March 18, 2016

TO: Secretary, U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001 ATTN: Rulemakings and Adjudications Staff
Rulemaking.Comments@nrc.gov

FR: Donna Gilmore, SanOnofreSafety.org
dgilmore@cox.net

RE: Comments to Proposed Rulemaking (ANPR): Regulatory Improvements for Decommissioning Power Reactors, Docket ID NRC-2015-0070

In addition to the Sierra Club March 18, 2016 comments and recommendations to this proposed rulemaking, please address the following urgent issues.

- **After crack initiation, cracks may grow through the thin stainless steel canister wall in less than 5 years.**

  According to the March 25, 2015 Sandia National Laboratories document referenced below, once a crack starts in a thin spent fuel stainless steel canister it can grow through the canister wall in less than 5 years if temperatures are hotter, e.g., 60° degrees C (140° F) or above. See Sandia chart on PDF page 46. This chart assumes canister wall is 0.625" (5/8") thick. However, the majority of the U.S. canister walls are only 0.50" (1/2") thick.

  Draft Geologic Disposal Requirements Basis for STAD Specification, A. Ilgen, et.al, Sandia National Laboratories, March 25, 2015, FCRD-NFST-2013-000723 SAND2015-2175R
  http://prod.sandia.gov/techlib/access-control.cgi/2015/152175r.pdf

  Sandia Chart, page 46
  https://sanonofresafety.files.wordpress.com/2013/06/sccpropatationratessandiastad2015-03-25.jpg?w=640

  A 2-year old Diablo Canyon canister had measured temperatures range from 49°C (120°F) to 118°C (245°F). Calculated temperatures ranged from 60°C (140°F) to 105°C (221°F). Lid – measured temperatures ranged from 87°C (188°F) to 97°C (207°F).

  Update on In-Service Inspections of Stainless Steel Dry Storage Canisters, EPRI, January 28, 2014 *http://pbadupws.nrc.gov/docs/ML1405/ML14052A430.pdf*

- **Diablo Canyon canister has all the conditions for stress corrosion after only 2 years.**

  It is unknown when a crack will start, but thin canisters are subject to corrosion and cracking from environment conditions such as ocean salts (chlorides), air pollution (e.g., vehicle exhaust sulfides), pitting, and microscopic scratches. A Diablo Canyon canister was found to have all the conditions for chloride-induced stress corrosion cracking (SSC) in a two-year old canister.

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

- **A similar component at the Koeberg nuclear plant leaked after only 17 years**.

  The Koeberg nuclear plant in South Africa, located in a similar environment to San Onofre and Diablo Canyon, had a waste water tank (similar to a spent fuel canister) leak after 17 years with cracks up to 0.61” deep. The tanks maintained water between 7° and 40° C (45° and 104° F), so were much cooler than canisters filled with highly irradiated spent fuel.

  > NRC Information Notice 2012-20. *Potential Chloride-Induced Stress Corrosion Cracking of Autenitic Stainless Steel and Maintenance of Dry Cask Storage System Canisters*, November 14, 2012
  > *http://pbadupws.nrc.gov/docs/ML1231/ML12319A440.pdf*

- **DOE EIA inventory database shows, as of June 30, 2013, 1589 thin welded stainless steel canisters have been loaded with spent fuel and the numbers continue to grow.**

  Loading dates ranged from 1989 to 2013. Each one of these contains about as much Cesium-137 as released from Chernobyl, making the issues identified in these comments critical and time sensitive.

  > *U.S. Nuclear Spent Fuel Storage Canisters/Casks loaded as of June 2013*
  > https://sanonofresafety.files.wordpress.com/2016/01/d32-caskinventorydetailbyyearsloaded2016-03-14.pdf

- **The NRC should no longer allow spent fuel pools to be destroyed until another solution is in place to remediate failed canisters/casks and failed fuel and should address this issue in existing decommissioned sites that have no pools.**

  In 2002 the NRC approved destruction of Big Rock Point’s spent fuel pool, removing the only means they had to replace or repair failed W74 thin (0.625”) stainless steel canisters or fuel. The NRC approved alternative was to “return canister to transfer cask” and “return canister to repaired or replaced storage cask” within 270 days. To this day, this is not a possible solution. This is further evidence that the NRC needs to wait until a plan and capability is in place before allowing destruction of spent fuel pools. No more unsubstantiated hope, assuming a solution will appear “soon”. It’s time to learn lessons from the past.

  > *3. TS 3.3.2 and TS 3.3.3, changed required action “return canister to the fuel building and remove all assemblies” to “return canister to transfer cask”, and added “return canister to repaired or replaced storage cask” within 270 days.*
  >
  > *Amendment No. 2 to Certificate of Compliance No. 1026 for the FuelSolutions Spent Fuel Management System*, January 25, 2002
  > *http://pbadupws.nrc.gov/docs/ML0202/ML020250519.pdf*
  >
  > *NRC Safety Evaluation Report*, Docket No. 72-1026, FuelSolutions Spent Fuel Management System Certificate of Compliance No. 1026, Amendment No. 2, January 25, 2002. *http://pbadupws.nrc.gov/docs/ML0202/ML020250586.pdf*

A thermal evaluation was also done in the 2002 NRC Safety Evaluation Report. Since transfer casks are not vented, hotter canisters that still need cooling would overheat if placed in a transfer cask for very long.

Both the Holtec vendor and the Areva vendor at Southern California Edison public meetings have suggested using a transfer or transport cask as a temporary means to deal with a leaking canister.

A San Diego Gas and Electric "expert" witness in a recent California Public Utilities Commission decommissioning proceeding also suggested storing a failed canister inside a thick cask. There is no NRC approved cask to do this and the heat issue makes this even a questionable short term solution. The NRC needs to address this issue for both existing and future decommissioned reactor facilities.

The DOE pilot proposal for a consolidated interim storage site has no pools, no dry transfer facility and no other method to remediate failed canisters/casks or fuel. They are relying on the NRC to continue to approve facilities without pools or any other method to remediate failed canisters or fuel. The NRC should not approve any facility that doesn't address this issue.

- **No canisters are approved for transport with even partial cracks**.

The DOE pilot plan is to transport existing spent fuel canisters to an interim site. Having no solution to remediate cracks means no canisters can legally be transported to any other facility. And since there is no current technology that can inspect for cracks or repair cracks in canisters filled with spent nuclear fuel, a conservative assumption would be that they may all have partial cracks. Therefore, none of them can be moved. Thick-walled (10" to 20") bolted lid metal casks do not have these cracking issues. However, they may still need the pools to unload fuel into a smaller cask or to remediate failed fuel problems or problems with the baskets that keep the fuel assemblies in place and separated inside the casks.

- **Over 5000 damaged fuel assemblies as of June 2013**

As of June 30, 2013, the DOE reports 5,208 U.S. damaged fuel assemblies. This increases the consequences of failing canisters.

> U.S. Nuclear Power Reactor Damaged Spent Fuel Assemblies (June 2013)
> *https://sanonofresafety.files.wordpress.com/2011/11/totaldamagedfuelassemblies2013june30.pdf*

- **Cladding damage may occur with fuel burnup as low as 35 GWd/MTU.**

This increased the likelihood and consequences of ailing canisters and fuel assemblies

> *Evaluation of the Technical Basis for Extended Dry Storage and Transportation of Used Nuclear Fuel*, NWTRB, December 2010, page 56
> http://www.nwtrb.gov/reports/eds_rpt.pdf
>
> NWTRB Burnup Chart
> https://sanonofresafety.files.wordpress.com/2013/06/higherburnupcladdingfailurechart1.jpg