Citizens' Oversight Projects (COPs)
CitizensOversight.org

Mar 12, 2019

To: San Onofre "Move the waste" Expert Team
Fm: Ray Lutz, Citizens Oversight
Re: Communication to and Request for Information from San Onofre Settlement Expert Team

This is a formal communication to the six-member expert team which was formed nearly one year ago as a result of our lawsuit and settlement to move the waste to a safer place.

I. Expert Team Status
Please provide a status report of the expert team, as follows:

A. How many meetings have been held?
B. Are any of the agenda and reports available for review?
C. What is the status of the work?
D. What options have been considered?
E. Has the transportation plan and strategic plan been drafted?
F. What are the future plans?

II. Canister drop mishap
SCE says they believe that the canister would not breach based on their computer model. But no detailed model was provided for third-party review or by the public. We compare this with the prior modeling effort which concluded there was a 28% chance for the canister to breach. It is frankly hard to believe that the earlier model was off by 28% and that now miraculously, the chance of breaching the containment boundary is 0.00%. The real world does not work like that.

A. What review has the expert team performed on the canister drop mishap?

B. Please provide the detailed computer model, including the details of the construction of the welds between the baseplate and the walls of the container, and any longitudinal welds.

C. We believe that the gouging and scratching that is occurring as the canisters are dropped into the vaults is a bad design. Has the expert team reviewed this?

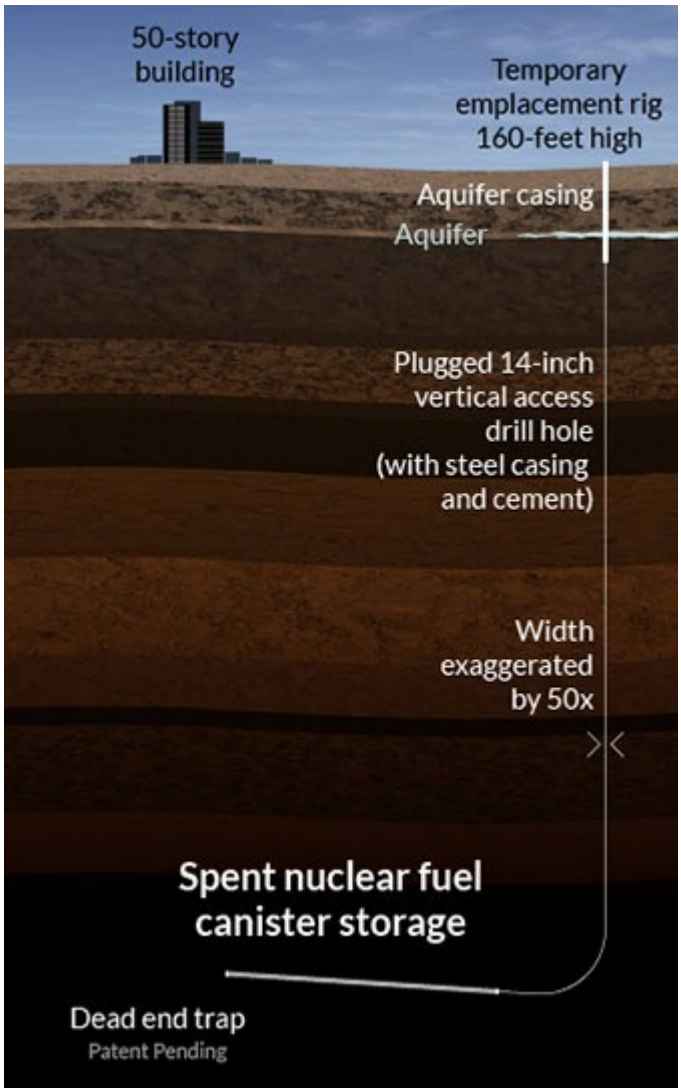
D. Has the expert team considered changes in design to alleviate the positioning problem where the canister might get stuck on the alignment ring, and to eliminate scratching and gouging? It seems that relatively minor changes in the mating device, such as by adding spring-loaded metal wheels, would help to guide the canister into the vault and avoid scraping and gouging and eliminate the risk that the canister could again become held from an 18 ft drop by only a fraction of an inch.

III. Deep Borehole Option
A relatively new option has been recently broached.

January 2019 World Nuclear News article
http://world-nuclear-news.org/Articles/US-company-demonstrates-innovative-waste-disposal
"US company demonstrates innovative waste disposal concept"

See this website: http://www.deepisolation.com

The whitepaper: https://www.deepisolation.com/wp-content/uploads/2018/12/DeepIsolationTechnology-White-Paper.pdf is also attached with this document.



Essentially, this design leverages the recent advances in drilling technology gained through hydraulic fracturing in the petroleum industry, so as to create a deep borehole that goes straight down at first and then once it is far underground, turns and runs roughly horizontally and slightly up. Canisters are emplaced in the horizontal leg. The upward tilt keeps any fume that may be emitted. should they tend to rise. This horizontal leg is the big difference with previous deep borehole proposals that had only a vertical hole.

The waste must be placed in smaller canisters which hold a single fuel assembly. These canisters are inserted into the hole and slowly pushed to the bottom and up the sloping horizontal storage leg.

According to their whitepaper, the whole process has been tested both emplacing the canister and withdrawing it, if that would ever be necessary.

We believe this option should be one of the options considered because:

1. Such an option may allow the spent fuel to be inserted in a deep isolation borehole with minimal transportation. Although we have no concern that transportation is technically feasible, it may not be politically feasible and will likely result in the public blocking transportation routes. Also given recent near-miss incident, such transportation is not devoid of risk. The recent canister mishap at San Onofre points out that the large canisters that each weigh 50 tons, and the surrounding transportation overpack, which weighs another 60 tons or so, is too difficult to handle and manage. Dropping such a large canister or canister plus overpack is a major issue and although the design may seem to be good enough, design mistakes do happen.

2. It is unclear if the San Onofre site itself might be suitable for such a borehole approach. The Mesa or another site in Camp Pendleton may serve as a bore hole site so as to avoid any transportation. Since the use of the site is temporary, Camp Pendleton may be more amenable to cooperating in this way given that otherwise the waste is on the surface. If Camp Pendleton is not an appropriate choice, it is likely that there is a location within CA where this process would have minimal impact. According to the whitepaper, three boreholes are required for a typical 1 GW nuclear reactor unit. As San Onofre had three operating units, it is likely that fewer than nine boreholes would be required.

3. Unlike the Yucca Mountain design, intended to house some 70,000 tons of heavy metal waste, to leave spent fuel on the surface to substantially cool (or "age"), and to actively cool the facility with large fans to keep the facility below 100C for some 150 years, the deep borehole does not have the same thermal considerations as they have outlined in the whitepaper. This would allow the possibility of immediate transfer of waste from the spent fuel pool to a small canister and then to emplacement.

4. The canisters used in the deep borehole approach must be smaller in size so they can be inserted into a borehole that is feasible with drilling technology. The whitepaper covers the size of the canisters and the compatibility of this method with the fuel assembly dimensions used at San Onofre, and it appears that it is compatible with the fuel assembly dimensions using canisters that are approximately 14 inches in diameter and with 1 cm thick walls.

These smaller canisters would be much easier to handle and dropping one would not have such horrendous consequences as dropping a canister with 37 fuel assemblies.

This also points out that a key assumption often repeated by SCE may not be true. They say that no matter what the ultimate disposition of the spent fuel, putting it in the Holtec Canisters and into the UMAX system only about 100 ft from the ocean sea wall is a prudent first step, because they are then ready for transport to the disposal site. This is incorrect if the smaller canisters are used.

6. Even if the deep borehole site is somewhere off site, the use of the smaller canisters can make transportation much less difficult. Perhaps a half dozen of these canisters could be placed in an overpack which is the same dimensions as a conventional container, and then carried on any semi truck. Lower weight does not challenge all the equipment used to manipulate the canisters nearly so much.

7. Given the recent mishap at the site where a canister was nearly dropped 18ft into a storage vault, the expert team should evaluate the feasibility of stopping all movement of waste into the UMAX facility until the deep borehole option is fully considered. It may be best to leave the remaining fuel assemblies in the spent fuel pools, which are now far less dangerous as they are only partially filled. If the deep borehole option pans out, then stopping this movement avoids the cost of first filling the canisters and then cutting them back open to use the smaller canisters (which are compatible with the deep borehole option). Yet again, it appears that SCE is painting themselves into a corner by being too hasty in the decision making process.

Please include the deep borehole option in the options being considered. Please include a statement of whether this has already been considered in your response.

IV. HELMS-Compliant Canisters

On Feb 21, 2019, the NRC conducted a review of the application for approval of the CASTOR waste cask system by GNS Gessellschaft für Nuklear-Service mbH. The CASTOR Cask has some desirable features, as follows:

- Cask and canister are integrated into a single movable unit, which serves both as containment and shielding, storage and transportation.
- Contains a separate canister inside the cask which is closed by a dedicated lid with a bayonet locking system. This system will ease inspection of the contents of the canister without needing to cut open the canister, a process which is still not well defined for the Holtec canisters, which are welded shut. Both systems will require either a hot cell or fuel pool if they are opened.

- Based on the answer to my question during the NRC web conference call, the CASTOR (transport and storage) cask can also accept sealed Holtec canisters which may be removed from the poorly located UMAX facility.
- Once the canister is loaded into the cask, it is closed with redundant bolted lids.
- The "Cask Loading Unit" (CLU) and the cask design does not have any protrusions or "guide rings" which will cause the canister to become stuck in the process of loading the cask, as we have seen in the Holtec design and in the recent loading mishap that nearly dropped a 50 ton canister 18 feet.
- The interior of the exterior cask is likely purged of oxygen and replaced with inert helium, to eliminate corrosion and degradation of the interior canister. This would then comply with our suggested dual-wall cask design as described in the HELMS whitepaper. This design will allow replacement of the outer cask if there is any degradation sufficient so that the cask depressurizes, so that, with maintenance, the cask live is at least 1,000 years and without any maintenance, will likely last 300 years.
- This system may therefore be compliant with the HELMS criteria of establishing a storage design.

We ask, therefore, that the Expert Team investigate and further consider this spent fuel cask design for use in any future surface storage proposals, such as at any Consolidated Interim Storage facility, such that any such system will be HELMS-compliant.

References:

- Slides from NRC web conference are attached with this document as "Enclosure 2 of V113-007-RNa-1.pdf"
- Specification Sheet of CASTOR geo: https://www.gns.de/language=en/29778/castor-geo
- Meeting notice: https://www.nrc.gov/pmns/mtg?do=details&Code=20190112
- HELMS criteria and submission to NRC as 2.802 petition is available at this link: http://copswiki.org/Common/HelmsProposal

/s/
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