

Neill, Ben@Waterboards

From: Nina Babiarz <babiarz@cox.net>
Sent: Tuesday, June 12, 2018 4:57 PM
To: Gibson, David@Waterboards; Neill, Ben@Waterboards; harry.abarbanel@waterboards.ca.gov; Blank, Christina@Waterboards; rb9agenda, rb9agenda@Waterboards
Cc: George Courser; Charles Langley; 'William Weigel'; 'Lynch Niel'; 'Pam Patterson'; 'Phil M'; 'Pope Bob'
Subject: Public Watchdogs PPT. Presentation and associated printed materials for San Diego
Attachments: PWD SD RWQCB SONGS Overview-6-20-17.pptx; Dwight-Nunn 11-20-2004 Letter Leaked 05 14 15.pdf; Warsaw Notes.pdf; Public Watchdogs-SONGS Closure Costs Bar Graph-FINAL 2-28-18.pdf; Nina Babiarz.vcf

Greetings Dave –

Many thanks for the return call and your direction to provide copies of the Public Watchdogs PPT. and associated printed materials in PDF format for electronic distribution; Attached.

Look forward to seeing you on the 20th.

Best Regards, Nina



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SAN ONOFRE

San Diego Regional Water Quality Control Board

June 20, 2018

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by

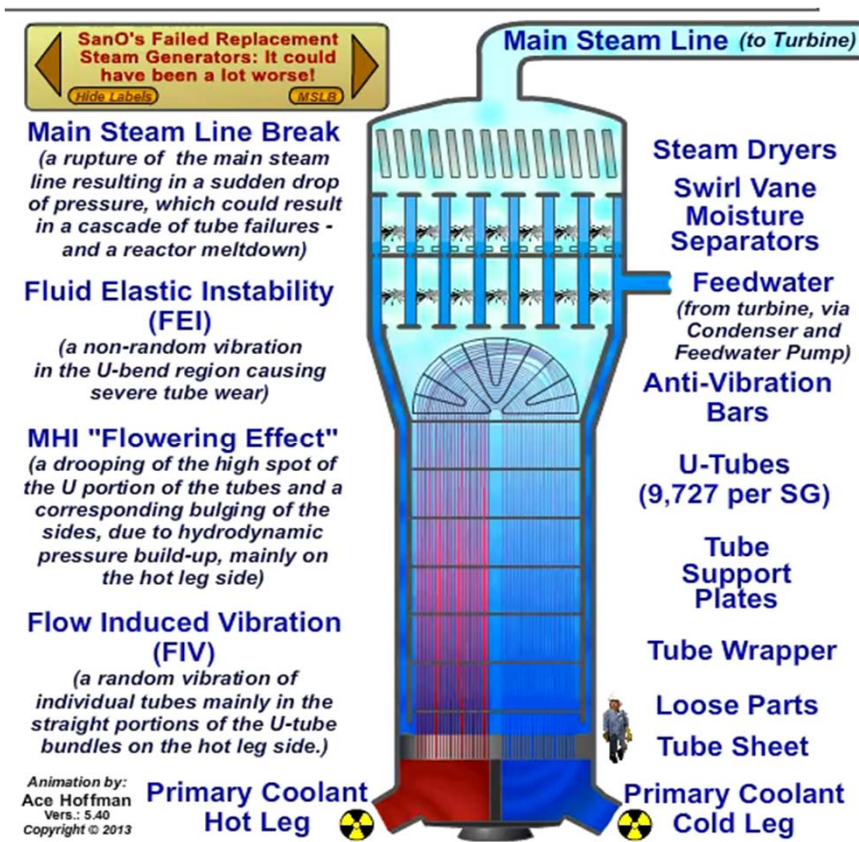


Charles
Langley
Executive
Director

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



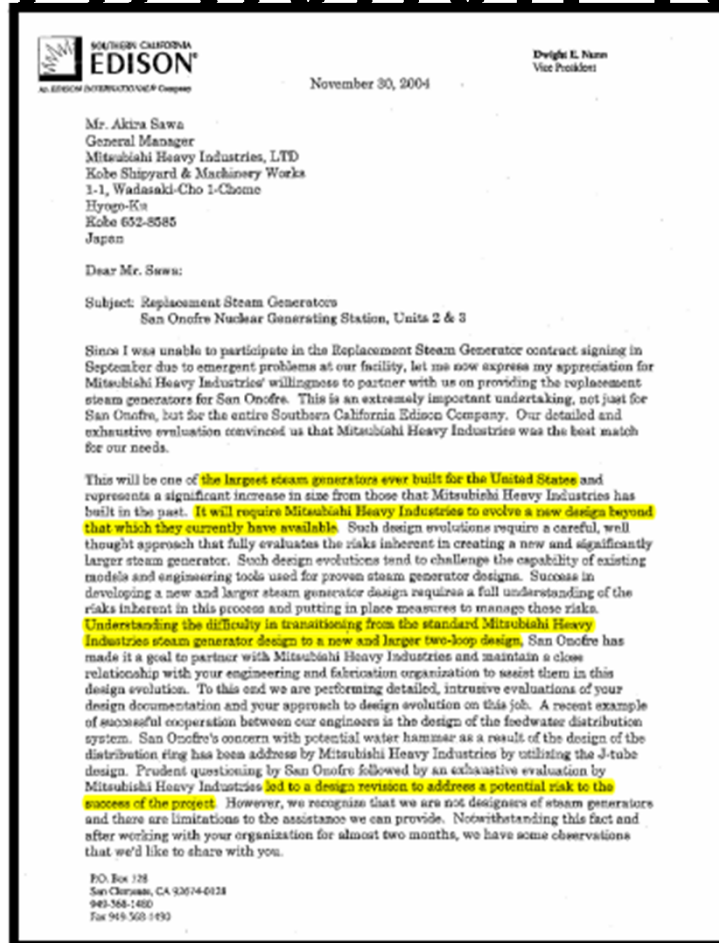
- Southern California Edison's (SCE) Steam generators wore out
- Reported replacement intent to Nuclear Regulatory Commission (NRC)
- "Like for Like" Replacement Steam Generators (RSG)

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



Old Steam Generator, before design modifications

New Steam Generator



Replacement Steam Generator, after modifications

WHISLEBLOWER 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)

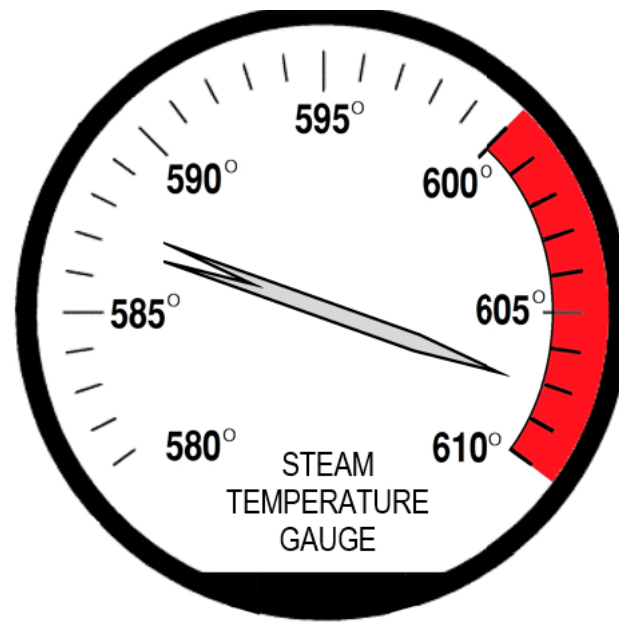
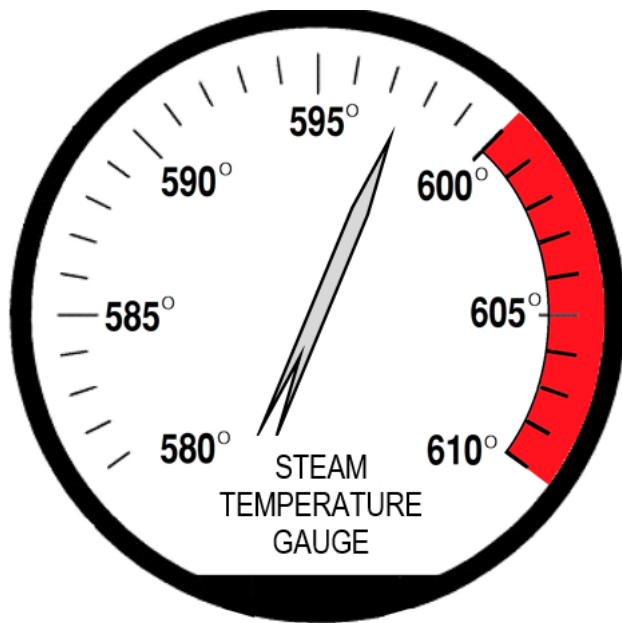
The RSGs are qualified to operate in the T_{hot} range from 598 to 611oF, which corresponds to the T_{cold} range from 541.3 to 555.4oF. However, NECP 800071703 and this 50.59 screen only allows the plant to operate up to $T_{hot} \leq 598oF$, as additional analyses are required to be performed to evaluate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



D#ghunqf#ri#Ghjuh#Vwdp #Wp shudun#r#lk

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

FBI



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

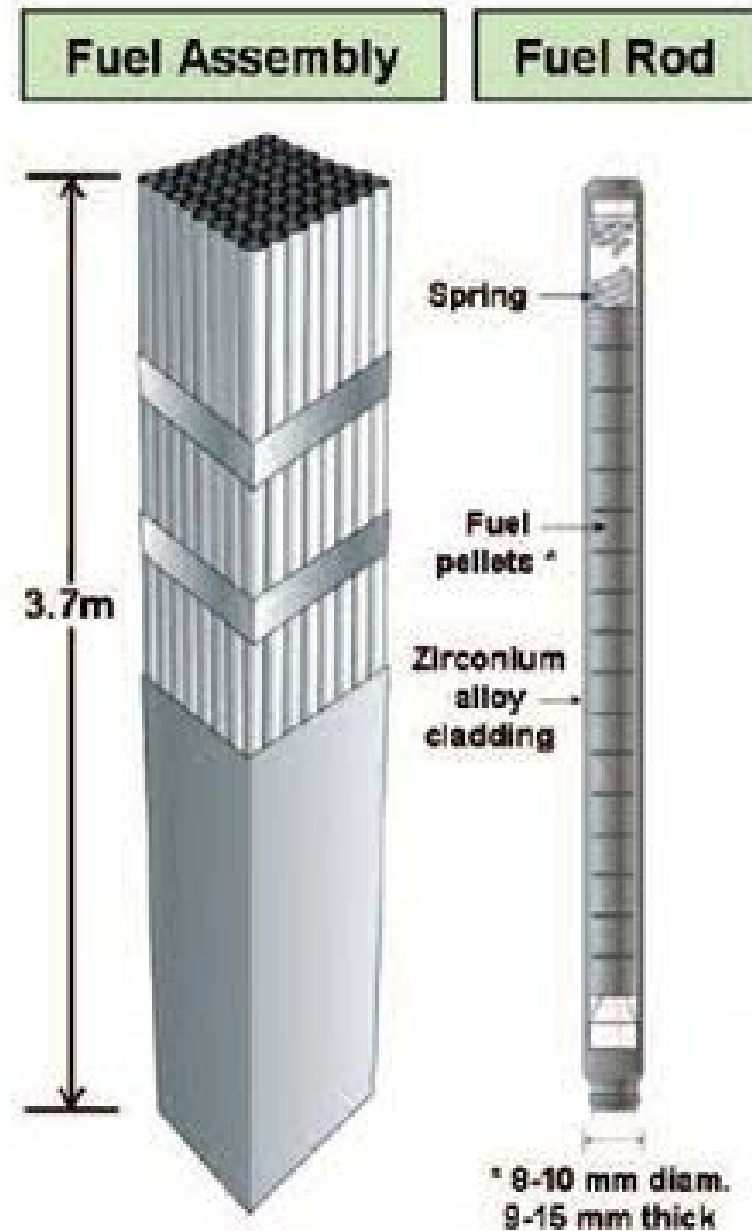
FUEL WAS SCHEDULED TO BE INTERRED IN DECEMBER



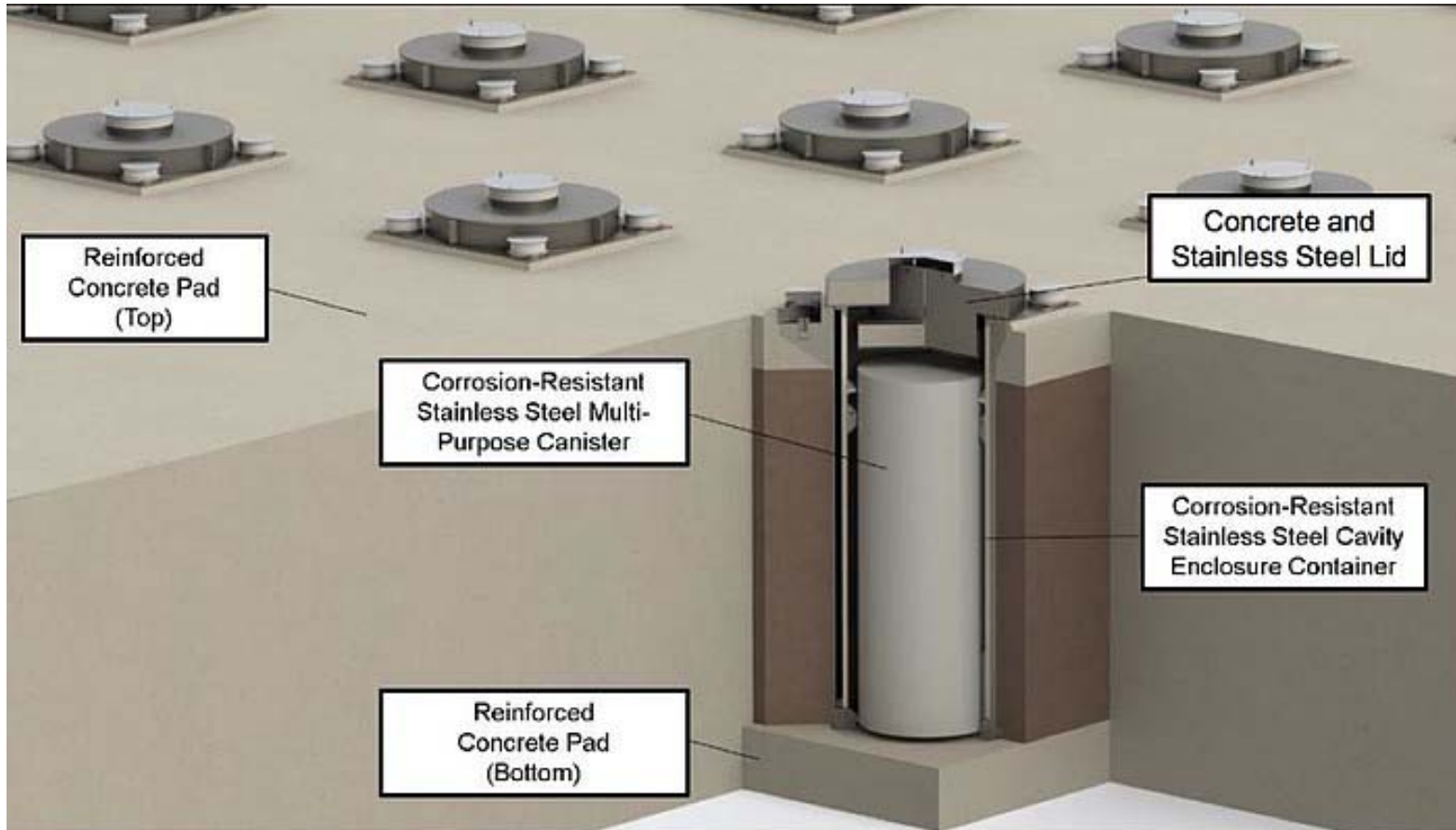
Fuel Offload Schedule

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

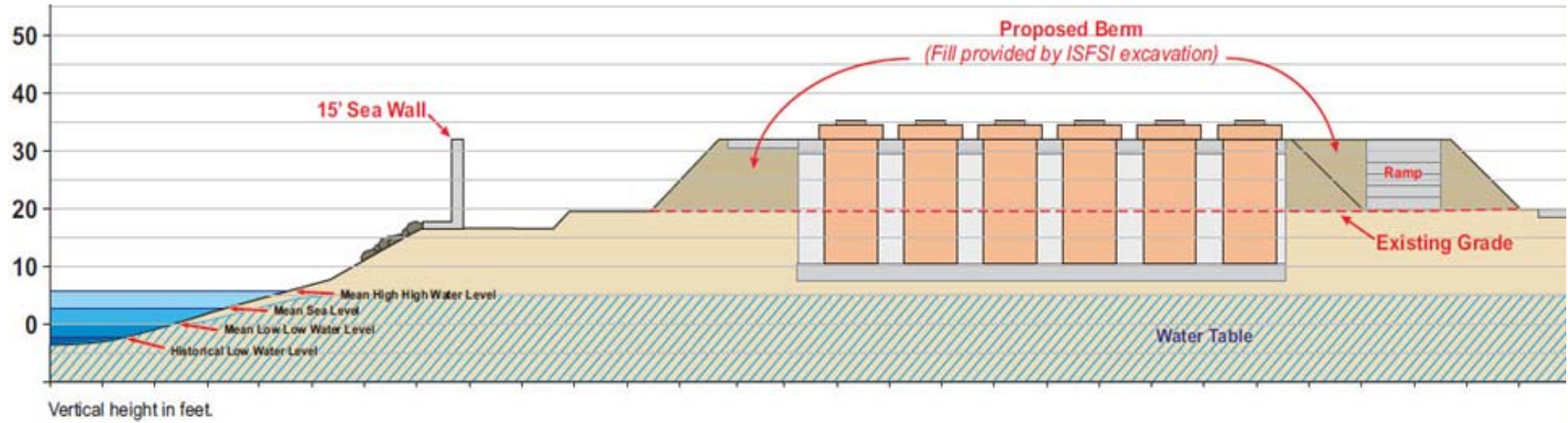


The Silos

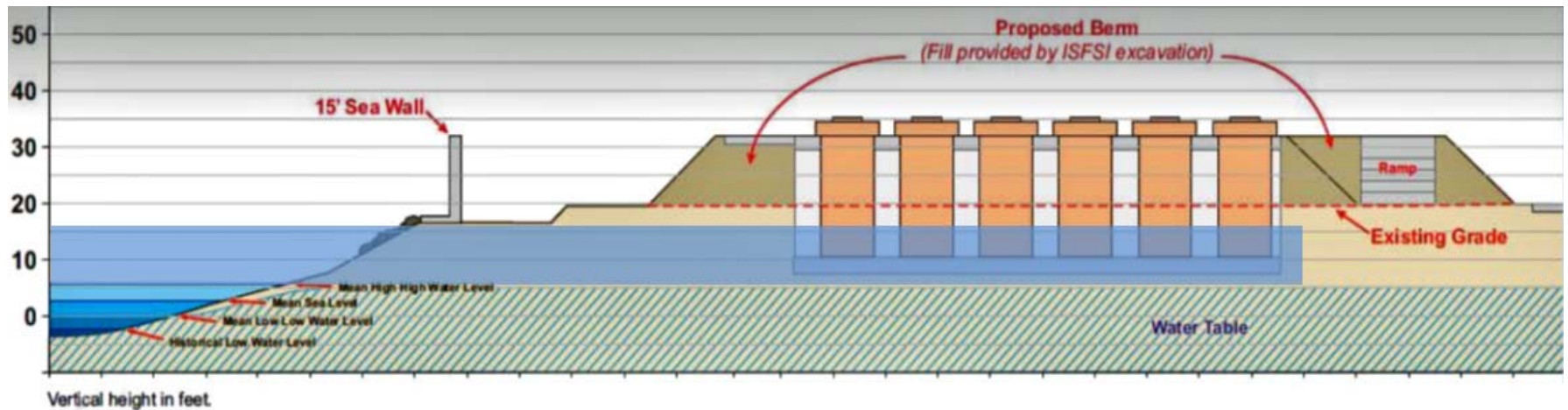


MANUFACTURER'S SIDE VIEW

Current Sea Level



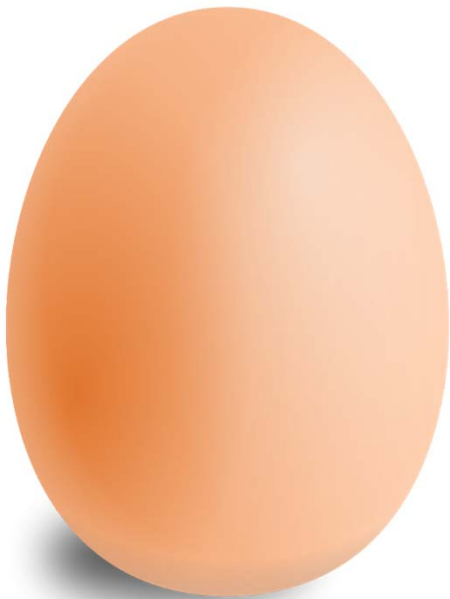
Projected Sea Level by 2050, James Hansen, NASA





Proportional Mathematics

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



wiseGEEK

DEFECTIVE SHIMS



**Decommissioning
San Onofre**
Nuclear Generating Station

Basket Shims




Shims

Basket for
Fuel Assemblies



Shim
Installation

Decommissioning San Onofre Nuclear Generating Station Safety | Stewardship | Engagement



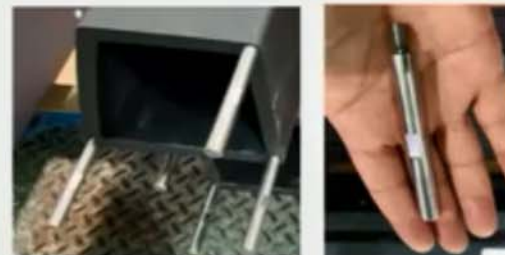


Shim Designs

Original Design

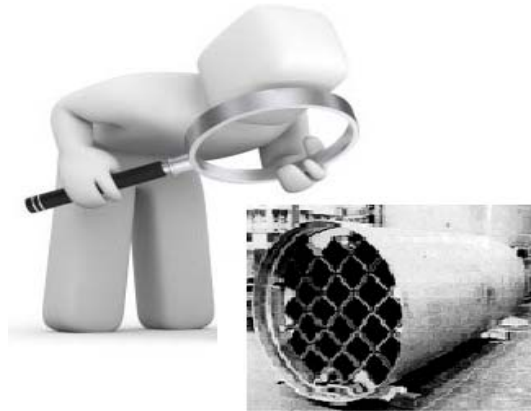


New Design



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**

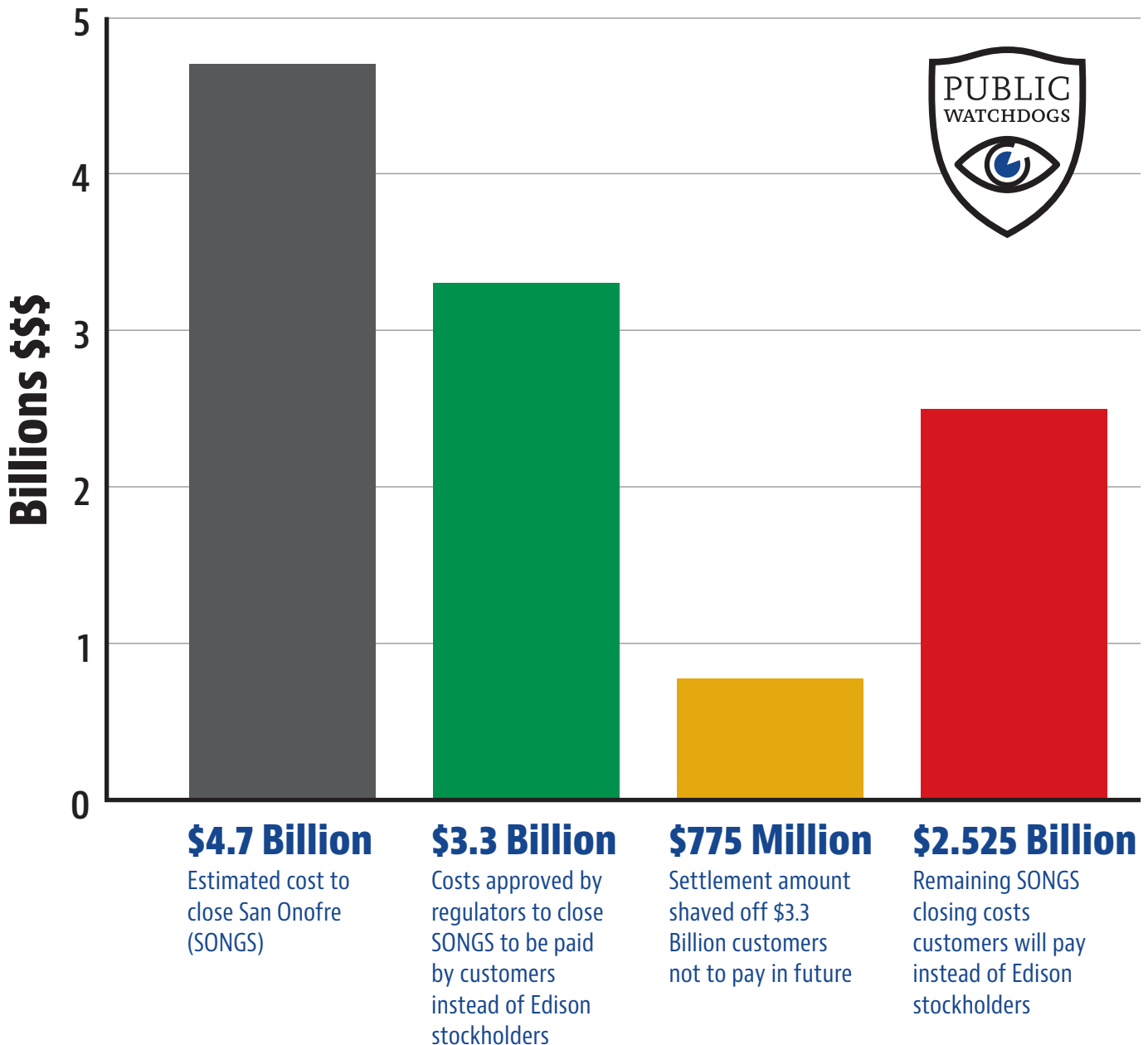
“

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.

”

Orxlv#Eudqghlv/#xsuhp h#rxu#xwifh

What SONGS Closure Settlement Costs the Consumer





Dwight E. Nunn
Vice President

November 30, 2004

Mr. Akira Sawa
General Manager
Mitsubishi Heavy Industries, LTD
Kobe Shipyard & Machinery Works
1-1, Wadasaki-Cho 1-Chome
Hyogo-Ku
Kobe 652-8585
Japan

Dear Mr. Sawa:

Subject: Replacement Steam Generators
San Onofre Nuclear Generating Station, Units 2 & 3

Since I was unable to participate in the Replacement Steam Generator contract signing in September due to emergent problems at our facility, let me now express my appreciation for Mitsubishi Heavy Industries' willingness to partner with us on providing the replacement steam generators for San Onofre. This is an extremely important undertaking, not just for San Onofre, but for the entire Southern California Edison Company. Our detailed and exhaustive evaluation convinced us that Mitsubishi Heavy Industries was the best match for our needs.

This will be one of the largest steam generators ever built for the United States and represents a significant increase in size from those that Mitsubishi Heavy Industries has built in the past. It will require Mitsubishi Heavy Industries to evolve a new design beyond that which they currently have available. Such design evolutions require a careful, well thought approach that fully evaluates the risks inherent in creating a new and significantly larger steam generator. Such design evolutions tend to challenge the capability of existing models and engineering tools used for proven steam generator designs. Success in developing a new and larger steam generator design requires a full understanding of the risks inherent in this process and putting in place measures to manage these risks. Understanding the difficulty in transitioning from the standard Mitsubishi Heavy Industries steam generator design to a new and larger two-loop design, San Onofre has made it a goal to partner with Mitsubishi Heavy Industries and maintain a close relationship with your engineering and fabrication organization to assist them in this design evolution. To this end we are performing detailed, intrusive evaluations of your design documentation and your approach to design evolution on this job. A recent example of successful cooperation between our engineers is the design of the feedwater distribution system. San Onofre's concern with potential water hammer as a result of the design of the distribution ring has been address by Mitsubishi Heavy Industries by utilizing the J-tube design. Prudent questioning by San Onofre followed by an exhaustive evaluation by Mitsubishi Heavy Industries led to a design revision to address a potential risk to the success of the project. However, we recognize that we are not designers of steam generators and there are limitations to the assistance we can provide. Notwithstanding this fact and after working with your organization for almost two months, we have some observations that we'd like to share with you.

P.O. Box 128
San Clemente, CA 92674-0128
949-368-1480
Fax 949-368-1490

Mr. Akira Sawa

-2-

November 30, 2004

- A detailed and accurate calculation of Reactor Coolant System flow is critical to ensure the steam generators are designed to within limits required to satisfy our existing licensing basis of 106% of the original flow rate (as required by our Purchase Order). Failure to meet this requirement would have significant impact on the operation of San Onofre including a potential inability to operate the units. We understand that Mitsubishi Heavy Industries is currently in discussions with Westinghouse to develop a detailed loop model to perform this analysis. We support Mitsubishi Heavy Industries' sensitivity to the significance of this issue and the prudent course of action they are undertaking.
- Anti-Vibration Bar design (and installation) is by far one of the most challenging tasks that will face Mitsubishi Heavy Industries and San Onofre; in fact, it is in our opinion the single most significant task facing the industry for steam generators of our size today. Since the San Onofre steam generators are one of the largest steam generators ever built and large steam generators appear more susceptible to wear (in fact, our current steam generators have experienced a high percentage of plugged tubes due to wear), it is a paramount concern of ours that we ensure a reliable support design. We consider this engineering challenge perhaps the most critical issue at this time. Recent industry experience with Anti Vibration Bar supports has demonstrated the difficulty in developing a successful design (the recent experience at a United State's plant emphasized this point when more that 180 tubes were found to have wear indications after only one cycle of operations, some of these indications were up to 20% through wall). Our discussions with Mitsubishi Heavy Industries to date have not resulted in a plan that will successfully address this industry concern. Both San Onofre and Mitsubishi Heavy Industries are having difficulty in formulating such a plan.
- San Onofre is located in a high seismic zone. As Mitsubishi Heavy Industries is aware this creates significant design challenges, especially in light of the fact that the San Onofre steam generators are among the largest ever built in the United States and are the largest ever built by Mitsubishi Heavy Industries. We have been working very closely with your staff to assist them in any manner we can in this design effort. As part of this seismic design effort, Mitsubishi Heavy Industries developing a stick mass spring model for the new steam generators. In addition, Mitsubishi Heavy Industries is developing some localized three-dimensional models of the new steam generators to benchmark the stick model. However, these models aren't ready for use at this time and the design effort must proceed to meet the 2008 delivery date for the steam generators for Unit 2. Consequently, the design of the new steam generators is currently proceeding using the existing steam generator seismic response based on a like-for-like replacement concept (although the old and new steam generators will be similar in many respects they aren't like-for-like replacements). Should there be a significant difference in the seismic response of the old and new steam generators, changes in the steam generator design may be necessary. Therefore, it is imperative that adequate margin be provided in the replacement steam generator design to accommodate this possibility while simultaneously expediting the necessary new analysis (procurement of major components is currently in progress and purchase of new forging can't be accommodated in the schedule should it become necessary). The development of an accurate stick model, using conservative assumption and subsequent validation of this stick model

Mr. Akira Sawa

-3-

November 30, 2004

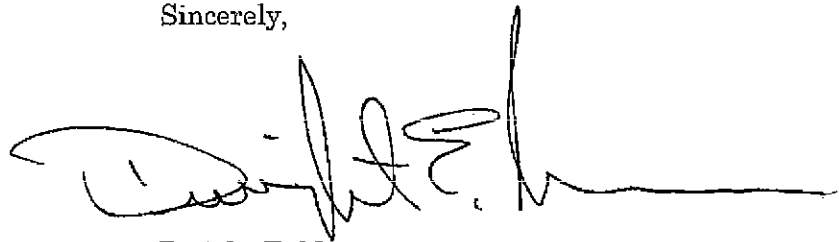
using results from the three dimensional models is essential to minimize the risk of any future design modification after the major forgings are procured and/or machined.

- The San Onofre steam generator moisture separator assembly will be the largest Mitsubishi Heavy Industries has ever designed. The configuration of the moisture separators and dryers and their ability to achieve the required performance remains a concern for San Onofre. **Scaling up an existing design is not necessarily a linear task and if not performed correctly may result in unsatisfactory performance at San Onofre.** Mitsubishi Heavy Industries is encouraged to consider using all available resources (such as being done with respect to the Reactor Coolant System flow analysis) in the design the steam generators to ensure acceptable performance.

Based upon these observations, **I am concerned that there is the potential that design flaws could be inadvertently introduced into the steam generator design that will lead to unacceptable consequences (e.g., tube wear and eventually tube plugging).** This would be a **disastrous outcome** for both of us and a result each of our companies desire to avoid. In evaluating this concern, it would appear that one way to avoid this outcome is to ensure that relevant experience in designing larger sized steam generators be utilized. It is my understanding the Mitsubishi Heavy Industries is considering the use of Westinghouse in several areas related to scaling up of your current steam generator design (as noted above). I applaud your effort in this regard and endorse your attempt to draw upon the expertise of other individuals and company's to improve the likelihood of a successful outcome for this project. I would encourage you to continue to draw upon those resources available to you to produce a design that will represent a Mitsubishi Heavy Industries steam generator capable of meeting not just San Onofre's, but the world's needs.

Should you have any questions or desire further discussion on this matter, I can be reached at (949) 368-1480. I look forward to visiting your facility again in the near future.


Sincerely,



Dwight E. Nunn
Vice President


cc: Y. Nishi
J. E. Hutter
H. Kaguchi
H. Hirano
M. Ida
M. A. Wharton
R. L. Park

Warsaw Notes



1. Pre-RSC investment: recovery of debt-level reduce through 2022.
2. RSC and post-RSC investment: disallow "retroactively out of sale price" effective release ~~release~~
3. Replacement power responsibility: customer
4. Misfeasance remedies: to customer
5. M&E M&E recovery: 1st to S&P to the extent of the disallowance 2nd to customer
6. Decommissioning costs: remain in sales through time of decommissioning -- partial participation in CAC proceedings as before
7. O&M:
 - a) Already approved O&M assets through shutdown + 6 months
 - b) S&P to determine shutdown O&M through end of 2017 (i.e., not in CAC)
 - c) shutdown O&M 2018 and beyond determined in CAC's
 - d) Shutdown O&M to include consented allowance for 2018 employees - 1 per 9 hrs rates

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8. Environmental offset: S&P to create \$100 million per year 2019-2022 to for spent upon O&E, climate, or environmental academic research fund, institution, etc.}
9. Review of settlement agreement approved in CAC
 - a) balance of CAC should account for shutdown O&M phase
 - b) now CAC phase for shutdown O&M per 7(b) and 7(d) above
 - c) 200 O&E for shutdown O&M 2018 and beyond
 - d) Used CAC proceeds for recovery of decommissioning costs

M&E Summary

1 - First 6 months	50% each
2 - Next 6 months	50% each
3 - Approval for 6 hrs	50% each
4 - After Shutdown	50% each

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