DENY FUNDING FOR NUHOMS 32PHT2-DSC DRY STORAGE CANISTERS

INDEPENDENT STUDY NEEDED REGARDING SAN ONOFRE NUCLEAR WASTE STORAGE

TO**:** CPUC Commissioners June 16, 2014
FR: Donna Gilmore, SanOnofreSafety.org

We've all just been through the San Onofre steam generator failures. Have we learned any lessons to avoid future ratepayer boondoggles? Are you ready for the next multi-million dollar failure? Because it's headed our way unless you stop Southern California Edison (SCE) from procuring the new unproven dry cask system, the NUHOMS 32PTH2-DSC dry storage canisters. This 32-fuel assembly canister is even more likely to fail than the current 24-fuel assembly canister.

In addition, due to the lack of a permanent repository, the NRC has stated spent fuel may need to be stored for decades or longer at San Onofre. The current canister designs were intended for very short-term storage, with approvals granted for only 20 years for high burnup spent fuel and 40 years for lower burnup spent fuel.

The high burnup fuel storage problem is so significant the NRC has refused to renew the 20 year dry storage licenses. The NRC is studying the impact of longer term storage, according to NRC's Drew Barlo. Many, including Per Peterson (Nuclear Waste Blue Ribbon Commission and U.C. Berkeley nuclear engineering professor), did not know that the protective fuel cladding continues to break down after dry storage.[1] This is a game changer, especially with high burnup fuel.

This is no time to spent millions of ratepayer dollars on a dry storage system that may not last longer than 20 to 40 years, let alone hundreds of years. And we need to ensure once the spent fuel assemblies are stored in a dry canister, they will be retrievable for transport, or transfer to another canister, in case of canister failure -- which is more likely to happen with canisters stored in a coastal environment and with high burnup fuel.

Independent analysis is needed to determine the best storage system for San Onofre's tons of nuclear waste. Please consider using funds from the settlement or decommissioning monies to fund an independent study by other than SCE. SCE is relying on the canister manufacturer, Areva, for technical evaluation and support of the new 32-fuel assembly canisters, according to SCE's Tom Palmisano. Haven't we been down this road before?

The NRC lowered their standards in order to approve the new canister and hid justification for approving it for high burnup fuel storage and transport. They plan to approve use of this canister June 30, 2014, unless they receive significant comments. Attorney Diane Curran, representing numerous organizations, forwarded a copy of her NRC comments to Senator Barbara Boxer stating "*we oppose this NRC Direct Rule that approves a NUHOMS cask for storage and transport of high burnup fuel. We are concerned that NRC has tried to slip this rule by without AEA and APA compliant procedures for public participation on the serious safety issues raised by transport of high burnup fuel. We asked the NRC to withdraw the Direct Rule and re-publish it as a proposed rule.*[2] The NRC is approving this canister for high burnup fuel transportation by ignoring their own high burnup safety data and providing no justification for changing their regulations (ISG-11R3).[3]

Following is a partial list of concerns with SCE's current waste storage plan. For more information with government and scientific references, go to SanOnofreSafety.org.

- SCE and the NRC have no mitigation plans if the canisters fail. This is more likely to occur with coastal stress corrosion cracking of steel canisters. This can occur in less than 128 weeks.[4] This issue is such a major problem that both the NRC and DOE made this a top priority issue.[5]
- The 32-fuel assembly canisters squeeze 32 fuel assemblies into a canister with a similar diameter as the current 24 fuel assembly canister, increasing safety risk.
- Areva eliminated the ability to "can" damaged fuel assemblies. The NRC and DOE require storing damaged fuel assembly in separate unsealed Failed Fuel Cans prior to loading into the canister. This is to ensure retrievability of the fuel for transport and recovery from failed canisters. Areva even created a new definition of damaged fuel in an attempt to justify removing the need to can damaged fuel assemblies. [6]
- The new canisters reduce spent fuel pool cooling time by increasing the heat load allowed for each fuel assembly and canister. The NUHOMS® 24-fuel assembly dry canister specifications state up to 15+ years cooling in the pools.[7] SCE plans to use shorter cooling periods (5-7 years).
- Both the 24 and 32-fuel assembly canisters are only 5/8" thick stainless steel (SS 316L).[8][9] In contrast, the CASTOR V/19 canister is about 20" thick (19.685") ductile cast iron with a nickel coating inside to prevent stress corrosion cracking.[10] The justification for U.S. dry storage is based on the CASTOR V/21, yet the industry switched to thin stainless steel to save money. Testing was done with low burnup fuel and with fuel that was never subjected to moisture as is normal after storage in spent fuel pools. Moisture reacts with the Zirconium cladding. The CASTOR V/21 appears superior to the NUHOMS canisters in many areas. Its wall thickness is 14.9" thick cast iron, holding 21 PWR fuel assemblies. The primary bolted lid is 11.4" thick stainless steel and secondary lid is 3.5". This isn't a recommendation for a specific canister, but an indication we need to do better and not jump into a decision with an inferior product.

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[1] Per Peterson emails to Donna Gilmore and Marvin Resnikoff
http://www.songscommunity.com/docs/050614_EmailThreadsAndCorrespondence.pdf

[2] Diane Curran NRC comments https://sanonofresafety.files.wordpress.com/2013/06/2014-05-15-comment-letter-to-nrc-re-nuhoms-cask-approval-corrected-2014-05-27.pdf

[3] NRC Interim Staff Guidance - 11, Revision 3 Cladding Considerations for the Transportation and Storage of Spent Fuel http://www.nrc.gov/reading-rm/doc-collections/isg/isg-11R3.pdf

[4] NRC's NUREG/CR-7030 states atmospheric corrosion of sea salt can lead to stress corrosion cracking within 32 and 128 weeks in austenitic [corrosion resistant] stainless steel canisters. See Atmospheric Stress Corrosion Cracking Susceptibility of Welded and Unwelded 304, 304L, and 316L Austenitic Stainless Steels Commonly Used for Dry Cask Storage Containers Exposed to Marine Environments, NUREG/CR-7030, October 2010.
http://pbadupws.nrc.gov/docs/ML1031/ML103120081.pdf

[5] DOE Review of Used Nuclear Fuel Storage and Transportation Technical Gap Analyses July 31, 2012
http://energy.gov/sites/prod/files/Gap%20Comparison%20Rev%200.pdf

[6] Revision 3 to Transnuclear, Inc. (TN) Application for Amendment 3 to Standardized Advanced NUHOMS® Certificate of Compliance No. 1029, Response to Request for Additional Information (Docket No. 72-1029; TAC No.L24607), Sept 7, 2012 , Enclosure 2 to E-33290 RAIs and Responses, p.1.
http://pbadupws.nrc.gov/docs/ML1225/ML12254B039.pdf

[7] Technical Specifications, Table 2-12 PWR FUEL Qualification Table for 0.9 kW/Assembly for NUHOMS 24PT4-DSC http://sanonofresafety.files.wordpress.com/2013/06/table2-12fuelcoolingtimetable24pt4-dsc.jpg

[8] Support for NRC Review of Transnuclear Inc. Application for Amendment 3 to the Standardized Advanced NUHOMS® Certificate of Compliance No. 1029, San Onofre Nuclear Generating Station, Units 2 and 3 and Independent Spent Fuel Storage Installation Docket Nos. 50-36, 50-362 and 72041, February 10, 2012
http://pbadupws.nrc.gov/docs/ML1204/ML12046A013.pdf

[9] Support for NRC Review of Transnuclear Inc. Application for Amendment 3 to the Standardized Advanced NUHOMS® Certificate of Compliance No. 1029, San Onofre Nuclear Generating Station, Units 2 and 3 and Independent Spent Fuel Storage Installation Docket Nos. 50-36, 50-362 and 72041, February 10, 2012

[10] CASTOR : A High-Tech Product Made of Ductile Cast Iron
http://www.siempelkamp.com/fileadmin/media/Englisch/Nukleartechnik/produkte/CASTOR_A_high_tech_Product_made_of_ductile_Cast_Iron.pdf