

Accepting Necessary Risk –
A Case Study Demonstrating the Application of Risk Acceptance Principles

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Abstract

This paper illustrates how the process of risk assessment and acceptance can be applied at a top level within the context of a weapon system safety program. Using a case study approach, the process and associated safety analyses required to justify the acceptance of risk are shown. This case involved a program request to permit construction of expanded test facilities in close proximity to an active explosives site. The construction zone was within the Public Traffic Route distance of the explosives site, which included both an assembly area and a test fixture.

Topics this paper addresses include:

- Determination of the need to accept risk,
- Evaluation/development of three major probabilistic components of risk,
 - Exposure
 - Probability of Event
 - Fatality expectation given an event and exposure of people to the event
- Underlying technical analysis of the effects from an “event,” and
- The practical application of operational restrictions to mitigate the risks associated with non-compliant activities.

Introduction

Explosives Safety Standards clearly define minimum allowable distances between ongoing operations and Potential Explosive Sites (PES's). Occasionally military organizations find themselves unable to both comply with these standards and accomplish their directed missions. To obtain approval of non-compliant operations necessary for mission accomplishment, “High Priority” or “National Need” programs must provide an assessment of the risks associated with the proposed activities. The installation commander, in accordance with Military Standards and Service Regulations, may then weigh the assessed risks against National Consensus Standards and/or a documented justification of national need to determine the acceptability of the risk. Use of a well defined

and documented process helps protect the government and the decision-maker from liability in civil courts should an incident occur.

The Risk Acceptance Process

This section presents a top-level approach for integrating the concept of Risk Acceptance into a typical system safety program. A key feature of this approach is that it provides a framework for satisfying the requirements of the Discretionary Function Exclusion under the U.S. Federal Tort Claims Act (ref. 1). This exclusion provides a source of liability protection for both government and contractor personnel if “an intelligent, discretionary decision process” is followed. Legal tests for the validity of such a process include:

- an understanding of the risk obtained by an examination using the best available information and analysis techniques,
- a formalized decision process,
- a decision made by a properly designated authority, and
- documented results demonstrating the process.

When properly executed, the 9-step process illustrated in figure 1 will help provide a high degree of safety while at the same time assisting the program in obtaining approval of activities where operational necessity precludes their compliance with existing safety requirements. In so doing it also provides the government and the decision-makers significant protection from civil liability.

Role of the Safety Program: The first three steps of this process cover the activities included in a typical safety program. Properly executed, they form a solid foundation to support the acceptance of risk. (The remaining steps deal with risk definition, analysis, and acceptance.)

Step 1 - Define Planned Activity: A complete understanding of program plans – including design, hardware/software configurations, and planned test or operational activities – is necessary for a proper assessment of hazards.



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