

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

| | | |
|------------------------------|---|------------------------|
| In the Matter of |) | |
| |) | |
| PRIVATE FUEL STORAGE, L.L.C. |) | Docket No. 72-22-ISFSI |
| |) | |
| (Independent Spent |) | |
| Fuel Storage Installation) |) | |

NRC STAFF'S OBJECTIONS AND RESPONSES
TO THE STATE OF UTAH'S SIXTEENTH SET OF
DISCOVERY REQUESTS DIRECTED TO THE NRC STAFF

INTRODUCTION

On December 11, 2001, the State of Utah ("State") filed "State of Utah's Sixteenth Set of Discovery Requests Directed to the NRC Staff" ("Sixteenth Request"), concerning the application for an Independent Spent Fuel Storage Installation ("ISFSI") filed by Private Fuel Storage, L.L.C. ("PFS" or "Applicant"). In its Request, the State filed six interrogatories concerning Contention Utah K/Confederated Tribes B (aircraft crash hazard). The NRC Staff ("Staff") hereby files its objections and responses to the State's Sixteenth Request, as follows.¹

GENERAL OBJECTIONS

Objection 1. The Staff objects to each of the State's discovery requests, in that the State has not complied with the Commission's regulations that govern discovery from the Staff. In this regard, it is well established that discovery against the Staff rests on a different footing than discovery in general. *Consumers Power Co.* (Midland Plant, Units 1 and 2), ALAB-634, 13 NRC

¹ The following objections and responses are filed pursuant to an extension of time granted by the Licensing Board, without objection by the State. See "Order (Granting Discovery Response Time Extension Request)," dated December 19, 2001. Responses to interrogatories provided herein are supported by the Affidavits of Amitava Ghosh and Kazimieras M. Campe attached hereto; objections are stated by Counsel.

96, 97-98 (1981). While discovery from parties in an NRC adjudicatory proceeding is generally governed by the provisions of 10 C.F.R. § 2.740 *et seq.*, interrogatory and document discovery against the Staff is governed by the provisions of 10 C.F.R. §§ 2.720(h)(ii)-(iii), 2.744 and 2.790.² These regulations establish certain limits to the Staff's obligation to respond to discovery requests. In particular, with regard to interrogatories, the Commission's rules provide:

[A] party may file with the presiding officer written interrogatories to be answered by NRC personnel with knowledge of the facts designated by the Executive Director for Operations. Upon a finding by the presiding officer that answers to the interrogatories are necessary to a proper decision in the proceeding and that answers to the interrogatories are not reasonably obtainable from any other source, the presiding officer may require that the staff answer the interrogatories.

10 C.F.R. § 2.720(h)(2)(ii). With regard to requests for the production of documents, the Commission's rules similarly provide:

(a) A request for the production of an NRC record or document not available pursuant to 10 C.F.R. § 2.790 . . . shall set forth the records or documents requested, either by individual item or by category, and shall describe each item or category with reasonable particularity and shall state why that record or document is relevant to the proceeding.

(b) If the Executive Director for Operations objects to producing a requested record or document on the ground that (1) it is not relevant or (2) it is exempted from disclosure under § 2.790 and the disclosure is not necessary to a proper decision in the proceeding or the document or the information therein is reasonably obtainable from another source, he shall so advise the requesting party. 10 C.F.R. § 2.744(b).

Moreover, it is an adequate response to *any* discovery request for a party to state that the information or document requested is available in the public domain and to provide information to locate the material requested. 10 C.F.R. § 2.740(b)(1); *accord*, *Metropolitan Edison Co.* (Three Mile Island Nuclear Station, Unit No. 1), CLI-79-8, 10 NRC 141, 147-148 (1979).

² See also 10 C.F.R. §§ 2.740(f)(3), 2.740a(j), 2.740b(a), and 2.741(e) (excluding discovery from the Staff from the general provisions of those regulations).

Here, the State has not complied with the Commission's requirements governing discovery against the Staff. First, the State has not indicated that the requested information is not available in the public domain. Indeed, some of the information requested by the State is available to the public in the Commission's Public Document Room (PDR), or has previously been provided to the State. Further, the State has not indicated that the requested information is exempt from disclosure under 10 C.F.R. § 2.790 or that it can not obtain the documents from public sources.

Objection 2. The Staff objects to each of the State's discovery requests, insofar as they request information that is not relevant to the issues in this proceeding and/or that exceeds the scope of admitted Contention Utah K/Confederated Tribes B (aircraft crash hazard) in this proceeding.

Objection 3. The Staff objects to the State's discovery requests insofar as they relate to matters which are outside the jurisdiction of the NRC and/or are beyond the proper scope of this proceeding.

Objection 4. The Staff objects to each of the State's discovery requests, insofar as they seek to impose an obligation to respond that is different from or greater than the obligations imposed by Commission requirements in 10 C.F.R. Part 2. See, e.g., "Instruction B" ("Supplemental Responses") (Request at 2).

Objection 5. The Staff objects to each of the State's discovery requests, insofar as they may request intra-agency memoranda, notes and other pre-decisional materials; or information or documents protected under the attorney-client privilege, the doctrines governing the disclosure of attorney work product and trial preparation materials, and/or any other privilege or exemption that warrants or permits the non-disclosure of documents under the Freedom of Information Act, as set forth in 10 C.F.R. § 2.790(a).

Objection 6. The Staff objects to each of the State's discovery requests, insofar as they may pertain to issues that have previously been the subject of discovery and are not currently subject to discovery under the Licensing Board's scheduling orders in this proceeding. See, e.g., "Attachment A" to "Order (General Schedule Revisions)," dated September 20, 2001 (discovery against the Staff on Contention Utah K/Confederated Tribes B has been completed, except as to new matters raised in the Staff's November 13, 2001, Supplement to the Safety Evaluation Report ("SER"), for which discovery commenced on November 21, 2001).

RESPONSES TO DISCOVERY REQUESTS

Notwithstanding the above objections to the State's Sixteenth Request, and without waiving these objections or its right to interpose these or other objections in the future, the Staff hereby states the following additional objections and responses to the State's Request.

INTERROGATORY NO. 5

State the Staff's understanding of the exact manner in which the F-16 crash rate was calculated to be 2.736×10^{-8} per mile, as referred to in the Staff's Revision to the PFS Safety Evaluation Report, Aircraft Supplement No. 1, November 13, 2001 ("SER, Aircraft Supplement") at page 11, including the source of all values used in such calculation.

STAFF RESPONSE

The Staff objects to the numbering of this interrogatory on the basis that this interrogatory should properly be described as Interrogatory No. 9 on Contention Utah K/Confederated Tribes B.³

³ The State asserts that the numbering of these interrogatories is continued from the last interrogatory relating to Contention Utah K/Confederated Tribes B. See Sixteenth Request at n.1. However, the Staff objected to the State's numbering previously, on the grounds that Interrogatory No. 3 of the "State's Ninth Set of Discovery Requests Directed to the NRC Staff" posited five interrogatories in the form of a single interrogatory, and therefore, did not comport with the Licensing Board's Order that limits each party to ten interrogatories per contention, including "all discrete subparts." See *Private Fuel Storage, L.L.C.* (Independent Spent Fuel Storage Installation), LBP-98-7, 47 NRC 142, 245 (1998); "NRC Staff's Objections and Responses to "State of Utah's Ninth Set of Discovery Requests Directed to the NRC Staff," dated November 13, 2000, at 16-18.

Notwithstanding this objection, the Staff responds to this interrogatory as follows. The Staff's understanding of PFS's F-16 crash rate calculation is as follows. The U.S. Air Force maintains mishap rates for each type of aircraft. Typically, the U.S. Air Force presents mishap rate data as the number of crashes per 100,000 hours of flight. PFS estimated the crash rate on a per mile basis by dividing the time rate (i.e., crashes per hour) by the average speed of aircraft (i.e., miles per hour) (Private Fuel Storage Limited Liability Company, 2000, Tab D). Further, on the basis of the U.S. Air Force data, PFS modified the normal crash rate developed in the DOE ACRAM study by updating the data from 1975 to 1993 with data from FY 1994 to FY 1998. Using the updated F-16 accident rate in normal in-flight mode, PFS estimated the crash probability to be 2.736×10^{-8} per mile.

The sources of information used in this estimation are: (1) Kimura, C.Y. R.E. Glaser, R.W. Mensing, T. Lin, T.A. Haley, A.B. Barto, and M.A. Stutzke. 1996. *Data Development Technical Support Document for the Aircraft Crash Risk Analysis Methodology (ACRAM) Standard*. UCRL-ID-124837. Livermore, CA: Lawrence Livermore National Laboratory (Kimura, et.al); and (2) U.S. Air Force (<http://www-afsc.saia.af.mil/AFSC/RDBMS/Flight/stats/f16mds.html>) from Table 1 of *Aircraft Crash Impact Hazard at the Private Fuel Storage Facility*. Revision 4 (August 10, 2000), La Crosse, WI: Private Fuel Storage Limited Liability Company.

INTERROGATORY NO. 6

With respect to the following statement in the Staff's SER, Aircraft Supplement at page 11,

On the basis of the U.S. Air Force data, PFS modified the normal crash rate developed in the DOE ACRAM study by updating the data from FY 1975 to FY 1993 with data from FY 1994 to FY 1998.

state the Staff's understanding of the exact manner in which such modification by PFS was accomplished or calculated, including the Staff's understanding of what mathematical computations were made and the source of all values used in such calculations.

STAFF RESPONSE

The Staff objects to the numbering of this interrogatory on the grounds that this interrogatory should be Interrogatory No. 10, for the reasons stated in response to Interrogatory No. 5, *infra* at 4. Notwithstanding this objection, the Staff responds to this interrogatory as follows.

The Staff's understanding of PFS' modification of the normal crash rate is as follows:

The following information about F-16 mishaps for the years 1975 through 1993 were considered:

| | |
|------------------------------|---|
| Total landings | = 2,818,000 |
| Number of sorties by F-16s | = 2,675,000 |
| Total mishaps | = 212 |
| Total flight hours | = 3,730,000 |
| Total estimated flight miles | = $(8.3 + 9.3) \times 10^8$, or 17.6×10^8 |

The distribution of mishaps according to different flight phases is:

| | | |
|----|-------------------|---|
| A. | Takeoff/Landing | = 76 (35.85% of total mishaps) |
| B. | Normal in-flight | = 32 (15.09% of total mishaps) |
| | Estimated miles | = 8.3×10^8 (47.18% of total miles flown) |
| | Crash Rate | = 3.86×10^{-8} mishaps/flight mile |
| C. | Special in-flight | = 104 (49.06% of total mishaps) |
| | Estimated miles | = 9.3×10^8 (52.84% of total miles flown) |
| | Crash Rate | = 1.12×10^{-7} mishaps/flight mile |

See Kimura *et al.* (1996), Tables 4.7 and 4.8. Based on the above information, PFS estimated (Appendix D, Aircraft Crash Hazard Report) the average flight miles flown in a flight hour to be equal to $(8.3 + 9.3) \times 10^8 / 3,730,000 = 471.85$. PFS has used this average speed to modify the crash rate of F-16s taking into consideration recent data available from the U.S. Air Force.

PFS used the mishap data of F-16 aircraft for FY 1989 through 1998 to estimate the crash rate. F-16 crash data from U.S. Air Force (FY 1989 through FY 1998) (<http://www-afsc.saia.af.mil/AFSC/RDBMS/Flight/stats/f16mds.html>) (Table 1 of Aircraft Crash Impact Hazard at the Private Fuel Storage Facility, Revision 4, August 10, 2000) show:

Class A mishaps = 142

Class B mishaps = 20

The total of Class A and Class B mishaps is 162, out of which 139 aircraft were destroyed. The total flight hours in FY 1989 through FY 1998 is 4,016,311.

PFS made the assumption that the average speed or the flight miles per flight hour remains constant over the years at 471.85. Hence, the estimated total flight miles in FY 1989 through FY 1998 is $471.85 \times 4,016,311$, or 1.895×10^9 . PFS made the assumption that the ratio of normal flight miles to total flight miles remains constant at 47.18% during FY 1989 through FY 1998. Hence, the estimated normal flight miles in FY 1989 through FY 1998 is $0.4718 \times 1.895 \times 10^9$, or 8.941×10^8 . PFS made the assumption that the ratio of normal flight mishaps to total mishaps also remains constant during FY 1989 through FY 1998 at 15.09%. Hence, the estimated number of mishaps in normal flight phase is 0.1509×162 , or 24.45. Based on the above assumptions, PFS adjusted the crash rate of F-16 in normal in-flight mode during FY 1989 through FY 1998.

The adjusted crash rate in normal in-flight mode in FY 1989 through FY 1998 is $24.45 / 8.941 \times 10^8$, or 2.736×10^{-8} mishaps per flight mile. This analysis took into consideration both Class A and Class B mishaps (Private Fuel Storage Limited Liability Company, 2000).

INTERROGATORY NO. 7

With respect to the Staff's statement, "Hence, PFS used the crash rate based on the last 10 years data (i.e., from FY 1989 to FY 1998)" made in the SER, Aircraft Supplement at page 11, state the Staff's understanding of the values of the crash rate data referred to for FY 1989, the values of the crash rate data referred to for FY 1990, and in a like manner, the values of crash rate data for each and every following year through and including FY 1998, including the Staff's understanding as to the specific source of such crash rate data for each such year.

STAFF RESPONSE

The Staff objects to the numbering of this interrogatory on the grounds that it should be Interrogatory No. 11, for the reasons stated in response to Interrogatory No. 5, *infra* at 4. Further, inasmuch as the State is limited to filing ten interrogatories per contention against the Staff, the Staff objects to this interrogatory because it exceeds the ten-interrogatory limit imposed by the Licensing Board. See LBP-98-7, 47 NRC at 245; see also, "NRC Staff's Objections and Responses to "State of Utah's Ninth Set of Discovery Requests Directed to the NRC Staff," dated November 13, 2000, at 16-18. Notwithstanding these objections, the Staff responds to this interrogatory as follows.

Typically, the mishap rate is defined as the number of crashes per 100,000 hr of flight.

| Year | Class A | | Class B | | Total Mishaps | Flight Hours |
|---------|---------|-------------|---------|-------------|---------------|--------------|
| | Mishaps | Mishap Rate | Mishaps | Mishap Rate | | |
| FY 1989 | 14 | 3.63 | 1 | 0.26 | 15 | 385179 |
| FY 1990 | 13 | 3.19 | 4 | 0.98 | 17 | 408078 |
| FY 1991 | 21 | 4.55 | 1 | 0.22 | 22 | 461451 |
| FY 1992 | 18 | 4.04 | 1 | 0.22 | 19 | 445201 |
| FY 1993 | 18 | 4.15 | 2 | 0.46 | 20 | 433960 |
| FY 1994 | 16 | 4.00 | 2 | 0.50 | 18 | 400484 |
| FY 1995 | 9 | 2.33 | 2 | 0.52 | 11 | 386445 |
| FY 1996 | 8 | 2.14 | 5 | 1.34 | 13 | 374530 |
| FY 1997 | 11 | 3.05 | 1 | 0.28 | 12 | 360738 |
| FY 1998 | 14 | 3.89 | 1 | 0.28 | 15 | 360245 |
| Total | 142 | | 20 | | 162 | 4016311 |

10 year (FY 1989 through FY 1998) average mishap rates are 3.54 and 0.50 (mishaps per 100,000 flight hours) for Class A and Class B mishaps, respectively.

The source of F-16 mishap data is Table 1 of Aircraft Crash Impact Hazard at the Private Fuel Storage Facility, Revision 4, August 10, 2000, based on the U.S. Air Force (<http://www.afsc.saia.af.mil/AFSC/RDBMS/Flight/stats/f16mds.html>).

INTERROGATORY NO. 8

Identify the two most recent license applications reviewed by the Staff (other than the application in this matter) with respect to which the Staff calculated or reviewed the calculation of the probability that a pilot of a crashing aircraft would be able to avoid striking the facility under consideration.

STAFF RESPONSE

The Staff objects to the numbering of this interrogatory on the grounds that it should be Interrogatory No. 12, for the reasons stated in response to Interrogatory No. 5, *infra* at 4. Further, inasmuch as the State is limited to filing ten interrogatories per contention against the Staff, the Staff objects to this interrogatory because it exceeds the ten-interrogatory limit imposed by the Licensing Board. See LBP-98-7, 47 NRC at 245; see also, "NRC Staff's Objections and Responses to "State of Utah's Ninth Set of Discovery Requests Directed to the NRC Staff," dated November 13, 2000, at 16-18. Notwithstanding these objections, the Staff responds to this interrogatory as follows: The Staff does not recall previous license applications reviewed by the Staff (other than the application in this matter) with respect to which the Staff calculated or reviewed the calculation of the probability that a pilot of a crashing aircraft would be able to avoid striking the facility under consideration.

INTERROGATORY NO. 9

Identify the two most NRC [sic] recent licensing proceedings (other than this one) with respect to which the Staff calculated or reviewed the calculation of aircraft crash rates.

STAFF RESPONSE

The Staff objects to the numbering of this interrogatory on the grounds that it should be Interrogatory No. 13, for the reasons stated in response to Interrogatory No. 5, *infra* at 4. Further, inasmuch as the State is limited to filing ten interrogatories per contention against the Staff, the Staff objects to this interrogatory because it exceeds the ten-interrogatory limit imposed by the Licensing Board. See LBP-98-7, 47 NRC at 245; see also, "NRC Staff's Objections and Responses to "State of Utah's Ninth Set of Discovery Requests Directed to the NRC Staff," dated November 13, 2000, at 16-18. Further, the Staff objects to this interrogatory because the identity of the two most recent NRC licensing proceedings in which the Staff calculated or reviewed the calculations of aircraft crash rates are a matter of public record and are obtainable by perusing the files in the Commission's Public Document Room. As such, the State has failed to show that any reason exists for the Staff to conduct this task on behalf of the State. See 10 C.F.R. § 2.740(b)(1). Notwithstanding the above objections, the Staff responds to this interrogatory as follows.

To the best of the Staff's recollection and belief, the two most NRC recent licensing proceedings (other than this one) with respect to which the Staff calculated or reviewed the calculations of aircraft crash rates were (1) an assessment of aircraft crash hazards at the Florida Power and Light Company's Turkey Point Plant, Units 3 and 4, Docket Nos. 50-250 and 50-251 (2000), and (2) an assessment of aircraft crash hazards at the Baltimore Gas and Electric Company's Calvert Cliffs Nuclear Power Plant, Units 1 and 2, Docket Nos. 50-317 and 50-318 (2001). To the best of the Staff's recollection and belief, the two most recent NRC adjudicatory proceedings (other than this one) with respect to which the Staff calculated or reviewed the calculations of aircraft crash rates were (1) the operating license proceeding for Three Mile Island, Unit 2, discussed in *Metropolitan Edison Co. (Three Mile Island Nuclear Station, Unit No. 2)*, ALAB-692, 16 NRC 421 (1982); and (2) the Big Rock Point license amendment proceeding,

discussed in *Consumers Power Co.* (Big Rock Point Nuclear Plant), LBP-84-32, 20 NRC 601 (1984).

INTERROGATORY NO. 10

Identify the two most NRC [sic] recent licensing proceedings (other than this one) with respect to which the Staff calculated or reviewed the calculation of the probability that a pilot of a crashing [sic] aircraft would be able to avoid striking the facility under consideration.

STAFF RESPONSE

The Staff objects to the numbering of this interrogatory on the grounds that it should be Interrogatory No. 14, for the reasons stated in response to Interrogatory No. 5, *infra* at 4. Further, inasmuch as the State is limited to filing ten interrogatories per contention against the Staff, the Staff objects to this interrogatory because it exceeds the ten-interrogatory limit imposed by the Licensing Board. See LBP-98-7, 47 NRC at 245; see *also*, "NRC Staff's Objections and Responses to "State of Utah's Ninth Set of Discovery Requests Directed to the NRC Staff," dated November 13, 2000, at 16-18. Notwithstanding these objections, the Staff responds to this interrogatory as follows: The Staff does not recall previous licensing proceedings with respect to which the Staff calculated or reviewed the calculation of the probability that a pilot of a crashing aircraft would be able to avoid striking the facility under consideration.

Respectfully submitted,

/RA/

Sherwin E. Turk
Counsel for NRC Staff

Dated at Rockville, Maryland
this 2nd day of January 2002

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PRIVATE FUEL STORAGE, L.L.C.) Docket No. 72-22-ISFSI
)
(Independent Spent)
Fuel Storage Installation))

AFFIDAVIT OF KAZIMIERAS M. CAMPE

COUNTY OF MONTGOMERY)
) SS:
STATE OF MARYLAND)

I, Kazimieras Campe, having first been duly sworn, do hereby state as follows:

1. I am employed as a Senior Reactor Engineer in the Probabilistic Safety Assessment Branch, Division of Systems Safety and Analysis, Office of Nuclear Reactor Regulation. A statement of my professional qualifications has previously been provided in this proceeding.

2. I have reviewed the foregoing answers to Interrogatories Nos. 8, 9 and 10, in the "NRC Staff's Objections and Responses to the State of Utah's Sixteenth Set of Discovery Requests Directed to the NRC Staff," and verify that they are true and correct to the best of my knowledge, information and belief.

/RA/

Kazimieras M. Campe

Sworn to before me this
2nd day of January, 2002

Circe E. Martin
Notary Public

My commission expires: March 1, 2003

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PRIVATE FUEL STORAGE, L.L.C.) Docket No. 72-22-ISFSI
)
(Independent Spent)
Fuel Storage Installation))

AFFIDAVIT OF AMITAVA GHOSH

COUNTY OF BEXAR)
) SS:
STATE OF TEXAS)

I, Amitava Ghosh, having first been duly sworn, do hereby state as follows:

1. I am employed as a Principal Engineer at the Center for Nuclear Waste Regulatory Analysis, which is a division of the Southwest Research Institute in San Antonio, Texas. I am providing this affidavit under a technical assistance contract between the NRC Staff and the Southwest Research Institute. A statement of my professional qualifications has previously been provided in this proceeding.

2. I have reviewed the foregoing answers to Interrogatories Nos. 5, 6 and 7, in the "NRC Staff's Objections and Responses to the State of Utah's Sixteenth Set of Discovery Requests Directed to the NRC Staff," and verify that they are true and correct to the best of my knowledge, information and belief.

/RA/

Amitava Ghosh

Sworn to before me this
2nd day of January, 2002

Ruben Juarez
Notary Public

My commission expires: 11/29/2005

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of)
)
PRIVATE FUEL STORAGE L.L.C.) Docket No. 72-22-ISFSI
)
(Independent Spent)
Fuel Storage Installation))

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S OBJECTIONS AND RESPONSES TO THE STATE OF UTAH'S SIXTEENTH SET OF DISCOVERY REQUESTS DIRECTED TO THE NRC STAFF," in the above captioned proceeding have been served on the following through deposit in the NRC's internal mail system, with copies by electronic mail, as indicated by an asterisk, or by deposit in the U.S. Postal Service, as indicated by double asterisk, with copies by electronic mail this 2nd day of January, 2002:

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/RA/

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