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COMMITMENT RESOLUTION LETTER #25
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PRIVATE FUEL STORAGE FACILITY
PRIVATE FUEL STORAGE L.L.C.

A meeting was held on January 10, 2000 between Private Fuel Storage (PFS) and the NRC/CNWRA to discuss several questions regarding the aircraft crash hazard assessment for the Private Fuel Storage Facility (PFSF). The following issues were discussed in the conference.

AIRCRAFT CRASH HAZARD ASSESSMENT

Presentation of the Analysis in One Document

NRC Comment:

In the meeting between PFS and the NRC/CNWRA in Salt Lake City on November 16, 1999, the issue of PFS's multiple submissions of additional information concerning aircraft crash hazards was discussed. At that meeting, PFS committed to combining its submissions into a single document that would fully set forth PFS's position and analysis on aircraft crash hazard issues. Subsequent to that meeting, PFS combined all its information and analyses in one Report, dated November 24, 1999. The Report, however, did not contain cross-references to earlier PFS submissions.

PFS Response:

As noted in the transmission letter for the Report, PFS took a fresh look at all of the available data and submissions to present one comprehensive position and results. This single report is referenced in the PFS SAR and constitutes PFS's sole position on aircraft crash hazards. PFS reiterated this point at the January 10 meeting. Thus, cross-references to the earlier PFS submissions are not necessary nor relevant. PFS will update

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its November 24 Report and SAR as necessary to resolve the issues raised in the meeting set out below, so that its analysis will remain in a single comprehensive report.

F-16s Transiting Skull Valley

NRC Comment:

In Tab H to its November 24, 1999 Report, PFS determined that 95 percent of the F-16 crashes that would occur in Skull Valley would occur due to engine failure and would allow a pilot time to attempt to direct a crashing plane away from the PFSF. PFS should provide additional support for its 95 percent determination. This support may take the form of further confirmatory analysis of the existing data (possible approaches include normalization or testing for trends), the gathering of additional data from the Air Force, and/or statements from Air Force officials

PFS Response:

PFS will undertake additional analyses and/or obtain additional supportive data and information from the Air Force through the FOIA process.

NRC Comment:

PFS also determined in its November 24 Report that for no more than 5 percent of the F-16s that would crash in Skull Valley due to engine failure, which would allow a pilot time to attempt to direct a crashing plane away from the PFSF, would the pilot fail to do so. PFS should provide additional information to support this determination. Topics discussed at the meeting of the type of additional information that might be provided by PFS included: a description of a pilot's situational awareness of his location and surroundings, the fact that pilots do as a matter of general course what they are trained to do, the fact that F-16s transit Skull Valley under visual flight rules with a clear air mass, the applicability of PFS's analysis to night missions (by virtue of the same emergency procedures being employed by F-16 pilots at night and the lighting of the PFSF), and the F-16 performance (zoom) charts referenced in the PFS November 24 Report.

PFS Response:

PFS will provide additional information to support its determination.

The Moser Recovery Route

NRC Comment:

In its impact probability calculation for the F-16s returning to Hill AFB via the Moser Recovery Route, PFS similarly determined that for no more than 5 percent of the F-16s crashing due to engine failure (in which the pilot would remain in control of the plane) would the pilot fail to direct the plane away from the site. PFS should provide additional information to justify the application of this factor to the probability calculation for the Moser Recovery Route. Topics discussed at meeting of the type of additional information that might be provided by PFS included: the additional response time provided by the fact that F-16s on the Moser Recovery Route are flying at an altitude of 15,000 ft MSL; the likelihood that the bad weather necessitating use of the Moser Recovery Route is local to Hill AFB; and a pilot's awareness of his location and surroundings, supplemented by information and direction provided by air traffic control.

PFS Response:

PFS will provide additional information to support the application of this factor to the Moser Recovery calculation.

Effective Area for Impact Probability Calculation

NRC Comment:

When PFS calculated the effective area for the PFSF in order to determine the probability of an aircraft impact at the facility, it calculated separately the effective area for the cask storage area and the effective area for the canister transfer building and then added them together. It was unclear that this approach is appropriate, in that the cask storage area and canister transfer building are not separated by a great distance.

PFS Response:

To clarify its approach, PFS explained at the January 10 meeting that this formulation was reasonable, conservative, and consistent with both DOE Standard 3014 and standard probability text (e.g., *Introduction to Probability*, John Freund, Dover Publications Inc. (1993)), in that 1) the probability of a crashing aircraft hitting either area is, as a theoretical matter, equal to the probability of hitting one area, plus the probability of hitting the second area, minus the probability of hitting both areas and 2) PFS's analysis treats any impact with the canister transfer building or the cask storage area as an impact, regardless of the severity of the effects of the impact. From the meeting, PFS understands that no further information or clarification is required to justify its methodology of adding the effective areas of the cask storage area and the canister transfer building.

Military Airway IR-420NRC Comment:

With respect to PFS's probability calculation for IR-420, PFS used destroyed aircraft as the basis for calculating the crash rate for large military cargo planes. PFS should more fully justify its use of destroyed aircraft in this calculation.

PFS Response:

PFS will explain further why it used destroyed aircraft as the basis for the calculation and why such usage is proper.

NRC Comment:

PFS should explain or justify its application of the factor of 3/21 on page 53 of its Report.

PFS Response:

PFS will explain the use of the 3/21 factor and will ensure that accidents are appropriately accounted for through additional supportive data and information to be obtained from the Air Force through the FOIA process.

NRC Comment:

In footnote 60 on page 53 of the Report, PFS refers to a multi-engined aircraft "losing" an engine." PFS should clarify what this phrase means.

PFS Response:

PFS will clarify the footnote to include that "losing an engine" means failure of the engine and not its falling off of the aircraft.

NRC Comment:

In its Report, PFS uses the NUREG-0800 commercial aircraft crash rate per mile of 4×10^{-10} for large cargo aircraft instead of the crash rate that it calculates in its probability calculation for IR-420.

PFS Response:

PFS will use the calculated rate instead of the NUREG-0800 rate.

The Utah Test and Training Range (UTTR)NRC Comment:

In its November 24 analysis, PFS concluded that aircraft conducting air combat training on the UTTR more than 10 miles from the PFSF would not pose a hazard to the facility. PFS should further justify its use of the 10 mile limit by including additional discussion. Topics discussed at meeting of the type of additional information that might be provided by PFS included the fact that high stress maneuvers inside restricted areas on the range are conducted toward the center of the restricted area and the fact that an aircraft that experienced an incident leading to a crash while at high altitude would not glide a long distance off range and strike the PFSF.

PFS Response:

PFS will provide additional discussion to support its use of the 10 mile limit.

NRC Comment:

In the section of its Report discussing air-to-ground combat training, PFS states that aircraft conducting such training over 20 miles from the PFSF would not pose a hazard to the facility. PFS should clarify why that conclusion does not contradict its conclusion discussed above that aircraft conducting air-to-air combat training over 10 miles away do not pose a hazard to the facility.

PFS Response:

PFS's referred to aircraft conducting air-to-ground combat training 20 miles from the PFSF because that is the location closest to the PFSF at which such training occurs. PFS will clarify that it is not applying a different standard to air-to-ground than to air-to-air combat training.

NRC Comment:

When calculating the probability that an aircraft experiencing an incident on the UTTR that would lead to a crash would hit the PFSF, PFS used a factor A_p to account for the potential area in which the aircraft could hit the ground. PFS described the area as a circle with a 10-mile radius. It is inappropriate to consider a 10-mile circle around the PFSF when aircraft on the UTTR are only located to the west of the facility. PFS should clarify how this area is applied in its analysis.

PFS Response:

PFS will clarify that, as discussed in the meeting, the center of the circle representing the potential area in which a crashing aircraft could hit the ground is not located at the PFSF but rather at the point at which the incident leading to the crash occurs.

NRC Comment:

In its probability analysis for the UTTR, PFS only divides elevations below 10,000 ft. AGL into altitude bands and does not do so for elevations above 10,000 ft. AGL.

PFS Response:

PFS will further clarify why it took that approach.

General AviationNRC Comment:

With respect to PFS's probability calculation for General Aviation, PFS states at page 71 of its November 24 Report, that 73.1 percent of all General Aviation aircraft in the United States were single-engine piston types and approximately 75 percent of those weigh less than 3,500 lbs. PFS should provide the basis for these two percentages. PFS should also review an apparent conflict in its data regarding the number of General Aviation aircraft in the United States given at page 69 of its November 24 Report.

PFS Response:

PFS will provide the bases for its data and will resolve any conflicts between the data and its Report.

NRC Comment:

When calculating the probability that a general aviation aircraft would impact the PFSF and cause a radioactive release, PFS states that crashes of aircraft weighing less than 3,500 lbs. would not penetrate a spent fuel storage cask, in that the aircraft crash would be bounded by the cask design basis tornado missile. In footnote 74 on p. 71 of its November 24 Report, PFS states that this conclusion applies to the canister transfer building despite the fact that its design basis tornado missile impacts at a lower velocity than the design basis tornado missile for the casks. PFS justifies this conclusion on the grounds that any spent fuel canister in the canister transfer building would be inside a storage or transportation cask all but 8 percent of the time, when it would be inside a transfer cask. PFS concludes that the potential for an aircraft impact to occur while the canister is inside the transfer cask is "negligible" in view of the relatively small area of

the facility constituted by the canister transfer building and the overly conservative, bounding nature of the general aviation probability calculation. PFS should further support this conclusion with additional information. Topics discussed at meeting of the type of additional information that might be provided by PFS included the nature of the transfer operation and the robust nature of the canister transfer building and overhead bridge crane.

PFS Response:

PFS will provide further information to support its conclusion.

Federal Airways

NRC Comment:

With respect to probability calculations for commercial airways J-56 and V-257, PFS did not state whether its calculations included private business jet traffic.

PFS Response:

PFS will clarify that its airway calculations includes private business jet traffic.

Ordnance

NRC Comment:

In its November 24 Report, PFS determined that for 95% of the F-16s transiting Skull Valley the pilots would remain in control of the aircraft in the event of a crash and have time to jettison unarmed ordnance or dummy ordnance that they may be carrying and attempt to take measures to avoid the PFSF. PFS calculated the probability that either the aircraft or the jettisoned live (but unarmed) or dummy ordnance would strike the PFSF. For the remaining 5% of the F-16s transiting Skull Valley, PFS assumed that ordnance was not jettisoned and made a single calculation of the probability of the aircraft impacting the PFSF. PFS should take additional steps to assess whether live, but unarmed, non-jettisoned ordnance carried on such crashing aircraft might adversely impact the PFSF in cases in which the aircraft itself did not directly impact the facility. Methods discussed at the meeting concerning how PFS might assess this possible potential included further verification that live but unarmed ordnance will not explode on impact and/or ensuring that in the unlikely event on an explosion, the effective impact area for this event is bounded by the effective area calculation for the PFSF.

PFS Response:

PFS will resolve this issue by further verifying the unlikely potential for unarmed ordnance to explode on impact through additional supportive data and information to be obtained from the Air Force through the FOIA process and/or ensuring that the effect of any such explosion is bounded by the effective area calculation for the PFSF.

Schedule of Responses

PFS will provide its response to the above NRC comments (except those for which PFS has had to file Freedom of Information Act requests with the U.S. Air Force in order to obtain some of the data necessary for PFS to respond to the NRC's comments) by Monday, January 24, 2000. PFS will provide its responses to those NRC comments for which FOIAs have been filed promptly upon receiving and analyzing the requested data.

If you have any questions regarding this response, please contact me at 303-741-7009.

Sincerely



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Enclosure

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