



INEEL/CON-02-00261
PREPRINT

Guidance for Safety Analysis of Other Than Nuclear Facilities/Activities at the INEEL

D. S. Swanson
S. W. Perry

June 22, 2002 – June 27, 2002

SAWG Annual Safety Workshop

This is a preprint of a paper intended for publication in a journal or proceedings. Since changes may be made before publication, this preprint should not be cited or reproduced without permission of the author.

This document was prepared as a account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, or any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any third party's use, or the results of such use, of any information, apparatus, product or process disclosed in this report, or represents that its use by such third party would not infringe privately owned rights. The views expressed in this paper are not necessarily those of the U.S. Government or the sponsoring agency.

Guidance for Safety Analysis of Other Than Nuclear Facilities/Activities at the INEEL

Doug Swanson and Scott Perry
Idaho National Engineering and Environmental Laboratory
P.O. Box 1625
Idaho Falls, Idaho
(208) 526-6072 and (208) 526-1357
swands@inel.gov and perrsw@inel.gov

Abstract

The U.S. Department of Energy Idaho Operations Office (DOE-ID) provided guidance per DOE-ID Orders 420.C, “Safety Basis Review and Approval Process,” and 420.D, “Requirements and Guidance for Safety Analysis,” for conducting safety analysis for facilities and activities that do not meet either the nuclear facility criteria or the criteria for not requiring additional safety analysis (NRASA). These facilities and activities are thus designated as “other than nuclear” (OTN), and hazard analyses are performed using a graded approach. This graded approach is done in accordance with DOE-ID Order 420.D. DOE-ID guidance is used to format these OTN facilities and activities into 3-chapter documents, rather than the 17-chapter format specified in DOE-STD-3009-94, “Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Safety Analysis Reports.”

Process Development

U.S. Department of Energy (DOE) DOE-STD-1027, “Hazard Categorization and Accident Analysis Techniques for Compliance with DOE Order 5480.23, Nuclear Safety Analysis Reports,” establishes the hazard categorization for DOE nuclear facilities, i.e., Category 1, 2, and 3. For those facilities that are not Category 1, 2, 3 or NRASA, DOE-ID Order 420.D establishes the hazard classification guidelines for Low, Moderate and High hazard other than nuclear facilities. These guidelines are based on exposures to radiation and hazardous materials. The general guidelines are as follows:

- Low Hazard – Presents minor onsite and negligible offsite impacts to people or the environment.
- Moderate Hazard – Presents considerable potential onsite impacts to people or the environment, but at most, minor offsite impacts.
- High Hazard – Presents the potential for onsite or offsite impact to large numbers of people or for major impacts to the environment.

The hazard assessments for all OTN facilities require DOE-ID approval. After obtaining DOE-ID approval of the hazard classification, the safety documents are approved by either the Idaho National Engineering and Environmental Laboratory (INEEL) management and operations (M&O) contractor or DOE-ID. The safety document for a Low Hazard facility requires M&O contractor approval. The safety document for a Moderate or High Hazard facility requires DOE-ID approval.

DOE-ID and the M&O contractor developed a general graded approach to the development of the safety basis documents for the OTN facilities. A graded approach was used resulting in a 3-chapter format to document the safety analysis. The documented safety analysis also contains an executive summary, table of contents, and acronym list. The three safety analysis chapters include the following information:

1. Facility and Activity Description which includes:
 - Location of the facility or activity
 - Building description
 - Operation of the facility or activity
 - Description of the equipment and processes.
2. Hazard and Accident Analyses which includes:
 - Hazards identification and evaluation methods
 - Hazards analysis results
 - Accident analysis.
3. Hazard Controls which may include:
 - Safety class structures systems, and components (SSCs) – offsite public protection
 - Safety significant SSCs – onsite worker protection
 - Derivation of operational safety requirements (OSRs)
 - Institutional safety programs.

The information that is contained in Chapter 1 includes the information that would normally be in Chapters 1 and 2 of the DOE-STD-3009 format. The information in Chapter 2 contains the information contained in Chapter 3 of the DOE-STD-3009 format. Chapter 3 contains the information contained in Chapters 4, 5, and any institutional program of the DOE-STD-3009 format. The accident analysis, identification of safety SSCs, and OSRs follow the same rigor and development as that required in DOE-STD-3009.

To minimize confusion between nuclear and OTN Safety Analysis Reports, the titles are different. Nuclear facility safety documents are called Documented Safety Analyses (DSAs). Low Hazard facility safety documents are called Auditable Safety Analyses (ASAs). Moderate and High Hazard facility safety documents are called Safety Analysis Documents (SADs).