August 30, 2018

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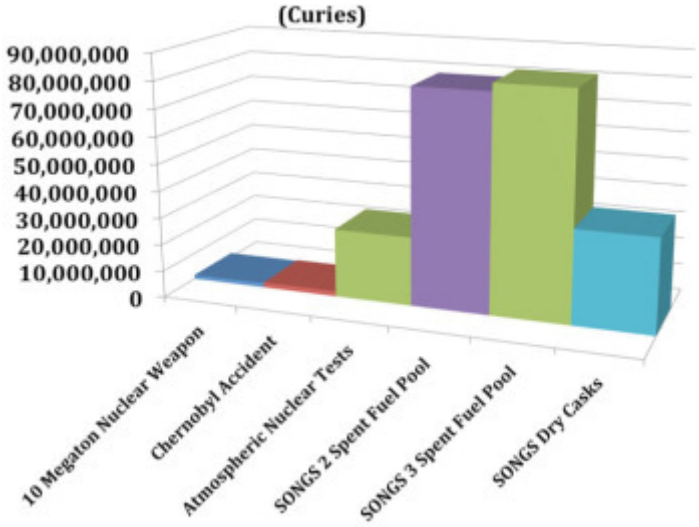
RE: SONGS Decommissioning Project Draft EIR comments (San Onofre)



Curies of Cesium-137 at San Onofre (SONGS), Robert Alvarez

There are many false assumptions, inconsistencies, incorrect information and conclusions based on non-factual information in the State Lands SONGS Decommissioning Project Draft EIR. It requires a reevaluation and recirculation. A "No Project" recommendation is the only environmentally sound conclusion at this time, once you know the facts.

If the EIR is truly looking for the lowest environmental impact, the only alternative is to store all the San Onofre spent nuclear fuel into thick-wall casks that can be maintained and monitored to prevent major radioactive releases. The spent fuel pools must be retained and not eliminated from the EIR scope.

The EIR claim that it is "speculation" that canisters may need to be reloaded is based on EIR false assumptions and contradicting information within the EIR itself. CEQA requires projects not be broken into pieces when there are interrelated pieces, as is the case in this situation.

Southern California Edison's (SCE) current NRC license requires using the spent fuel pools to unload defective or leaking canisters. The conduits in the ocean are needed for cooling the pools. They should remain functional and not be destroyed. SCE implemented a "fish aquarium" chiller system in lieu of using the once-through cooling system, but that was approved based on assumptions of only short-term need. Since the fuel will remain on the site for decades, if not centuries, (as the EIR states) a pool or a hot cell is needed to replace aging or otherwise defective canisters.

> NRC Certificate of Compliance, Docket 72-1040, Holtec HI-STORM UMAX Spent Fuel Storage Casks (Condition 8.h.) https://www.nrc.gov/docs/ML1634/ML16341B080.pdf
>
> San Onofre Nuclear Generating Station – NRC Inspection Report 05000206/2017-003, 05000361/2017-003, 05000362/2017-003, and 07200041/2017-001, August 24, 2018
> https://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber=ML18200A400

NRC NUREG-1927, Revision 1, (Aging Management Plan) states canisters with 75% through-wall cracks (based on ASME Pressure Vessel standards) must be taken out of service. A pool or hot cell is required to do this. There are no other options. SCE's plan to destroy the pools and cooling systems does not address how they will handle this situation. The SLC should require that information from Edison as part of their EIR analysis.

Standard Review Plan for Renewal of Specific Licenses and Certificates of Compliance for Dry Storage of Spent Nuclear Fuel Final Report, NUREG-1927 Revision 1, June 2016 (ML16179A148) https://www.nrc.gov/docs/ML1617/ML16179A148.pdf

Given that defective Holtec canisters were delivered to San Onofre and it was not discovered until after four canisters were loaded with nuclear waste and welded shut, it is not "speculative" as the EIR states, that canisters will need to be unloaded.

Email from NRC David McIntyre regarding Holtec/San Onofre Loose Bolts issues, March 27, 2018 https://sanonofresafety.files.wordpress.com/2018/08/nrc-mcintyre-gilmorelooseholtecboltsemail2018-03-27-0245pm.pdf

Tom Palmisano presentation on defective Holtec Basket Shim (loose bolts) issue, March 22, 2018 https://youtu.be/mjgna2atn7Y

The NRC admits once a crack starts in a thin-wall canister (only 5/8" thick), it can grow through the wall in **16 years**. A Diablo Canyon Holtec canister was found to have a **2-year old canister** with one of the conditions for cracking (moist salt air, which can enter through air vents and initiate the corrosion process. This is critical information that should not be ignored. San Onofre canisters are up to **15 years old.** You do the math.

Large air vents in Holtec lids allow corrosive marine environment to corrode canisters and start the cracking process.

Summary of August 5, 2014, Public Meeting with the Nuclear Energy Institute on Chloride Induced Stress Corrosion Cracking Regulatory Issue Resolution Protocol, Nuclear Regulatory Commission, September 9, 2014 https://www.nrc.gov/docs/ML1425/ML14258A081.pdf

Diablo Canyon: conditions for stress corrosion cracking in 2 years, October 23, 2014 https://sanonofresafety.files.wordpress.com/2011/11/diablocanyonscc-2014-10-23.pdf

It would be extremely beneficial to California residents and other stakeholders that California elected official and regulators convene a fact-finding workshop and project with all agencies that have regulatory or other authority over the San Onofre facility, along with selected citizens who have facts that apparently are not being shared with our state government and others. This is too major an issue to decide in a piecemeal fashion.

The SCE Settlement Agreement with Citizen's Oversite is a private agreement with SCE. The Coastal Commission is not a party to that agreement and did not agree to this settlement. It should not be used as any justification for this EIR. It basically lets Edison do whatever they want that is "commercially viable". This misinformation is used throughout the EIR.
On Page ES-5 and elsewhere the EIR admits the nuclear waste may need to be repackaged, whether for transport or other problems with the canisters. SCE's NRC Certificate of Compliance (license) requires the ability to unload the spent fuel assemblies back into the spent fuel pool. Tom Palmisano, SCE, admitted in a Community Engagement Panel Meeting (CEP) that they have no ability to do this and no other facility has done this with these thin-wall canisters. Therefore, SCE is out of compliance with their NRC license. The EIR process should stop until this and other issues are resolved.

The only other method to unload canisters and load into another container is in a hot cell (dry fuel handling facility filled with an inert gas so nothing explodes). However, there are none in the US large enough to do this. SCE has no plans to build a hot cell.

The "expert" SCE used to claim they have an adequate plan is MPR Associates. MPR Associates claimed it is feasible to transport a cracking or leaking canister to the Idaho National Lab Test Area North "hot cell" facility. **MPR's own reference stated this hot cell was destroyed in 2007.** And the NRC has not approved a transport cask for this purpose.

SCE plan to replace leaking canisters: Ship it to this Idaho Test Area North (TAN) hot cell, which was destroyed in 2007

Test Area North Hot Shop Final Demolition video, 2007. This was the only US hot cell large enough to replace large spent nuclear fuel canisters. https://youtu.be/P_4eQ41ttPQ

MPR Associates white paper "SONGS Used Fuel Management – Defense in Depth", September 2017, page 20, https://sanonofresafety.files.wordpress.com/2018/08/pre-read_songs_used_fuel_management_did_white_paper.pdf

MPR Associates Reference #21 Viability of Existing INL Facilities for Dry Storage Cask Handling, USDOE Report, INL/EXT-13-29035, April 2013 Executive Summary Page v) https://inldigitallibrary.inl.gov/sites/sti/sti/5680934.pdf

MPR Associates is the same so-called "independent experts" that stated the four defectively designed Holtec canisters, currently loaded with spent nuclear fuel waste at San Onofre, are safe. These are the canisters with the defective basket shims. Basket shims are needed for structural stability, thermal cooling and to prevent criticalities (an uncontrolled fission reactions).

SCE admitted they do not know if these defectively designed canisters can be safely transported. Since transport is a Special Condition requirement of the Independent Spent Fuel Installation (ISFSI) California Coastal Commission Permit, this is a condition that cannot be ignored in this EIR.

Special Conditions for San Onofre Southern California Edison Coastal Permit 9-15-0228 https://sanonofresafety.files.wordpress.com/2015/10/9-15-0228-adopted-findingsspecialconditionsp6-8.pdf

Coastal Commission Permit 9-15-0228 Construct and operate an Independent Spent Fuel Storage Installation (ISFSI) to store spent nuclear fuel from SONGS Units 2 and 3, December 8, 2015 https://sanonofresafety.files.wordpress.com/2015/10/9-15-0228-adopted-findings.pdf

Coastal Commission Addendum to 9-15-0228 – SCE SONGS ISFSI Project, October 5, 2015 https://sanonofresafety.files.wordpress.com/2015/10/tu14a-10-2015-addendum.pdf

Recent loading errors at San Onofre by Holtec are more examples of human error and mismanagement at San Onofre. To presume it is speculative canisters will need to be unloaded back into the pool or loaded into new containers due to failure, incorrect loading or for transport purposes is not speculative. These documents and video identify numerous unresolved issues at San Onofre. Many of them could

require unloading fuel back into the pool either now or in the relatively near future. For example, in Edison's August 10, 2018 press release, *Southern California Edison Statement on Spent Nuclear Fuel Canister*, it states:

> Holtec was loading the spent fuel canister into the Cavity Enclosure Container (CEC) on the dry cask storage pad when the canister got caught on an inner ring that helps to guide it into place. There is a very snug fit in the CECs, and **it is not unusual for it to take the downloading team a few manipulations to get the canister aligned appropriately**.
>
> Southern California Edison Statement on Spent Nuclear Fuel Canister, August 10, 2018 https://www.songscommunity.com/news/releases/southern-california-edison-statement-on-spent-nuclear-fuel-canister

The workers loading the canisters are not able to see the bottom of the over 50 ton thin-wall canister moving into the CEC hole to easily properly align it. That's why in addition to this being the second time a canister was caught on an inner ring guide (as stated by David Fitch), SCE admits it takes a few manipulations to get the canister aligned appropriately. This means the canister is likely scraped on the inner guide ring (referred to as an MPC Guide in the HI-STORM UMAX SYSTEM FSAR).

Once the microscopic oxide layer that makes stainless steel stainless is removed through scratches or other conditions, crack initiation will occur, according to the NRC. Therefore, provisions for taking partially or fully cracked canisters out of service is needed even in the short-term. SCE has no plan for this if the spent fuel pools are removed. David Fritch said this Holtec design is an engineering problem. Based on the evidence provided, it appears this Holtec loading system is inadvertently designed to initiate cracking of the canisters. The NRC plans to inspect in September to determine if canisters are damaged. However, since canisters cannot be inspected for cracks, even on the outside, it is unclear how they will be able to do this. Therefore, we are left with cracking canisters that cannot be inspected, repaired, maintained or monitored to prevent or stop radioactive leaks and explosions.

> David Fritch, industrial safety inspector, August 10, 2018 transcript. https://sanonofresafety.files.wordpress.com/2018/08/davidfritchcep08-09-2018transcriptdg.pdf
>
> David Fritch, video statements, August 10, 2018 SCE Community Engagement Panel Meeting https://youtu.be/fnM9rfhWmic
>
> Final Safety Analysis Report (FSAR) Holtec HI-STORM UMAX Canister Storage System Revision 3, June 29, 2016 (ML16193A339) https://www.nrc.gov/docs/ML1619/ML16193A339.pdf
>
> NRC to Conduct Special Inspection at San Onofre Nuclear Generating Station, NRC News No: IV-18-013, August 24, 2018 https://www.nrc.gov/reading-rm/doc-collections/news/2018/18-013.iv.pdf
>
> NRC Memo, Inspection Charter to Evaluate the Near-Miss Load Drop Event at San Onofre Nuclear Generating Station, August 17, 2018 https://www.nrc.gov/docs/ML1822/ML18229A203.pdf

The US Nuclear Waste Technical Review Board (NWTRB) December 2017 report to Congress states that spent nuclear fuel must be maintained, monitored and retrievable in a manner to prevent hydrogen gas explosions in both short and long-term storage and transport. They state this is not being done. This issue has not been addressed by this EIR, SCE, the California Coastal Commission, the California Public

Utilities Commission or the Nuclear Regulatory Commission, yet the consequences of this are catastrophic. The EIR must address this in order to do a valid CEQA.

> NWTRB report to United States Congress and the Secretary of Energy, Management and Disposal of US Department of Energy Spent Nuclear Fuel, December 2017. http://www.nwtrb.gov/docs/default-source/reports/nwtrb-mngmntanddisposal-dec2017-508a.pdf?sfvrsn=12

The NWTRB May 2018 report to Congress admits technology does not exist to maintain and monitor a geological repository – **even in the short-term**. And no one is the world has any idea how they will be able to do this. This information counters the EIR unsubstantiated speculation that the DOE will take this waste to Yucca Mountain or any other location, for that matter.

> Geologic Repositories: Performance Monitoring and Retrievability of Emplaced High-Level Radioactive Waste and Spent Nuclear Fuel, NWTRB report to Congress, May 2018 http://www.nwtrb.gov/our-work/reports/geologic-repositories-performance-monitoring-and-retrievability-of-emplaced-high-level-radioactive-waste-and-spent-nuclear-fuel

> NWTRB March 27, 2018 Meeting on Geologic Repositories: preclosure operational and performance confirmation monitoring and the retrievability of emplaced high-level radioactive waste (HLW) and spent nuclear fuel (SNF) webcast and slides. http://www.nwtrb.gov/meetings/past-meetings/spring-2018-board-meeting---march-28-2018

NRC claims that nothing can go wrong in dry storage are based on false assumptions, proven false by their own data. Explosion risks were not addressed by the NRC or this EIR. Assumptions canisters can never be loaded incorrectly has been proven wrong at San Onofre and elsewhere. Assumptions of no materials degradation or manufacturing problems have been proven wrong.

> Advanced Notice of Proposed Rulemaking (ANPR): Regulatory Improvements for Decommissioning Power Reactors, Docket ID NRC-2015-0070, Sierra Club comments to NRC, March 18, 2018 https://www.nrc.gov/docs/ML1608/ML16082A004.pdf

The President of Holtec, Kris Singh, states even if you could find the crack, **in the face of millions of curies of radiation being released**, and find a way to robotically repair it, there is no adequate method to repair these canisters filled with spent nuclear fuel without introducing another area for cracking.

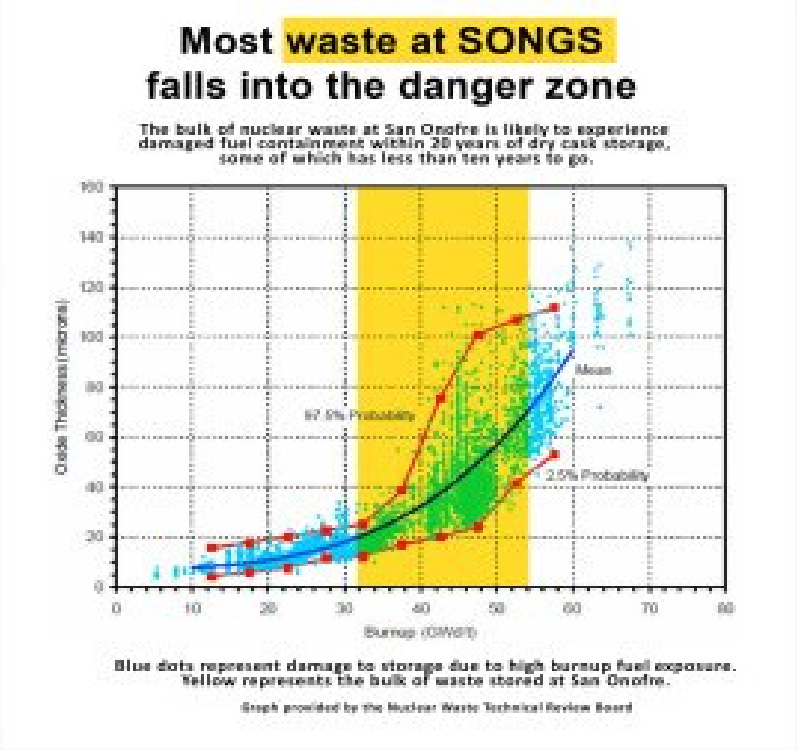
> Kris Singh, Holtec President, SCE Community Engagement Panel meeting, Oct. 4, 2015
> Video: https://youtu.be/euaFZt0YPi4
> Transcript: https://sanonofresafety.files.wordpress.com/2015/09/attachment-14-declaration-of-donna-gilmore.pdf

In the Holtec FSAR, claims of no tsunami risks or other flooding risks assume no through-wall cracks, yet SCE has no method to inspect canisters for cracks or depth of cracks and no method to replace canisters without a pool or hot cell.

At previous SCE Community Engagement Panel meetings Tom Palmisano, SCE Chief Nuclear Officer, has stated failing canisters could be stored in sealed transport casks. However, there are no such approved transport casks for these canisters. A thermal analysis would likely show they would overheat, since they would lose their required air-cooling system.

Instead, SCE's plan appears to be to hide radiation leaks and hope nothing explodes or goes critical. Their Areva TN America vendor is asking the NRC to allow SCE and others to no longer report radiation levels from the outlet air vents of these aging NUHOMS thin-wall canisters (already up to 15 years old at San Onofre). The outlet air vent is where radiation levels will be highest when canisters begin to leak from cracks. The NRC has already approved this for the Calvert Cliffs ISFSI, in Maryland.

Certificate of Compliance No. 1029, Amendment 4 NRC Pre-Application Meeting, TN Americas [Areva], September 11, 2017 (slide 6)
https://adamswebsearch2.nrc.gov/webSearch2/view?AccessionNumber=ML17254A086



The NRC bases their assumption on consequences of a canister "accident" on NRC NUREG-1140. This 1988 report assumes low burnup fuel (33,000 megawatt-days per metric ton of uranium). And they assume no unborated water will enter the canisters. They assume no explosion risks. However, the majority of spent nuclear fuel at San Onofre is above that level, up to 55,000 MWd/MTU. This higher burnup fuel creates hydrides in the zirconium cladding (rods), in the uranium pellets, and even in the aluminum alloy baskets. These hydrides when combined with air is very pyrophoric at fairly low temperatures. It damages the fuel rods and baskets and makes the thin cladding even thinner and fragile. These factors need to be addressed in the EIR in order to adequately access the environmental risks.

NUREG-1140 A Regulatory Analysis on Emergency Preparedness for Fuel Cycle and Other Radioactive Material Licensees Final Report, January 1988
https://www.nrc.gov/docs/ML1014/ML101460227.pdf

High Burnup Nuclear Fuel Unstable in Storage and Transport, March 15, 2018
https://sanonofresafety.files.wordpress.com/2018/03/highburnupfuelshortfactsheet2018-03-15.pdf

Spent Nuclear Fuel Fact Sheet, July 11, 2018
https://sanonofresafety.files.wordpress.com/2018/07/spentnuclearfuelfactsheet-short2018-07-11.pdf

Short-Term Failure Risks of U.S. Thin-Wall Spent Fuel Storage Canisters, September 20, 2016
https://sanonofresafety.files.wordpress.com/2011/11/koebergacrs.pdf

RECOMMENDATIONS

A “No Project” recommendation is the only environmentally sound conclusion at this time. The spent fuel pools and conduits must be retained until the spent nuclear fuel waste is removed from the site. The EIR claim that it is “speculation” that canisters may need to be reloaded is based on EIR false assumptions and contradicting information within the EIR itself. This EIR is filled with false assumptions, speculation, and conflicting and incomplete information. This EIR project should be halted until these issues are resolved. This requires a reevaluation and recirculation.

Recommended alternative project is to replace thin-wall canisters with thick-wall transportable storage casks. Then move the thick-wall casks to a higher elevation away from coastal environmental risks. Store in a reinforced building for additional environmental protection. This is the only option SCE and the NRC have left us with to do minimal environmental damage from San Onofre. If doing minimal environmental damage is truly the goal as stated in the EIR, there are no other feasible options.

The State of California should initiate an emergency project before it’s too late. With San Onofre canisters up to 15 years old, we are running out of time. We cannot rely on the NRC or SCE to do this. California needs to lead the nation with the most environmentally sound solution to store highly radioactive nuclear waste. The State of California allowed this nuclear waste to be generated. Now it needs to be part of the solution to store it in the most environmentally sound manner. There is no “magic mountain” in Nevada, or any other viable storage option on the horizon. No one wants California’s nuclear waste. More information and sources at SanOnofreSafety.org.