

From: Lyon, Fred
Sent: Wednesday, June 10, 2009 3:37 PM
To: lakosh@gci.net
Cc: Mensah, Tanya; Markley, Michael; Blount, Tom; Barkman, Molly
Subject: RE: G20090007 2.206 Petition (Reactors Near Yellowstone)

The internal PRB meeting is not recorded. The results of the meeting and a summary of the PRB's rationale were provided to you in the e-mail of June 1, 2009.

A summary of the documents that formed the basis of the PRB's rationale was provided in the e-mail of June 1, 2009. As noted in the e-mail of June 9, 2009, you may request additional documents under the FOIA.

The NRC policy for withholding sensitive unclassified information concerning nuclear power reactors from public disclosure is provided in SECY-04-0191 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML043140175) and Management Directive 3.4, "Release of Information to the Public" (ADAMS Accession No. ML080310417). The PRB does not reclassify information already contained in ADAMS. The authors or the staff responsible for the classified documents redacts them pursuant to FOIA exemptions before providing them to FOIA requesters, in order to provide publicly available information. The redacted portions cite the applicable FOIA exemption, thus explaining why the information is being withheld.

Please inform me by June 15, 2009, if you intend to provide supplemental information to the PRB. If so, please provide the information within 30 days. Otherwise, in accordance with your desire as stated in your e-mail on June 8, 2009, the PRB will schedule another telephone call for you to address the board.

From: lakosh@gci.net [mailto:lakosh@gci.net]
Sent: Tuesday, June 09, 2009 12:01 PM
To: Lyon, Fred
Cc: Mensah, Tanya; Markley, Michael; Blount, Tom; Barkman, Molly
Subject: RE: G20090007 2.206 Petition (Reactors Near Yellowstone)

Dear All;

Were the deliberations of the PRB RE: G20090007 recorded and can I obtain a copy?

Is the PRB in possession of any studies regarding:

- 1) The distribution of ash from any volcano in the US?
- 2) The probability of eruption of any US volcanoes?
- 3) The effect of ash on reactor operations or equipment?

Would you please identify each of these studies and which of these studies contains state secrets?

Would you please explain why the scientific information in these studies cannot be segregated from the state secrets and provided pursuant to my FOIA and instant request?

Sincerely, Tom Lakosh

From: Lyon, Fred [mailto:Fred.Lyon@nrc.gov]
Sent: Tuesday, June 09, 2009 6:41 AM
To: lakosh@gci.net
Cc: Mensah, Tanya; Markley, Michael; Blount, Tom; Barkman, Molly
Subject: RE: G20090007 2.206 Petition (Reactors Near Yellowstone)

Mr. Lakosh,

On June 8, 2009, Mike Markley, Tanya Mensah, and I called you in response to your e-mail below, and as a follow-up to our telephone conversation on June 1, 2009. You requested that we provide any comments to you in writing and ended the call.

During our conversation on June 1, 2009, we informed you that the initial recommendation of the Petition Review Board (PRB) was to reject your petition. We provided you with the reasons for the PRB's recommendation during the conversation and by email on June 1, 2009. You requested the ability to review all of the documents cited in the PRB's decision.

Note that your request to the Public Document Room (PDR) staff, and your subsequent request under the Freedom of Information Act (FOIA), asked for a search "regarding the risk/probability of catastrophic eruptions from Yellowstone and Long Valley and their potential effect on reactor operations" or "NRC documents related to the probability of an eruption of the Yellowstone and Long Valley super volcanoes and any mitigation measures that might be taken for ash fall at nuclear reactor facilities." The PDR and FOIA staffs provided you with the results of a search of publicly available documents that matched the search criteria you provided, *i.e.*, documents related to Yellowstone and Long Valley. The FOIA staff's action on your search request was then complete. The PDR staff also provided additional documents that they considered may be of interest to you, using a search of the keywords "volcanism" and "ashplume."

Different search criteria, *e.g.*, volcanic activity or ash fall, may have included some of the documents relied upon by the PRB in reaching its decision, *e.g.*, Generic Letter 88-20, Supplement 4. Note that documents that are not publicly available may not come up in a PDR search, *i.e.*, the PDR is the *Public* Document Room. If you request specific documents via the FOIA, non-publicly available documents may come up in the search. Absent a request for specific documents, non-publicly available documents may not come up. Non-publicly available documents would then be subject to review and release under the restrictions of the FOIA. You may file an additional FOIA request with different search criteria at any time.

The NRC staff has followed the process outlined in Management Directive 8.11, "Review Process for 10 CFR 2.206 Petitions," which was provided to you by e-mail on January 13, 2009. The PRB's recommendation is not premised on whether or not you review all of the documents considered by the PRB in reaching its recommendation, or whether or not you concur with the recommendation. The PRB reviewed the information you provided as well as the information that I summarized in my June 1, 2009, e-mail, and reached its initial recommendation.

The purpose of the telephone calls on June 1 and June 8, 2009, was to inform you of the PRB's initial recommendation regarding your petition, and to offer you the opportunity to address the PRB again before it reaches a final recommendation. Please inform me by June 15, 2009, if you intend to provide supplemental information to the PRB. If so, please provide the information within 30 days. Otherwise, in accordance with your desire as stated in your e-mail on June 8, 2009, the PRB will schedule another telephone call for you to address the board.

From: lakosh@gci.net [mailto:lakosh@gci.net]
Sent: Monday, June 08, 2009 7:42 AM
To: Lyon, Fred
Cc: Mensah, Tanya; Markley, Michael; Blount, Tom
Subject: RE: G20090007 2.206 Petition (Reactors Near Yellowstone)

Dear Mr. Lyon and Board Members;

I find your request at the end of your email somewhat confusing as I clearly requested to address the PRB again in the telephone conversation prior to your sending the email. Again, I request the ability to review all of the evidence cited in the decision below for at least 30 days before I address the PRB. You and the decision mentioned that some of the documents were not publically available and I requested, and reiterate the request, that the information classified as secret be redacted and the relevant portion provided. It is abundantly clear that there can be little justification for maintaining the secrecy of studies that analyzed volcanic hazards and ash effects if they actually exist. The NRC has just as clearly stated that they do not exist in their response to my FOIA, (previously provided to the PRB), and one or another of these NRC departments responding to my inquiries are perpetrating a falsehood in their correspondence regarding my inquiries on this very specific subject. Unless and until the NRC response to my FOIA is corrected on advice of the PRB with the appropriate provision of all relevant documents, the documents cited below must be deemed pure fabrications as they profess to predate the NRC FOIA response that did not detect any NRC documents related to “the risk/probability of catastrophic eruptions from Yellowstone and Long Valley and their potential effect on reactor operations”.

I might add that regulations requiring analysis, particularly ones that downplay the hazard without any supporting research, are in no way supportive of the contention that the volcanic ash hazard was properly analyzed and appropriately deemed either beyond the level of probabilistic concern, that the facilities were/will be engineered to mitigate the hazard or that ash could not possibly migrate to any particular facility in concentrations of concern. Indeed, even if all of the suspect and fraudulently concealed documents were deemed valid evidence in this proceeding, there still appears to be no scientific analysis of tephra distribution or what concentrations of ash in the air or water would create levels of concern beyond the noted effect on offsite power and its propensity to raise the level of hazard to the facility. Even that admission of adverse effect does not have an evaluation of cause and effect nor a concatenate mitigating procedure to remedy the loss of offsite power.

In short, neither your dismissive regulations nor the instant dismissive decision have any basis in fact or science whatsoever, either in terms of a probabilistic assessment of eruption events and ash distribution required by regulation, or; in terms of an engineering analysis of the hazard to the facilities from ash in the air and water. If this is the quality of NRC oversight, then your agency presents more of a threat to US citizens than any imagined external security threat as the agency is blatantly incapable of assessing and mitigating either engineering defects or the security threat to nuclear facilities.

Sincerely; Tom Lakosh

From: Fred Lyon [mailto:Fred.Lyon@nrc.gov]
Sent: Monday, June 01, 2009 10:59 AM
To: Tom Lakosh
Cc: Tanya Mensah; Michael Markley; Tom Blount
Subject: G20090007 2.206 Petition (Reactors Near Yellowstone)

Mr. Lakosh, you were informed of the Petition Review Board's (PRB's) initial recommendation to reject your petition in an earlier phone call today with me, Mr. Markley, and Ms. Mensah. The PRB recommended to reject your petition because the impact of volcanic activity on U.S. operating reactors has already been the subject of NRC staff review and evaluation for which a resolution has been achieved, the issues have been resolved, and the resolution is applicable to U.S. nuclear power plants.

The Atomic Energy Commission (the predecessor of the NRC) considered the need for investigations of possible volcanism required for sites located in areas of volcanic activity during its consideration of amendments to its regulations, 10 CFR Part 100, "Reactor Site Criteria," which added an Appendix A, "Seismic and Geologic Siting Criteria for Nuclear Power Plants." In its final rule (38 FR 31279, dated November 13, 1973), the Commission stated in Appendix A, Section II, that "These criteria do not address investigations of volcanic phenomena required for sites located in areas of volcanic activity. Investigations of the volcanic aspects of such sites will be determined on a case-by-case basis."

Of the current operating reactors, potential volcanic activity, specifically ash fall, is addressed in the final safety analysis report for only Columbia Generating Station. The licensee concluded that the only aspect of volcanic activity that would affect the plant is ash fall. Considering the maximum expected ash fall rate concurrent with a 2-hour loss of offsite power, the licensee concluded that the procedures and equipment available will provide adequate assurance of safe plant operation and shutdown. In its Safety Evaluation Report (SER) for the operating license for WNP-2 (NUREG-0892, Supplement 3, "Safety Evaluation Report Related to the Operation of WPPSS [Washington Public Power Supply System] Nuclear Project No. 2," dated May 1983; ADAMS Accession No. ML091310458, non-publicly available), the NRC staff concurred with the licensee's assessment.

However, in NRC Generic Letter (GL) 88-20, Supplement 4, "Individual Plant Examination of External Events (IPEEE) for Severe Accident Vulnerabilities," dated June 28, 1991 (available at <http://www.nrc.gov/reading-rm/doc-collections/gen-comm/gen-letters/1988/ql88020.html>), licensees were requested to perform an IPEEE for plant-specific severe accident vulnerabilities initiated by external events and to submit the results to the NRC. As regulatory guidance for responses to GL 88-20, the staff referred licensees to NUREG-1407, "Procedural and Submittal Guidance for the [IPEEE] for Severe Accident Vulnerabilities," dated June 1991 (ADAMS Accession No. ML063550238). GL 88-20, Supplement 4, paragraph 3, "Identification of External Hazards," states that

However, licensees should confirm that no plant-unique external events known to the licensee with the potential to initiate severe accidents are excluded from the IPEEE. For example, *volcanic activities should be assessed as part of the IPEEE process at plant sites in the vicinity of active volcanoes....* [emphasis added].

NUREG-1407, Chapter 2, "Events Evaluated for Inclusion in the IPEEE," states that

In supporting the implementation of the [NRC's] Severe Accident Policy, a study of the risk of core damage to nuclear power plants in the United States due to externally initiated events was performed. ... "other external events" are investigated in NUREG/CR-5042, Suppl. 2. The "other external events" covered are nearby industrial/military facility accidents, on-site hazardous material storage accidents, severe temperature transients, severe weather storms, lightning strikes, external fires, extraterrestrial activity, *volcanic activity*, earth movement, and abrasive windstorms [emphasis added].

NUREG-1407, Section 2.11, "Volcanic Activity," states that

Most nuclear power plant sites are too far away from active volcanoes to expect any effect at the plant, so most licensees need not consider the volcanic effects. However, those sites in the vicinity of active volcanoes should assess volcanic activities (NUREG/CR-5042, Suppl. 2) as part of the IPEEE process.

NUREG-1407, Appendix D, "NRC Response to Comments and Questions," addressed the question of the inclusion of volcanic activities, among other events, in the IPEEE as follows.

Licensees need to confirm that lightning or volcanic activity is not a dominant contributor to severe-accident risk at their nuclear power plant sites. The determination should be based on plant-specific experience.... In regard to volcanic activity, only two sites [Trojan and WNP-2] would be affected. In either case, a simple discussion will be sufficient for those plants not affected by these events.

NUREG/CR-5042, Supplement 2, "Evaluation of External Hazards to Nuclear Power Plants in the United States - Other External Events," dated February 1989 (ADAMS Accession No. ML063470272, non-publicly available), specifically addresses volcanic activity in Section 2.2.8, "Volcanic Activity." The NRC staff concluded in Section 5.0, "Summary and Conclusions," that

Volcanic activity is a hazard which should be considered, but only at the Trojan and WNP-2 sites. All other nuclear plant sites are too far away from active U.S. volcanos to have to consider this threat.

In accordance with GL 88-20, Supplement 4, licensees performed IPEEEs to identify plant-specific vulnerabilities to severe accidents, and reported the results to the NRC together with any licensee-determined improvements and corrective actions.

The NRC staff performed a screening review, which examined the IPEEE results for their "completeness and reasonableness" considering the design and operation of the plant. On the basis of this review and further review by a senior review board (SRB), the NRC staff concluded that the aspects of seismic; fires; and high winds, floods, transportation and other external events were adequately addressed. The SRB was comprised of NRC staff from NRR, the Office of Nuclear Regulatory Research (RES), and an RES consultant (Sandia National Laboratories) with probabilistic risk assessment expertise for external events. The staff's review findings were summarized in individual plant SERs, which included appendices with the details of the contractor's and staff's findings.

In response to your concerns, responses to GL 88-20, and the subsequent staff SERs were reviewed for the following plants, which represent those surrounding the Yellowstone caldera:

Columbia Generating Station
Wolf Creek Generating Station
Fort Calhoun Station
Cooper Nuclear Station
Diablo Canyon Power Plant
San Onofre Nuclear Generating Station
Palo Verde Nuclear Generating Station

Volcanic activity was addressed in detail only by the licensee for Columbia Generating Station. The licensee concluded that the only aspect of volcanic activity that would affect the plant is ash fall. Considering the maximum expected ash fall rate concurrent with a 2-hour loss of offsite power, the licensee concluded that the procedures and equipment available will provide adequate assurance of safe plant operation and shutdown. In its SER for the plant's IPEEE (letter from J. Cushing (NRC) to J. Parrish (licensee) dated February 26, 2001; ADAMS Accession No. ML010570035, non-publicly available), the NRC staff referred to its SER for the operating license and concurred with the licensee's assessment.

The licensees for Palo Verde, San Onofre, Diablo Canyon, Cooper, Fort Calhoun, and Wolf Creek eliminated volcanic activity for review in the IPEEEs for those plants using the screening methodology outlined in NUREG-1407. The NRC staff review of the IPEEEs for those plants concluded that the licensees' processes were capable of identifying the most likely severe accidents and severe accident vulnerabilities for the plants and that the IPEEEs met the intent of GL 88-20, Supplement 4.

In addition, the latest Yellowstone Volcano Observatory (YVO; a partnership of the U.S. Geological Survey (USGS), Yellowstone National Park, and the University of Utah) monthly update for May 2009 reports a volcano alert level of normal and an aviation color code of green, which are unchanged since at least 2006. The Yellowstone National Park website (<http://www.nps.gov/yell/naturescience/volcanoqa.htm>) states that,

There is no evidence that a catastrophic eruption at Yellowstone National Park is imminent. Current geologic activity at Yellowstone has remained relatively constant since earth scientists first started monitoring some 30 years ago. Though another caldera-forming eruption is theoretically possible, it is very unlikely to occur in the next thousand or even 10,000 years. Scientists have also found no indication of an imminent smaller eruption of lava.

Regarding the earthquake swarm at Yellowstone in late December 2008, the YVO states in its article, "Yellowstone Lake Earthquake Swarm Summary as of 8 January 2009" (available at <http://volcanoes.usgs/yvo/publications/2009/09swarm.php>), that,

At this time, there is no reason to believe that magma has risen to a shallow level within the crust or that a volcanic eruption is likely.

The USGS states in its Open-File Report 2007-1071, "Preliminary Assessment of Volcanic and Hydrothermal Hazards in Yellowstone National Park and Vicinity" (available at <http://pubs.usgs.gov/of/2007/1071/>), that,

Of all the possible hazards from a future volcanic eruption in the Yellowstone region, by far the least likely would be another explosive caldera-forming eruption of great volumes of rhyolitic ash.... The probability of another major caldera-forming Yellowstone eruption, in the absence of strong premonitory indications of major magmatic intrusion and degassing beneath a large area of the caldera, can be considered to be below the threshold of useful calculation.

Please inform me by June 8 if you would like to address the PRB again.

E-mail Properties

Mail Envelope Properties ()

Subject: RE: G20090007 2.206 Petition (Reactors Near Yellowstone)
Sent Date: 6/10/2009 10:34:42 AM
Received Date: 6/10/2009 3:36:00 PM
From: Lyon, Fred

Created By: Fred.Lyon@nrc.gov

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Expiration Date:

Priority: oImportanceNormal
ReplyRequested: False
Return Notification: False

Sensitivity: oNormal
Recipients received: