RulemakingComments Resource

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To: RulemakingComments Resource
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Does this approval take into consideration the fact that the Holtec HI-STORM UMAX system effectively places the nuclear waste containing stainless steel canister into a well?

From my engineering experience I can see more than one problem with this aspect of the UMAX design.

First off, the inability to easily inspect the bottom of the waste containing canister that is sitting on the bottom of the concrete well. Since there will be intimate contact with the canister and the interior of the concrete well, there will be an opportunity for chemical reaction to occur between these two materials.

If removal of the canister is the only way to inspect the bottom of the canister that is in contact with the bottom of the concrete well, it will be unlikely that each canister will be inspected for corrosion occurring between the canister and the concrete well, if current NRC inspection schedules for dry storage casks are followed.

Does the NRC has some means of assuring the public that there will be no corrosion between the stainless steel canister and the bottom of the well? Please provide details into how the NRC is able to provide 100% surety that there is no chance of corrosion over the first two decades before initial inspection, and then the decades that the dry cask system is intended to perform.

Please consider the possibility of water seepage through the porous concrete and the possibility of cracks occurring in the concrete due to decades of radiation exposure embitterment. Additionally please provide insight into how the NRC can assure the public that the possibility that salts present in the surrounding soil at the site will not contribute to chloride induced stress corrosion cracking of the bottom of the stainless steel canister during the decades that the system is intended to be operational.

Given the limited number of dry storage canisters that have been inspected to date I am very concerned that there will be very few, probably only one, canister inspections performed at each Holtec UMAX installation site, with the first inspection occurring 20 years after deployment. I would challenge the NRC to search into their infinite wisdom and experience with similar materials to determine that this level of inspection of a underground installation is not sufficient. I would suggest that at sites that are prone to ground water near the earth's surface have annual visual inspections of the bottom of EACH canister as part of the dry cask's aging management plan.

This level of inspection would seem reasonable given the NRC's limited experience with such systems and the severity to the surrounding community if a canister were to breach. I am suggesting that the UMAX system have an additional level of inspection process due to the uncertainty of chemical reaction between the concrete well and the canister as the bottom of each UMAX encasement well.

My second concern has to do with the process and procedure that the NRC sees as sufficient to certify that the UMAX system will operate as designed after the occurrence of a tsunami event where the system is deployed. As stated above the concrete well that the spent fuel canister resides within is configured to hold water. Sea water will infiltrate the ventilation area used to passively cool the stainless steel canister. Many contaminants not found in sea water will infiltrate the canister's ventilation area, allowing the contaminants to react with the stainless steel canister in ways that are not expected during normal operation of the dry storage

system. Resulting in accelerated chloride induced stress corrosion cracking among other unexpected forms of chemical reactions. Please address how these unforeseen reactions will be handled in the event of a tsunami.

The thick mud that flows back into the ocean after a tsunami could be quite disruptive to the cooling process of the canisters contained within the concrete well, that will hold the contaminants near the canister. Additionally if the mud is allowed to dry, it may be quite difficult to remove the canisters, without damaging them due to the occlusion of the mud and its ability to fill the space between the stainless steel canister and its concrete encasement well. Pressures in between the concrete encasement well and the stainless steel canister could be significant if the mud were forced to dry quickly due to the heat of the fuel within the canister. Please determine the canister's weld strength in relation to the possible pressures that could be found due to mud drying quickly in between the canister and its encasement well.

Please include a detailed tsunami recovery procedure that will ensure the public that the dry storage system has been cleaned sufficiently after a tsunami. This procedure should include a means to assure the public that muds, salts and other chemicals within the infiltrating tsunami water have not damaged the stainless steel canister or reduced the UMAX dry storage system's longevity.

In combining these my two concerns please provide the public with a specification that quantifies the percent of the thickness of the stainless steel canister's wall that is sufficiently cracked to render it no longer able to survive the stresses found in a tsunami and the infiltrated mud event that follows the tsunami. Since the stainless steel canisters are known to suffer from chloride induced stress corrosion cracking, what level of CISCC cracking is sufficient to cause the stainless steel canister to be replaced to ensure canister survival by a tsunami?

Additionally what level of CISCC penetration into the stainless steel wall is sufficient to cause a canister to be considered too fragile to survive a large earthquake? How will the presence of CISCC cracks be detected in the Holtec UMAX system to assure the public that the entire field of dry storage canisters are able to survive a sizable earthquake?

What is Holtec's solution to handling a whole filed of canisters that have experienced an earthquake large enough to breach a large percentage of the canisters in the dry cask storage system? Where does the NRC and Holtec propose to obtain sufficient canister replacements quickly enough to contain the out-gassing of say 50 canisters that were believed to be structurally sound but were not, due to an inability to reliably inspect for microscopic cracks created by CISCC? What is the predicted radiation release of these 50 canisters into the surrounding community if such an event, that is predictable and possible, occurs?

What is Holtec's inspection techniques that will assure the public that there is no CISCC damage sufficiently large to jeopardize the stainless steel canister's ability to survive a sizable earthquake?

Thank you for you consideration of my concerns,

Rick Morgal
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