

**SAFETY MANAGEMENT --  
AN INTEGRAL PART OF PROJECT MANAGEMENT**

**PRESENTED TO THE  
DEPARTMENT OF ENERGY'S  
PROJECT MANAGEMENT WORKSHOP**

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**REMARKS BY**

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**NOTE:** The views expressed here are those of the author and do not necessarily represent the views of the Defense Nuclear Facilities Safety Board as a whole.

I realize the focus of this meeting is on project management, more specifically on ways for improving it. Some of you may wonder, why a talk about safety? This is not a safety meeting! I submit to you that both by policy and by rule the Department of Energy (DOE) is committed to **DOING WORK SAFELY**. That plainly means *that any project requiring uses of hazardous materials or work processes must make safety management an integral part of project management*. DOE is committed to Integrated Safety Management (ISM) as the core concept around which the DOE is re-structuring and up-grading the safety management of its varied activities.

Before talking about ISM, let me touch upon a few project management points based upon my experiences in project management both as a Federal employee and as a contractor. It is important in the discussion of project management to recognize the distinction of project management as performed by the doer—architect, designer/constructor, operator, etc.—and by DOE, the contracting authority. While there may be similar techniques and practices used and inter-dependent relationships, they are in reality very different. In my view, *the issue before you is not better management of projects, it is better management of contractors*.

Effective management of contractors requires two basic things:

1. A clear and definitive set of expectations, defined for both the contractor and their Federal overseers.
2. People with the requisite experience and skills to satisfy those expectations.

Among those expectations must be those relative to protection of the public, workers and the environment. It is this aspect that I wish to stress in my remarks to you today.

It is a fact of life today that even the government cannot undertake to build new facilities or undertake major activities involving hazardous materials without commitment to protection of the public, workers and the environment. Statutory requirements make such attention mandatory. Further, DOE has been required to commit to bringing existing facilities and activities into compliance with environmental protection laws. Compliance Agreements have been put in place at all major DOE sites. Existing contracts of the principal DOE site contractors have been modified to include provisions of recently enacted acquisition regulations calling for ISM programs. Some of you may already be familiar with ISM. If not, I urge you to do so, for adherence to its tenets and principles will be a central feature for any DOE project involving hazardous materials and activities. For those of you who may not already be familiar with the term Integrated Safety Management let me provide a little description and background.

The Defense Nuclear Facilities Safety Board (Board), established by Congress in 1988 to effect improvements by DOE in the safety management of defense nuclear facilities, observed during its oversight activities that DOE's program was quite extensive but highly fractured. In response to statutory and public pressures for better environmental protection, DOE over the

years turned to planning processes that largely separated work planning and safety planning. Further, safety planning became the purview of subject matter experts specializing in worker protection or public protection or environmental protection and further fractionated by media (air, water, land/solid wastes) and material classifications (radioactive, toxic, corrosive, ignitable/explosive). Historically, DOE's safety management program in the pre-1970 era was marked by a strong emphasis on protection of the public from the consequences of mishaps that could cause releases of radioactive materials into the public domain. As the national agenda for controls over hazardous and toxic materials enlarged in the post-1970 era, DOE as well as the commercial sector responded with added programs. The plethora of management programs and practices intended to provide protective measures in response to the various statutes separately evolved and were advanced largely as single sector protective initiatives.

The Board found DOE's safety management program a similar jumble of requirements and practices. DOE contractors were faced with the equivalent of a huge erector set of the kind many of us bought for our children years ago and challenged them to be creative. To some extent this situation still exists today. However, DOE, following a recommendation of the Board in 1995, has embraced a program called Integrated Safety Management, that promises to bring much more order to the program (DOE Policy 450.4).

Now, what is Integrated Safety Management? You can read DNFSB/Tech-16 dated June 1997 if you want a long version but let me give you this brief explanation. First, let me say ISM is built from the erector set of parts called DOE Directives (Policies, Rules, Orders, Manuals, Guides) and "good commercial practices" as selected by the contractor. What makes it different are:

1. It is a holistic approach to satisfying DOE's responsibilities for protecting the public, workers and the environment.
2. It provides for the structuring from the multiplicity of mandatory safety requirements programs that are appropriate for the specifics of the hazardous work involved.
3. It results in a simplistic, readily understandable, common sense approach to planning and performing hazardous tasks, large or small, radioactive or otherwise.

In developing the ISM concept, the Board and DOE agreed upon five basic functions and seven management principles to achieve an effective safety management program. These are as follows:

#### FUNCTIONS

1. Define the work and how it is to be accomplished;
2. Analyze the hazards;

3. Identify the controls necessary to perform the work safely;
4. Perform the work as planned, using adequately trained people; and
5. Assess how well the system worked and feed back the evaluation results.

## PRINCIPLES

1. Line management is responsible for safety;
2. Clear roles and responsibilities must be articulated;
3. Competence must be commensurate with responsibilities assigned;
4. Balanced priorities must be set;
5. Safety standards and requirements must be identified;
6. Hazards controls must be tailored to the work performed; and
7. Operations must be authorized.

To these seven principles, there is an eighth that has been recognized as equally important—

8. Workers must be involved in the pre-work planning of hazardous tasks they will be required to perform.

These management principles apply equally well to DOE's oversight of their contractors' safety management programs as they do for the contractors themselves.

It should be evident from this brief description that *safety management is clearly one of the main objectives of project management*. That is one of the major points I wish to stress in this brief this morning. The other is that *safety management is required during all phases of the life cycle of major projects requiring design, construction, operation and eventually de-commissioning* (cleanup, demolition, environmental restoration). To date the Board and DOE have been focusing largely upon getting safety management programs consistent with the concept of ISM in place for operational facilities. Facilities in design and construction phases are a much smaller sub-set of facilities comprising the DOE complex. Facilities undergoing environmental remediation efforts are being driven by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) provisions that require equivalent safety planning processes. None-the-less, it is important that safety management programs appropriate to the life cycle stage of these facilities be put in place. DOE has recently developed two new orders

particularly pertinent to this subject of project management. These are Order 430.1, *Life Cycle Asset Management*, including recent Revision A, and Order 435.1, *Waste Management*. These two orders, coupled with non-nuclear hazardous pollution controls mandated by the Resource Conservation and Recovery Act (RCRA), establish “cradle to grave” responsibilities for radioactive and other hazardous wastes. These responsibilities must be satisfied throughout the complete life cycle of DOE facilities where such materials are used. For new facilities, design to minimize the generation of such wastes is required.

In developing the new Life Cycle Asset Management (LCAM) Order, the lead office for its development found that the establishment of requirements relative to conditions required for transitioning facilities from one life cycle stage to another were the most difficult to establish. Yet, the definition of the “end” state one operational entity leaves a facility and another must takeover is crucial for safety management. This is especially crucial in the transition from the operational stage. Earlier in this talk I mentioned the need to define expectations clearly. *The state of facilities contractors are expected to operate, cleanup, or decommission is clearly one of the obligations DOE owes to those contracted to do work safely.*

The Board and its staff have inputted into the DOE efforts to establish these new Orders and the supplemental manuals and guides associated with them. Mr. Ron Barton, who is here with you, led the Board staff review effort on the LCAM Order. I leave to him the task of talking details with whomever at this workshop may be interested. I will say that the Board found the revised Order adequate. However, the practicality and usefulness of the extensive set of good practice guides DOE issued to complement this order remain to be seen.

As you well know, establishing expected practices in DOE directives is an important feature but not sufficient to ensure implementation. Failure to define and ensure implementation of requirements (expectations) has been the root cause of much of the problem of poor contract management. On the other hand it should not require a DOE directive for experienced contractors to set up and execute effective safety management programs. This is especially true for facilities under design for which both the job to be done and the methods for doing so are of their own making and not a make-do hand down from a previous era. Yet, the Board and its staff have observed from recent reviews of various design and construction projects at Hanford, Los Alamos and Savannah River, for example, shortcomings in the early identification and incorporation of health and safety requirements into facility design. At Hanford, projects well along in construction are facing delays while safety issues recognized much earlier are belatedly addressed. Costly delays attributable to poor planning contribute much to the impression of poor contract/project management by DOE.

In addition to its advocacy of ISM and its review and input to revised DOE directives, the Board has emphasized through its recommendations several other aspects that are pertinent to the subject of project management. These are (1) the enlarged use of site-wide systems engineering to ensure that major projects on site are conducted in a synergistic and coordinated fashion (Recommendation 92-4) and (2) the desirability of establishment by DOE for each of its major

projects a Technical Management Plan that, among other things, defined the roles, responsibilities and interfaces between DOE and the contractor (Recommendation 93-4).

In summary let me leave you with the following:

- Safety Management must be an integral part of Project Management;
- Safety Management must be exercised throughout the life cycle of a major project—design, construction, operation and de-commissioning;
- Project Management in DOE space is Contract Management; and
- Effective Contract Management requires clear definition of what is expected and forceful actions to ensure implementation.