

DiabloCanyonCEM Resource

From: jayklaus [jayklaus@tcsn.net]
Sent: Thursday, February 25, 2010 3:35 PM
To: DiabloCanyonEIS Resource
Cc: Stuyvenberg, Andrew
Subject: 75 FR 4427, amended comments
Attachments: NIRS principles for on-site storage of HLNW, 10-07-09.doc

Environmental Scoping Comments

To: License Renewal Diablo Canyon Nuclear Plant in San Luis Obispo, CA County, Scoping Meeting, March 3, 2010 in San Luis Obispo, CA.

Subject: 75 FR 4427

Date: February 25, 2010

Submitted by Klaus Schumann, Paso Robles, CA 93446; Ph: (805) 238-4454.
I am unable to personally attend the March 9th Scoping meeting.

In light of the seismic issues at Diablo and the most recent developments at the Vermont Yankee plant, I hereby amend my previous comments and request that the following replace my submission dated 2-20-2010.

I. Stay of process request

Before considering the following scoping comments, I request that the NRC stay the license renewal process and work with the State of California to review state-required seismic studies. The seismic issues set Diablo apart from any other nuclear plant in the US. Common sense requires that the State of California seismic studies be completed before the re-licensing process moves forward.

II. Introduction:

My name is Klaus Schumann. I reside in San Luis Obispo County [SLO], roughly 23 miles from the Diablo Canyon Nuclear Plant (Diablo). I have been interested in nuclear waste issues at least since 1995. In April, 1996, the County established a public committee, the San Luis Obispo Nuclear Waste Management Committee, of which I was a founding member. This committee was chaired by County Supervisors Evelyn Delaney and Shirley Bianchi and met regularly until early 2002. It heard a wide variety of experts, including speakers from the US Department of Energy, the California Department of Transportation, California Highway Patrol, the County Office of Emergency Services and the Physics Department of Cal Poly.

In February of 1998, I drafted the chapter on "on-site storage options" for the Committee's final report to the County. I recommended an Independent Spent Fuel Storage Installation (ISFSI) using dry casks for the Diablo Canyon Plant as a means of temporary storage for the accumulating spent fuel wastes.

III. Background:

1. Highly Radioactive Nuclear Waste ("spent fuel") is accumulating at Diablo as a regular by-product of electricity production. Diablo was first designed, built and licensed for about 570 waste units, called spent fuel assemblies (SFA's). These were to be stored in the plant's two water-filled pools for no longer than 5 years. Today, Diablo stores more than six times the originally licensed amount on-site. Diablo will continue to

accumulate spent fuel at its plant site to an estimated 6,500 SFA's by the time the present licenses expire (2025). If Diablo receives a license renewal for another 20 years, it will produce additional SFA's also to be stored indefinitely at the plant site.

2. Since the inception of nuclear plants, the US government has tried to develop long range means of dealing with the wastes, such as a central permanent repository in Yucca Mountain, NV, or "re-processing" [cancelled during the Ford and Carter administrations]. Thus far, however, these efforts have been without success and there are still no concrete solution in sight. In fact, President Obama has just recently cancelled the funding for Yucca Mountain. He is now calling for a "Blue Ribbon Commission" on nuclear waste, something in discussion since at least 1995. Clearly, much larger quantities of "spent fuel" will be stored at Diablo for a much longer time than predicted and planned for by the NRC and PG&E.

3. Today, Diablo's pools contain far more radioactivity than the reactors, yet are located outside the containment domes. In late 2000, a Nuclear Regulatory Commission (NRC) study came to the conclusion that fires in "high density" pools are possible with consequences "comparable to reactor accidents." The possibility of such fires at Diablo is a direct consequence of PG&E changing Diablo's original "low density pool" design to "high density" in 1986, which allows the storage of a much greater number of SFA's by packing them closer together ("re-racking").

In 2005, a report by the National Academy of Sciences (NAS), mandated by the US congress and entitled "Safety and Security of Commercial Spent Nuclear Fuel" stated:

"that successful terrorists attacks on spent fuel pools, though difficult, are possible".

and

"If an attack leads to a propagating zirconium cladding fire [spent fuel pool fire], it could result in the release of large amounts of radioactive materials" [Summary for Congress, Page 2, (2) and (3)].

The NAS report recommends SFAs reconfiguration in the pools and the addition of independent sprinkler systems, as well as further studies on spent fuel vulnerabilities.

4. Before re-racking in 1986, fires in Diablo's pools were virtually impossible. That is probably the reason that its pools were constructed outside of the containment domes.

Now, in worst case scenarios, fires in either of Diablo's pools could lead to widespread radioactive contamination. This is due to the volatility of some of the more than 200 radioisotopes contained in high level radioactive waste ["spent fuel"], such as Cobalt 60 and Strontium 90. This is especially true of Cesium 137, because it has the consistency of talcum powder. Unfortunately, Cesium 137 is the most abundant isotope in spent fuel [21% in 10 year old fuel]. Most of the off-site contamination in the 1986 Chernobyl accident was due to Cesium 137, dispersed by a slow burning fire. There it contaminated an area roughly four times the size of SLO County. Each of Diablo's pools contains far more radioactivity than the reactors and about 20 times more Cesium 137 than was dispersed at Chernobyl. Cesium 137 contamination requires evacuation of the population for about 300 years. Clean-up would run in the hundreds of billions of dollars. Moreover, in earthquake country, there is the additional concern that beyond-design-basis seismic events could cause similar results.

IV. Developments since 2005:

Moreover, since the 2005 ISFSI licensing, the following significant developments have taken place:

1. An ISFSI has become available at the Diablo plant site.
2. The NAS has issued recommendations and findings in the above mentioned report.
3. Another active seismic fault ("Shoreline") was recently discovered near the plant.

4. The time for the next “big one” earthquake from this segment of the San Andreas Fault system is getting closer every day. The last one at Fort Tejon occurred in 1857. The average time span between “big one” quakes is supposedly 175 years.
5. The State of California is presently conducting seismic studies for the Diablo area.
6. The national repository at Yucca Mtn. will become available much later than previously assumed, possibly not at all. PG&E estimated the year 2017 during the 2005 ISFSI license procedure. As a consequence, the waste will stay at Diablo far longer than NRC, PG&E and the citizens of SLO County believed.
7. President Obama has established a “Blue Ribbon” commission on Nuclear Waste Storage solutions.
8. In June, 2006, the Ninth Circuit of the United States Court of Appeals agreed with the San Luis Obispo Mothers for Peace that the environmental effects of a terrorist attack on the dry cask storage facility at Diablo Canyon must be taken into account. The National Environmental Protection Act requires an EIS. This decision was upheld by the US Supreme Court.
9. A second pending Mothers for Peace (MFP) law suit in front of that same Court.
It contends
 - a. that the weak and undocumented 8 page Environmental Assessment the NRC produced is no substitute for the required EIS;
 - b. that the NRC has failed to provide documentation to support the NRC's conclusion that even "a successful terrorist attack" on the dry casks would have "no significant impact" on the environment;
 - c. that the NRC hides its reasoning behind a veil of secrecy, even though MFP is asking that any protected information be made available only to its attorney, who has the necessary security clearances, and to not members of MFP or to the public.
 - d. that the NRC has refused to consider credible attack scenarios that could result in a fire and a significant release of radioactive materials from the casks.
10. Radioactive tritium, a known carcinogen, has been discovered at dangerous levels in groundwater at the Vermont Yankee nuclear plant. Underground leaking pipes are now threatening to contaminate the Connecticut River, a source for drinking water. Just yesterday (2/24/10), the Vermont state senate decided on a 26:4 vote to end operation of the reactor in 2012. [THE TRIBUNE, 2/2/10 pg. A4, and 2/25/10 Pg. A5]
Tritium has now tainted at least 27 of the nation’s aging reactors.

V. Personal Comments and Conclusion:

I offer the attached “Principles for Safeguarding Nuclear Waste at Reactors”, (NIRS 10-07-09) **as part of my comments [by e-mail attachment and as a copy at the end below]**. These principles were developed by the Nuclear Information and Resource Service (www.nirs.org) and are supported by more than 150 US organizations (as of 10-07-09), including the Sierra Club, Natural Resources Defense Council, Public Citizen, Physicians for Social Responsibility, Union of Concerned Scientists and many concerned local organizations such as Mothers for Peace and Alliance for Nuclear Responsibility.

In addition, I respectfully submit the following comments:

Given the extraordinary dangers inherent in spent fuel and the possible catastrophic consequences of mishaps during spent fuel storage at Diablo, the NRC must include all spent fuel concerns in the EIS for Diablo re-licensing. The ongoing inseparable relationship between the pools and the ISFSI must be included and should not be dismissed or avoided by the fact that the ISFSI is separately licensed.

The 9/11 terrorist attack brought the issue of nuclear waste storage at plant sites into renewed focus. Regrettably, all studies on spent fuel pool vulnerabilities thus far have been based on present day threats and assumptions that do not take future developments into account. This is despite of the fact that spent fuel remains dangerous to human health for at least 1 million years (EPA estimate). For example, future airplanes could be much heavier and loaded with much more fuel, terrorists could get their hands on much more destructive weapons.

Moreover, the newly discovered “Shoreline“ fault just 1,800 feet from the plant requires further seismic studies. The seismic risk at Diablo could be revised beyond the design basis (7.5 Richter scale). As a reminder: when Diablo was constructed the oversight of the Hosgri fault near the plant required \$ 2 Billion retrofitting at rate payer’s expense. Let’s not repeat that costly mistake!

In conclusion, after all of the above, I request

1. that Diablo’s re-licensing be put on hold until the California seismic studies are completed, the Presidential “Blue Ribbon” commission has done its work and the pending Mothers for Peace law suit has been decided.
2. that the attached “ Principles of Safeguarding Nuclear Waste” be at once implemented as a condition to Diablo’s re-licensing.
3. that the NRC require, at a minimum, implementation of the NAS recommendations.
4. that the NRC reconsider the “environmentally superior alternative” as outlined in the SLO County EIR for the ISFSI, i.e., accelerated transfer as a means to return the pools to low density as soon as possible.
5. that a top to bottom review of aging parts in the pools be undertaken with special attention to embrittlement of aging pool components. The recent tritium leaks at 27 older plants and the shutdown of Vermont Yankee in 2012 could point to a faster rate of deterioration of components than previously assumed due to subjection to higher rates of radiation and heat for prolonged periods of time.

Finally, I believe that the citizen of SLO County deserve the best and most safe designs and methods in spent fuel storage at Diablo. Until now, this is not what they have gotten.

If SLO County is to face another 20 years of spent fuel production with no alternative of storage other than on-site, it is imperative that the NRC attaches conditions to the re-licensing which returns the pools to the original low density design. The newly constructed ISFSI allows PG&E to do this in a cost effective manner.

The following “ principles of safeguarding nuclear waste at reactors” [copied in below and in the attachment], should be made part of the conditions of re-licensing.

NIRS Principles for Safeguarding Nuclear Waste at Reactors

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Submitted to the US Nuclear Regulatory Commission on 10-20-09 at the Pismo Beach, CA public meeting on Generic EIS for License Renewal of Nuclear Plants and at the NRC EIS Scoping process meeting on 2-9-10 at the Embassy Suites in SLO.

By

Klaus Schumann, 26 Hillcrest Drive, Paso Robles, CA 93446; (805) 238-4454.

[NOTE: These principles were developed by the Nuclear Information and Resource Service (NIRS) and are supported by more than 150 political, environmental and citizen organizations throughout the US. (Count on 10-07-09).]

The following principles are based on the urgent need to protect the public from the threats posed by the current vulnerable storage of commercial irradiated fuel. The United States does not currently have a national policy for

the permanent storage of high-level nuclear waste. The Obama administration has determined that the Yucca Mountain site, which has been mired in bad science and mismanagement, is not an option for geologic storage of nuclear waste. Unfortunately, reprocessing proponents have used this opportunity to promote reprocessing as the solution for managing our nuclear waste. Contrary to their claims, however, reprocessing is extremely expensive, highly polluting, and a proliferation threat, and will actually complicate the management of irradiated fuel. Nor will reprocessing obviate the need for, or “save space” in, a geologic repository.

The United States has a unique opportunity to re-evaluate our nuclear waste management plan. We can make wise decisions about safeguarding radioactive waste or go down the risky, costly, and proliferation prone path towards reprocessing.

The undersigned organizations’ support for improving the protection of radioactive waste stored at reactor sites is a matter of security and is in no way an indication that we support nuclear power and the generation of more nuclear waste.

➤ **Require a low-density, open-frame layout for fuel pools:** Fuel pools were originally designed for temporary storage of a limited number of irradiated fuel assemblies in a low density, open frame configuration. As the amount of waste generated has increased beyond the designed capacity, the pools have been reorganized so that the concentration of fuel in the pools is nearly the same as that in operating reactor cores. If water is lost from a densely packed pool as the result of an attack or an accident, cooling by ambient air would likely be insufficient to prevent a fire, resulting in the release of large quantities of radioactivity to the environment. A low density, open-frame arrangement within fuel pools could allow enough air circulation to keep the fuel from catching fire. In order to achieve and maintain this arrangement within the pools, irradiated fuel must be transferred from the pools to dry storage within five years of being discharged from the reactor.

➤ **Establish hardened on-site storage (HOSS):** Irradiated fuel must be stored as safely as possible as close to the site of generation as possible. Waste moved from fuel pools must be safeguarded in hardened, on-site storage (HOSS) facilities. Transporting waste to interim away-from-reactor storage should not be done unless the reactor site is unsuitable for a HOSS facility and the move increases the safety and security of the waste. HOSS facilities must not be regarded as a permanent waste solution, and thus should not be constructed deep underground. The waste must be retrievable, and real-time radiation and heat monitoring at the HOSS facility must be implemented for early detection of radiation releases and overheating. The overall objective of HOSS should be that the amount of releases projected in even severe attacks should be low enough that the storage system would be unattractive as a terrorist target. Design criteria that would correspond to the overall objective must include:

- Resistance to severe attacks, such as a direct hit by high-explosive or deeply penetrating weapons and munitions or a direct hit by a large aircraft loaded with fuel or a small aircraft loaded with fuel and/or explosives, without major releases.

- Placement of individual canisters that makes detection difficult from outside the site boundary.

➤ **Protect fuel pools:** Irradiated fuel must be kept in pools for several years before it can be stored in a dry facility. The pools must be protected to withstand an attack by air, land, or water from a force at least equal in size and coordination to the 9/11 attacks. The security improvements must be approved by a panel of experts independent of the nuclear industry and the Nuclear Regulatory Commission.

➤ **Require periodic review of HOSS facilities and fuel pools:** An annual report consisting of the review of each HOSS facility and fuel pool should be prepared with meaningful participation from public stakeholders, regulators, and utility managers at each site. The report must be made publicly available and may include recommendations for actions to be taken.

➤ **Dedicate funding to local and state governments to independently monitor the sites:** Funding for monitoring the HOSS facilities at each site must be provided to affected local and state governments. The affected public must have the right to fully participate.

➤ **Prohibit reprocessing:** The reprocessing of irradiated fuel has not solved the nuclear waste problem in any country, and actually exacerbates it by creating numerous additional waste streams that must be managed. In addition to being expensive and polluting, reprocessing also increases nuclear weapons proliferation threats.

Federal Register Notice: 75FR4427
Comment Number: 2

Mail Envelope Properties (88BD8F57C0774F58BC2995AA4E170694)

Subject: 75 FR 4427, amended comments
Sent Date: 2/25/2010 3:34:53 PM
Received Date: 2/25/2010 3:35:05 PM
From: jayklaus

Created By: jayklaus@tcsn.net

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Tracking Status: None

Post Office: DFFQNW1

Files	Size	Date & Time
MESSAGE	18766	2/25/2010 3:35:05 PM
NIRS principles for on-site storage of HLNW, 10-07-09.doc		10116

Options

Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received:

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