From: "Denise Chancellor" <DCHANCELLOR@utah.gov>
To: <jrh@nrc.gov>, <mxb6@nrc.gov>, <NRCREP@nrc.gov>
Date: Mon, Jul 2, 2007 2:02 PM
Subject: State of Utah Comments on Terrorism Assessments for Docket

A cover letter and the State of Utah comments are attached for the above docket numbers. If you would like a hard copy of the attached documents, please contact the undersigned.

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72 FR 31866
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Denise Chancellor
Utah Attorney General's Office
P.O. Box 140873
Salt Lake City, UT 84114-0873
Phone: (801) 366-0286
Fax: (801) 366-0292

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CC: "Dianne Nielson" <DNIELSON@utah.gov>

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From: "Denise Chancellor" <DCHANCELLOR@utah.gov>

Created By: DCHANCELLOR@utah.gov

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nrc.gov
OWGWPO04.HQGWDO01
JRH (James Randall Hall)

nrc.gov
OWGWPO01.HQGWDO01
MXB6 (Matthew Blevins)

nrc.gov
TWGWPO01.HQGWDO01
NRCREP

utah.gov
DNIELSON CC (Dianne Nielson)

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July 2, 2007

Chief, Rulemaking, Directives, and Editing Branch
Mail Stop T6-D59
U.S. Nuclear Regulatory Commission
Washington DC 20555-0001

Sent via e-mail to: NRCREP@nrc.gov
jrh@nrc.gov
mxb6@nrc.gov

Attention: James R. Hall for Docket No. 72-26
and Matthew Blevins for Docket No. 030-36974

re: State of Utah Comments on NRC's Terrorism Assessments
for the Diablo ISFSI and the Pa'ina Irradiator

Dear Chief of Rulemakings, Directives and Editing,

Attached are the State of Utah comments which address both NRC terrorism assessments for the Diablo Independent Spent Fuel Storage Installation (Docket No. 72-26), and the Pa'ina Irradiator (Docket No. 030-36974).

Sincerely,

/s/ Dianne R. Nielson

Dianne R. Nielson, Ph.D.
Energy Advisor to the Governor

Enc:

State of Utah Comments on
U.S. Nuclear Regulatory Commission Terrorism Assessment
Supplements to the Environmental Assessments and
Draft Findings of No Significant Impact for the
Diablo Canyon ISFSI (Docket No. 72-26) and
Pa'ina Irradator (Docket No. 030-36974)
July 2, 2007

The Nuclear Regulatory Commission ("NRC") has recently conducted two terrorism environmental assessments ("EAs") in response to the 9th Circuit Court of Appeals decision, San Luis Obispo Mothers for Peace v. NRC, 449 F.3d 1016 (9th Cir. 2006), which held that consideration of the environmental effects of a terrorist attack cannot be categorically excluded under the National Environmental Policy Act ("NEPA"). Those facilities, located in the 9th Circuit's jurisdiction, are the Diablo Canyon Independent Spent Fuel Storage Installation ("Diablo ISFSI") in California, and the Pa'ina Irradiator, proposed for location near the Honolulu International Airport in Hawaii. NRC concluded, for both facilities, that their construction and operation, "even when potential terrorist attacks on the facilit[ies] are considered, will not result in a significant effect on the human environment." Diablo EA Supp. at 7; Pa'ina EA, App. B at B-8.

The State of Utah comments address the NRC assessments and its draft finding of no significant impact ("FONSI") for both facilities. The comments also address the process by which NRC has conducted its terrorism assessments, as well as the technical deficiencies in those assessments.

1. Need for Transparency and Objectivity

The NRC assessments lack transparency and objectivity. First, NRC's past statements on the feasibility of conducting a non-speculative and useful terrorism analysis give the public no confidence that NRC did not set out with a pre-ordained result in mind. Second, NRC has either not developed or not disclosed any objective technical standard by which it has judged the consequences of a terrorist attack at the Diablo or Pa'ina facilities. Third, NRC has not consulted with any outside entity or individual in conducting these two assessments, further eroding public confidence in its conclusions.

a. NRC's Past Aversion to Conducting Terrorism Assessments Undermines the Credibility of its Current Assessments.

NRC has been explicit that it sees no point in doing a terrorism assessment as part of its licensing review. In a number of contemporaneous rulings in 2002[1] and in its Diablo decision in

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[1] *See* Private Fuel Storage, L.L.C. (Independent Spent Fuel Storage Installation), CLI-02-25, 56 N.R.C. 340 (2002); Duke Cogema Stone & Webster (Savannah River Mixed Oxide Fuel Fabrication Facility), CLI-02-24, 56 N.R.C. 335 (2002); Dominion Nuclear Connecticut, Inc. (Millstone Nuclear Power Station, Unit 3), CLI-02-27, 56 N.R.C. 367 (2002); Duke Energy Corp. (McGuire Nuclear Station, Units 1 and 2; and Catawba Nuclear Power Station, Units 1 & 2), CLI-02-26, 56 N.R.C. 358 (2002).

2003,[2] the Commission considered a formal NEPA review would not add meaningfully to its understanding of terrorism and that it has no means of usefully assessing the risks of a terrorist attack. The Commission re-emphasized this point earlier this year: "we reiterate our longstanding view that NEPA demands no terrorism inquiry."[3] The Commission's intransigent position that it need not perform a terrorism analysis outside the jurisdiction of the 9th Circuit Court of Appeals, does not inspire public confidence that the NRC objectively evaluated the effects of a terrorist attack at Diablo and Pa'ina or that a FONSI was nothing more a foregone conclusion.

b. Need for a Comprehensive and Objective Independent Review

NRC relies on a generic security assessment of a large aircraft impact crash into a spent fuel cask (or casks) to use as a comparative basis for its terrorism analysis at Diablo. In preparing its analysis, NRC had no discussions or consultations with outside agencies or individuals. Diablo EA Supp. at 7. This in turn calls into question whether NRC has the in-house expertise to do such a comparative assessment.

It is critical that NRC's generic security assessment and its applicability to the Diablo and Pa'ina sites are independently reviewed by those who are free from bias or conflicts of interest, even if the assessment of threats and sabotage against the facilities may be safeguard information. The National Research Council of the National Academy of Sciences recommended a similar approach in addressing the security of spent fuel transportation: that it be conducted by a "technically knowledgeable group that is independent of the government and free from institutional and financial conflicts of interest."[4] The National Research Council also suggested that the independent group's findings and recommendations be presented in a format that can be shared with the public.[5]

The generic assessment referred to above, conducted by Sandia Laboratories, did not evaluate the effects of a jet fuel fire on the cask system.[6] This is a serious shortcoming because such fires are capable of collapsing steel structures. To cite a recent example, in April 2007, a truck laden

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[2]Pacific Gas & Elec. Co. (Diablo Canyon Power Plant Independent Spent Fuel Storage Installation), CLI-03-1, 57 N.R.C. 1 (2003).

[3]AmerGen Energy Co., L.L.C. (Oyster Creek Nuclear Generating Station), CLI-07-08, 65 N.R.C. 124 (2007). *See also* Nuclear Management Co., L.L.C.(Palisades Nuclear Plant), CLI-07-09, 65 N.R.C. 139 (2007).

[4]*See* "Going the Distance? The Safe Transport of Spent Nuclear Fuel and High-Level Radioactive Waste in the United States," National Research Council at 215 (2006).

[5]Id.

[6]"Safety and Security of Commercial Spent Nuclear Fuel Storage" Committee on the Safety and Security of Commercial Spent Nuclear Fuel Storage, National Research Council, Public Report at 67 (2006). Presumably, this is also the case for Pa'ina, where NRC used a generic assessment to do its comparative assessment. Pa'ina EA, App. B at B-5.

with 8,600 gallon of fuel caught fire, causing the collapse of the steel structure for a highway overpass in Emeryville, California.[7] Apparently, the bolts holding the steel frame of the overpass began to melt and bend in the intense heat. NRC's FONSI cannot stand without evaluating the environmental consequences that a jet fuel fire would have on the storage cask system or on the irradiator.

In sum, an independent and comprehensive terrorism assessment would identify problems, enable solutions to be implemented, help instill public confidence in siting and licensing nuclear facilities, and satisfy NRC's obligations under NEPA.

2. Security Orders Do Not Mitigate Environmental Consequences

In its terrorism assessments, NRC relies, in part, on non-public orders issued to licensees to increase security. NRC says it has imposed additional requirements after a review of threats, such as a land-based vehicle bomb, ground assault with insider assistance, and water borne assaults. Diablo EA Supp. at 5. NRC further states that a key feature of the security program for ISFSIs is a "response to intrusions". Id. at 5. However, it is apparent that ISFSI licensees need not employ armed guards or require armed response personnel to interpose themselves between an intruder.[8] Furthermore, it is still the case that ISFSIs (and probably irradiators too) do not have to protect against malevolent use of an airborne vehicle.[9]

Given the above, it does not follow that the security measures enumerated (1) through (6) in the Diablo EA[10] would "mitigat[e] the extent of damage and the potential radiological consequences if an attack were successful." Diablo EA Supp. at 5. The EA completely fails to tie the increased security measures to mitigating environmental consequences if an attack were to occur.

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[7] *See e.g.*, Demian Bulwa & Peter Fimrite, "Tanker Fire Destroys Part of MacArthur Maze," San Francisco Chronicle, April 29, 2007. *See* images of the aftermath at: http://www.sfgate.com/cgi-bin/object/article?f=/c/a/2007/04/29/BAGVOPHQU46.DTL&o=4

[8] *See e.g.*,10 C.F.R. § 73.55(h)(4)(iii)(A) and (h)(5) (exemptions for general licensees) and 72 Fed. Reg. 12705 (March 19, 2007)(*stating* security orders to specific ISFSI licensees result in both specific and general ISFSI licensees having equivalent protective measure in place for design basis threats against sabotage).

[9] *See e.g.*, Private Fuel Storage, LLC, 56 N.R.C. 340, 345 (2002) (*citing* Final Rule, "Physical Protection for Spent Nuclear Fuel and High Level Radioactive Waste," 63 Fed Reg. 26,955-56 (May 15, 1998)).

[10] Those measures are: "(1) increased security patrols; (2) augmented security forces and weapons; (3) additional security posts; (4) heightened coordination with local law enforcement and military authorities; (5) enhanced screening of personnel; and (6) additional limitations on vehicular access." Diablo EA Supp. at 5.

3. Technical Deficiencies and a Non-supportable FONSI

NRC's documentation and technical analysis do not support its conclusion that the construction, operation, and decommissioning of the Diablo ISFSI (or the Pa'ina irradiator) "will not result in a significant effect on the human environment." Diablo EA Supp. at 7; Pa'ina EA, App. B at B-8.

a. A Tornado-generated Missile Test does not Support a FONSI

NRC's offers another non sequitur example[11] by emphasizing that spent fuel storage casks are "specifically designed to withstand severe accidents, including the impact of a tornado-generated missile such as a 4,000-pound automobile at 126 miles per hour." Diablo EA Supp. at 6. A 4,000 pound vehicle launched at 126 miles per hour pales in comparison to the environmental consequences that may ensue from a terrorist attack using a commercial aircraft.

On September 11, 2001, a 181,520-pound Boeing 757 struck the Pentagon at a speed of 529 miles per hour (460 knots).[12] In tragically similar events on September 11, a Boeing 767 (American Flight 77) crashed into the North Tower of the World Trade Center at 530 miles per hour and a Boeing 757 (United Flight 93) crashed into the ground in Pennsylvania at 580 miles per hour.[13] The fact that NRC requires storage casks to withstand a 4,000-pound automobile traveling at 126 miles per hour, offers no support whatsoever for a FONSI based on a storage cask at Diablo being capable of withstanding a 180,000-pound, jet-fuel-laden, commercial aircraft attack, traveling at over 500 miles per hour.

b. Non-conservative and Unquantified Assumptions

NRC says it relied upon a generic security assessment that was "representative, **and in some cases**, conservative" of the actual conditions at the Diablo ISFSI. Diablo EA Supp. at 7 (*emphasis added*). *See also* Pa'ina EA, App. B at B-5. However, there are too many undisclosed assumptions and no articulated failure standard for the public to have any confidence in the validity of NRC's statement. It is unknown whether all of NRC's inputs and assumptions are representative or conservative of the proposed Diablo ISFSI design and operation. It is also unknown whether the weight and fuel loading for commercial aircraft used in the generic assessments are conservative. Furthermore, NRC has not quantified the use of non-conservative assumptions to determine their effect on the outcome of its comparative assessment. To support a FONSI, NRC must utilize conservative assumptions and methodologies in determining whether a terrorist aircraft attack would have a significant effect on the environment.

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[11]The other being mitigation measures discussed above.

[12]The Pentagon Building Performance Report, American Society of Civil Engineers, Paul F. Mlakar, Ph.D., P.E.; Donald O. Dusenberry, P.E.; James R. Harris, Ph.D., P.E.; Gerald Haynes, P.E.; Long T. Phan, Ph.D., P.E.; Mete Sozen, Ph.D., S.E. at 12 (Jan. 2003).

[13]9/11 Commission Report at 10, 14 (2004).

c. Lack of an Objective Technical Standard

Neither assessment describes an objective technical standard by which NRC measured its comparative analysis against the generic analysis. One such standard for determining the likelihood that a spent fuel storage cask or canister will be perforated is by comparing a unit-strain demand with a unit-strain capacity in the cask or canister material. NRC has not disclosed the failure standards (*e.g.*, steel and concrete failure standards) by which it judged the integrity of the cask and canister. Contrary to guidance published by the U.S. Department of Energy,[14] and relying on unilateral static coupon tests, NRC recently found it unnecessary to require further investigation or protection of spent nuclear fuel from the effects of an aircraft crash, in which carbon and stainless steel strains were estimated to be beyond the elastic range. In the Diablo EA, it is unknown how the NRC evaluated stains in the elastic range. Accordingly, without an articulated objective standard, NRC's FONSI lacks substantive support. Furthermore, the EA's silence on how the proposed anchored cask at Diablo would induce additional strains on the casks in comparison to the generic assessment further erodes NRC's FONSI.

d. Failure to Evaluate CRUD

There is no record that NRC evaluated the build up and release of activated corrosion and wear products (commonly referred to as Chalk River Unidentified Deposits or CRUD) deposited on fuel cladding during reactor operation. Radioactive components in CRUD, such as cobalt-60, may escape from a breached or leaking canister, even if the fuel is undamaged, and spalled CRUD may be released into the environment if a leakage path is available.[15]

e. Doses from a Terrorist Attack May Exceed 5 rem

NRC concludes that because a "greater degree of airborne dispersion" would occur at Diablo than was the case in the generic assessment, the dose to the nearest affected resident "would **likely** be below 5 rem." Diablo EA Supp. at 7 (*emphasis added*). There is nothing to suggest that the generic security assessment is bounding for assessment of perforation of the casks at the Diablo ISFSI, especially if all parameters and inputs considered in the generic assessment are not conservative compared with the design and operational parameters at the Diablo ISFSI. Furthermore, the generic assessment did not consider releases that may occur from jet fuel fires or CRUD. In any event, apparently the dose to the nearest affected resident could exceed 5 rem.

Thank you for your consideration of the State of Utah comments.

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[14]U.S. Department of Energy, Accident Analysis For Aircraft Crash Into Hazardous Facilities, DOE Standard, DOE-STD-3014-2006 (October, 1996, Reaffirmation May 2006).

[15]*See* Yucca DEIS at H-19: The amount of crud that would be released from the surface of the fuel rod cladding is uncertain because there are very few data for the accident conditions of interest, and the physical condition of the crud can be highly variable (Sandoval et al. 1991, page 18). Two sources (NRC 1997, Table 7-1; NRC 1998, Table 4-1) recommend a release fraction of 1.0 (100 percent of the cobalt-60) for accident conditions; therefore, the EIS analysis assumed this value.