DOCKETED

Docket Number:	15-IEPR-01
Project Title:	General/Scope
TN #:	203632
Document Title:	Comments of Richard Morgal Regarding General Scope
Description:	N/A
Filer:	Raquel Kravitz
Organization:	Richard Morgal
Submitter Role:	Public
Submission Date:	2/9/2015 8:59:38 AM
Docketed Date:	2/6/2015

To: California Energy Commission February 6, 2015

RE: Docket # 15-IEPR-01 General Scope

The 2014 Integrated Energy Policy Report Update must address new information effecting California's nuclear power plants, nuclear waste and decommissioning of these power plants.

Recent NRC Decision allowing the extension of Continued On-Site Storage timelines has serious impacts to current dry storage cask technology.
On August 26, 2014, the NRC Final Rule for Continued Storage from Spent Nuclear Fuel at existing nuclear power facilities recognizes the containers used for storing spent nuclear fuel need to meet on-site requirements for short-term (60 years), long-term (160 years) and indefinitely.

http://pbadupws.nrc.gov/docs/ML1423/ML14238A326.pdf

Yet there are no NRC cask specifications that address the extended timelines of the new on-site storage requirement. How can the timeline be extended to an "indefinite" period of time without specifying cask attributes that would allow a spent nuclear fuel storage cask to endure for such a long period of time?

The term "indefinitely" is not acceptable because there is no known nuclear waste storage technology that will last indefinitely. Morally and ethically we cannot rely upon future generations to be capable and/or willing to address the dangerous task of maintaining the casks holding our spent nuclear fuel.

Current thin walled, 5/8^{ths} of an inch thick, 304 stainless steel spent nuclear waste storage casks in marine environments are susceptible to Stress Corrosion Cracking at a rate of up to 1/100th of an inch per year on site at the San Onofre Site.

http://pbadupws.nrc.gov/docs/ML1425/ML14258A082.pdf page 9.

Current spent fuel storage casks on site in San Onofre could be corroding at a similar rate to the stainless steel 304 pipe deployed at San Onofre as documented in page 9 of the NRC presentation contained in the above link.

Thus, current casks may not even last "short term" (60 years) before needing to be repaired, replaced or reworked. Morally and ethically we cannot rely upon future generations to be capable and/or willing to address the dangerous task of maintaining the casks holding our spent nuclear fuel.

If cask maintenance was a trivial task, the nuclear industry would have already performed cask replacement, rework or rework on several test casks (at least for test purposes). Yet with over 1,800 5/8^{ths} of an inch spent nuclear fuel casks deployed in just the US alone, not one US spent nuclear fuel storage cask has ever been opened reworked or contents removed. Thus, providing an example that the task of spent nuclear waste storage cask rework is not

straightforward, nor desirable to inflict upon future generations. It is up to our current nuclear engineers, our current nuclear industry, our current Nuclear Regulatory Commission and our current United Stated Government to determine how to ensure we do not inflict our spent nuclear fuel onto future generations.

The California government and the CEC need to apply sufficient pressure on the above-mentioned groups to ensure all Californians, and their decedents, that we are not left with cracked nuclear waste canisters on our coastline.

Morally and ethically we cannot rely upon future generations to be capable and/or willing to address the dangerous task of maintaining the casks holding our spent nuclear fuel.

Cask storage systems need to be sufficiently designed to last the time period expected before a centralized repository becomes available. Sea salt in the marine air is the chief contributor to Stress Corrosion Cracking.

https://sanonofresafety.files.wordpress.com/2013/06/8-5-14-scc-rirp-nrc-presentation.pdf

It would make sense that the air used to passively cool the deployed spent nuclear fuel storage casks be desalinated and dehumidified. The issue of Stress Corrosion Cracking, which caused the San Onofre stainless steel pipe to corrode, would be eliminated if only desalinated, dehumidified cask cooling air was allowed to interact with the exterior of the stainless steel spent nuclear fuel storage cask. Extending the lifetime of the stainless steel spent fuel storage casks deployed in marine environments from near 60 years to potentially hundreds of years.

This is the type of solution the CEC could impose on any spent nuclear fuel storage sites within 25 miles of the California coastline. The infrastructure associated with the thin walled $5/8^{ths}$ of an inch thick casks would be minimally affected while extending the cask's lifetime significantly. Adding minimal initial deployment costs while greatly reducing the lifecycle costs of maintenance associated with the repeated replacement of stored nuclear fuel casks stored in salty marine environments.

Additionally these casks need to be monitored in real time for various conditions such as helium leakage to detect a cask leak before a radiation leak, radiation, temperature of cask walls and input cooling air temperature/humidity. The ability to inspect these casks while entombed in their overpack would also be paramount to understanding the integrity of the casks providing insight into their potential longevity. Currently the NRC does not require any monitoring of spent nuclear fuel casks.

With the State of California's emphasis on reducing our energy system's carbon footprint the State should be equally concerned with ensuring our State's nuclear energy system's radiation footprint in 60 years is not creating environmental havoc on our beaches and inland to our surrounding communities.

Some of the spent nuclear fuel storage casks have been deployed at San Onofre since Oct, 2003 are currently 11 and 1/2 years into deployment in their indefinite field assignment, with

no established means to inspect their integrity. Casks should be inspected periodically over their entire surface. Otherwise there is no way to predict when a cask will experience a mechanical failure due to Stress Corrosion Cracking. The NRC has given the industry 5 years to come up with inspection technology so the casks deployed at San Onofre today will be nearly 17 years deployed in a marine environment before ever being inspected (if the San Onofre casks are the first to be inspected after the inspection technology is developed).

NRC metallurgist Darrell Dunn, has stated that it could take as little as 16 years for a Stress Corrosion Crack to go all the way through the standard 5/8ths inch thick walled spent nuclear fuel storage cask (as compared to the 60 years it would take using the example of the stainless steel pipe Stress Corrosion Crack measured on site at San Onofre). Read first paragraph on page 4 of this link:

https://sanonofresafety.files.wordpress.com/2013/06/ml14258a081-8-5-14meetingsummary.pdf

Measurements have been made on casks deployed at the Diablo Canyon reactor site that indicate Diablo Canyon casks have experienced conditions conducive to Stress Corrosion Cracking after only two years of deployment (when the measurements were made)

http://www.nwtrb.gov/meetings/2014/aug/boyle.pdf

No NRC, EPRI, or NEI documented measurements of salt deposits have ever been made on casks deployed at San Onofre, so we have no idea if these casks are currently experiencing conditions that could induce Stress Corrosion Cracking. There is no sense of concern regarding the casks that have been deployed at San Onofre for the last 11 and ½ years so no inspections are scheduled according to NRC documents easily available to the general public.

Thus after 18 years (2 years to experience conditions that initiate Stress Corrosion Cracking and 16 years for the crack to go all the way through the cask) of being deployed it could be possible, as determined using NRC calculations and measurements, that the spent nuclear fuel storage casks at San Onofre could experience a through crack. So 2003 + 18 years gives us until 2021 to figure out how to stop this unknown yet disastrous possibility from occurring.

What does a cracked spent nuclear fuel storage cask condition mean to the general public? According the Dr. Kris Singh, CEO of Holtec, the manufacturer of an industry standard 5/8^{ths} of an inch spent nuclear fuel storage cask system deployed at many nuclear waste sites in the United States: "millions of Curies would be released when a microscopic crack breaches all the way through a spent nuclear fuel storage cask". Thirty to 45 seconds into the following link:

https://www.youtube.com/watch?v=euaFZt0YPi4

FYI Three mile island was documented as 43,000 Curies of radiation. Chernobyl has been estimated between 100 million and 5,000 million Curries. So a breach from one San Onofre canister releasing "millions of Curies of radiation" is a significant radiation event. Given the

fact that the casks experience about 100 psi internal pressure during normal conditions with helium being the interior gas, most of the released radiation will be air born affecting surrounding communities, I5 and the rest of the country that is typically down wind of the prevailing winds.

With such a short timeline for such a disastrous outcome it amazes me that their isn't more concern by the CEC the CCC and the State of California to get involved in the process of ensuring the spend nuclear fuel casks deployed on our beaches are not an example of Federal Regulation oversight failure similar to the financial conditions that lead to our country's recent recession.

As an example of the gross negligence of the NRC and their regulatory mismanagement: The NRC's earthquake survivability simulation/analysis for 5/8^{ths} of an inch spent nuclear fuel storage casks is performed on brand new casks with no cracks. Yet their specification for cracks on the surface of the cask allows for a crack to be three quarters of the way through the cask wall before going out of specification.

As a result of this type of specification versus reality, a mild to medium Southern Californian earthquake may damage several of the 51 casks currently holding spent nuclear fuel at San Onofre due to cracked casks well before the 2021 date predicted above. Releasing multi-millions of Curies into the surrounding environment where eight million people live in some of the most valuable real estate in the world.

Now here is the specification mismanagement kicker… in the above described earthquake situation, it could take weeks for the leak(s) to be detected since no real time radiation nuclear monitoring equipment has been installed for the spent nuclear fuel storage casks by SCE because radiation monitoring of spent nuclear waste storage casks is not required by the NRC.

These conditions need to be verified by the State of California before problems occur. All of these conditions are documented on the website www.sanonofresafety.org. Please inform yourself with documents on that website from the NRC, EPRI, NEI, SCE, PG&E… This is industry information available to the public. The information is all there and with sufficient concern by the CEC, the CCC and the State of California it is possible to protect the public from dangerous situations created by the close relationship between the NRC and the organizations is has been chartered to regulate. Our great State awaits your action.

Respectfully Submitted by,

Richard Morgal
13915 Mussey Grade Rd.
Ramona, CA 92065
760 788-4394
rmorgal@wildblue.net