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DOE STANDARD

ACCIDENT ANALYSIS FOR AIRCRAFT CRASH INTO HAZARDOUS FACILITIES

NUCLEAR REGULATORY COMMISSION

Docket No. _____ Official Exh. No. SSS
In the matter of PFS
Staff _____ IDENTIFIED ✓
Applicant ✓ RECEIVED ✓
Intervenor _____ REJECTED _____
Other _____ WITHDRAWN _____
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U.S. Department of Energy
Washington, D.C. 20585

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The analysis approach is consistent with an accident analysis (as in a Safety Analysis Report) that defines an approximate level of risk, rather than a detailed risk assessment. Thus, it adopts the typical accident analysis practice of addressing uncertainty through the use of analytical margin (i.e., conservatism) instead of through a formal uncertainty analysis. The philosophy is not one of providing substantial margin in every parameter used in the approach, as the combination of these margins would yield a final result so conservative as to be totally useless. Instead, margin is provided in each parameter based on the standard development team's judgement of the level of uncertainty in the parameter and the level of margin needed to address the uncertainty. Adjustments were made to assure that the level of margin provided at each step and throughout the process as a whole is adequate and reasonable.

When applied as a complete approach, the methodologies in this standard will result in a technically justified, conservative analysis of the risk posed by releases resulting from aircraft crash. The risk will be defined at a sufficient level of detail to document the safety of the facility with respect to aircraft crash, and at the same level of detail as would be expected for other types of accident analyses. The standard will also be sufficient to support safety findings, decision making, and design, and will free the user from justifying the techniques and models used in the assessment. However, it is not the intent of this standard to imply that these are the only methodologies acceptable for such an assessment. Alternative methodologies that meet the intent of the standard may be proposed and used, but their acceptability needs to be assessed on a case-by-case basis.

1.2 Purpose. This is an analytical standard intended to provide a sound, technically justifiable, and consistent approach to analyzing the risk posed by an aircraft crash into a facility containing radioactive or hazardous chemical materials. The focus is on analyzing the risk posed to the health and safety of the public and onsite workers from a release of hazardous material following an aircraft crash. Thus, this is not a standard on aviation safety and does not consider the risk to the occupants of the aircraft; the risk to individuals inside a building affected by the crash itself; or the risk to other individuals on the ground, either inside or outside a facility boundary, who might be directly impacted by the crash. This focus forms the basis for the standard's assumptions about excluding the

For commercial and large military aviation, crashes are assumed to occur at random throughout the CONUS, and the variation in traffic volume is reflected by the variation in the number of aircraft handled in each ARTCC. For small military aviation, the number of crashes varies among the ARTCCs. Thus, the expected number of crashes per year is estimated for each ARTCC based on the distribution of crash locations in the historical record.

Table B-15 in Appendix B provides reasonable estimates of NPf(x,y) for selected DOE sites, as well as estimates of a minimum, average, and maximum value applicable for facilities at other locations within the CONUS.

It is important to recognize that the in-flight analysis for military aviation given below only applies to normal in-flight operations outside military operations areas and low level flight ranges. For facilities at or near these latter types of areas, it is necessary to perform a site-specific assessment of the impact frequencies associated with activities in these areas.

The analyses for each of the commercial and military subcategories are as follows:

1. Commercial Aviation Air Carrier.

Step 9. Refer to Appendix B, Table B-15, and obtain the appropriate site-specific or generic value of NPf(x,y).

Step 10. Multiply the value of NPf(x,y) by the A value determined for air carriers in Step 5.