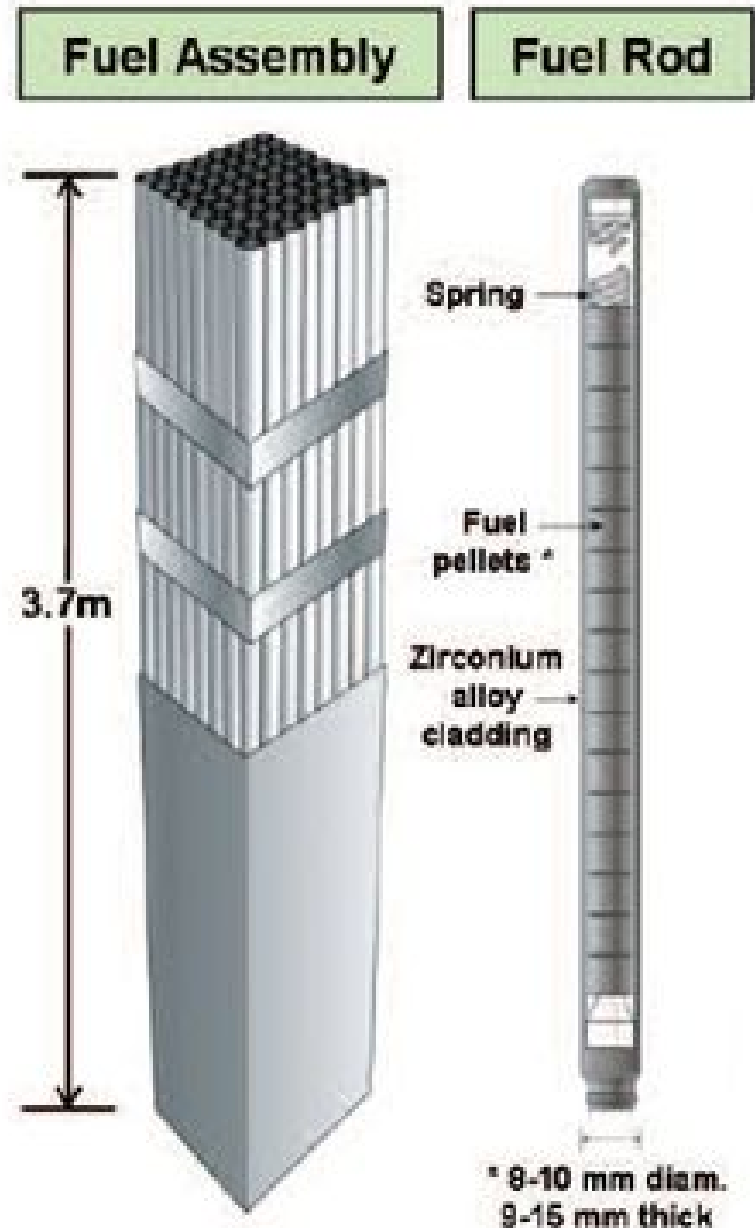
FUEL WAS SCHEDULED TO BE INTERRED IN DECEMBER



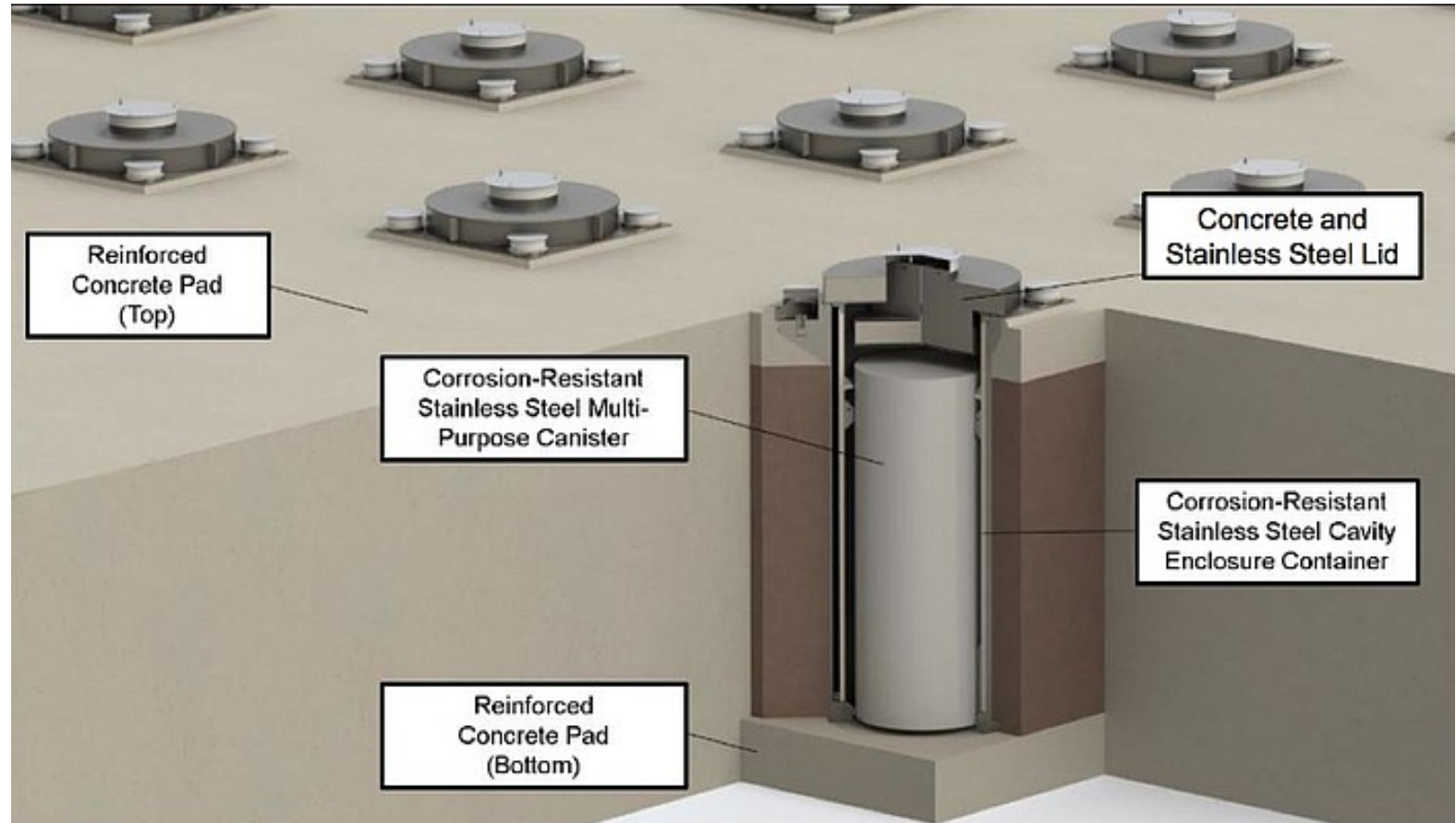
Fuel Offload Schedule

Action	Timing
ISFSI pad construction complete	August 2017
Security building complete	October 2017
Final SCE reviews and NRC inspections	November 2017
Start offload from wet to dry storage	December 2017
All fuel in passive dry storage	Mid-2019

This is the
fuel they are
offloading

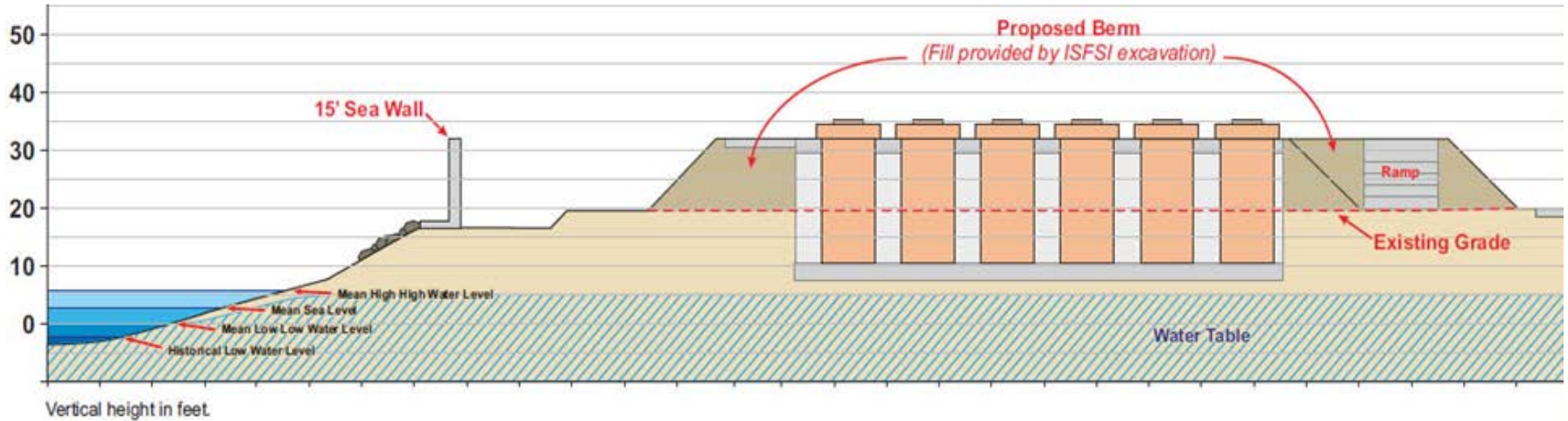


The Silos

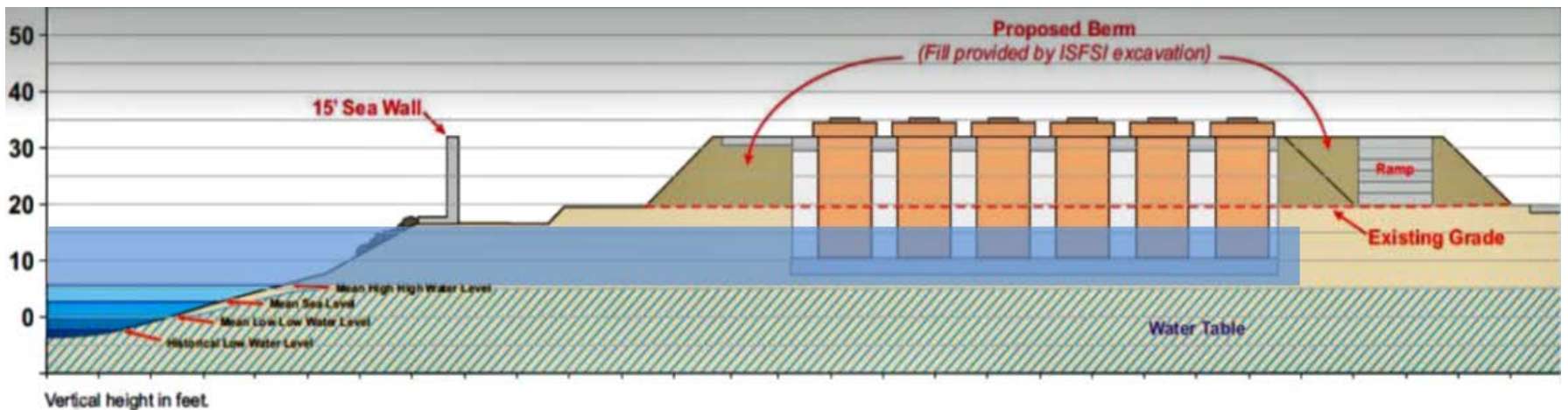


MANUFACTURER'S SIDE VIEW

Current Sea Level



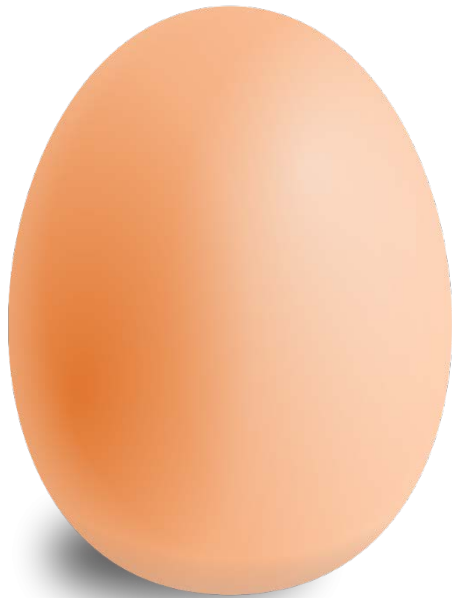
Projected Sea Level by 2050, James Hansen, NASA





Proportional Mathematics

- $5/8$ " on full size cask = "Eggshell Thin"



wiseGEEK

DEFECTIVE SHIMS



Basket Shims





Decommissioning
San Onofre
Nuclear Generating Station

Shim Designs

Original Design

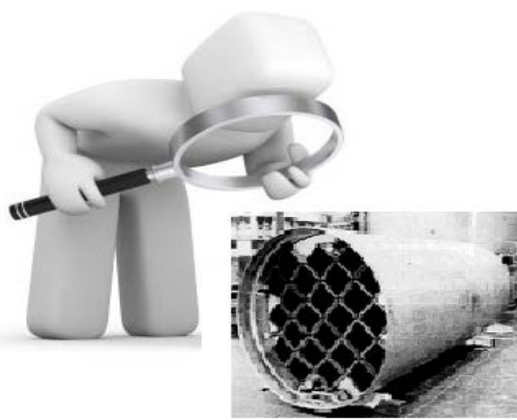


New Design



CA Coastal Commission GRANTS EDISON PERMIT

- October 6, 2015 CA Coastal Commission grants Edison burial permit
- Granted under **‘Special Conditions’**
- Aging Management Program **required** by the NRC
- Special Condition #2 of permit



STILL NO WAY TO INSPECT

- **Special Condition #2 requires** Edison implement an Aging Management Program
- **Underground Monitoring needed to:**
 - **evaluate environmental conditions**
 - **inspect cask for structural integrity**
 - **performance delivered as designed**
 - **allow for safe transport as promised**

“

Publicity is justly commended as a remedy for social and industrial diseases. Sunlight is said to be the best of disinfectants; electric light the most efficient policeman.

”

Louis Brandeis, Supreme Court Justice