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## CLEANING UP DOE'S WEAPONS SITES: ISSUES OF ORGANIZATION AND MANAGEMENT

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### ABSTRACT

Many Department of Energy facilities across the United States are seriously contaminated with radioactive and other hazardous wastes. Decades of focus on weapons production and inadequate attention to long-term solutions for dealing with those wastes have resulted in tremendous problems. The Department of Energy recognizes the seriousness of those problems and is addressing them. In some cases existing management systems are being used to accomplish the new mission of environmental cleanup, and in other cases new systems have been created to help carry out that mission. Widespread criticism of those efforts to date are evidence that the management systems being used may not be appropriate for the job. In particular, it appears that some management systems aren't producing desired results because they are not well aligned with the people and tasks for whom they are intended.

The United States Department of Energy (DOE) oversees weapons-related research, as well as other work, at many sites across the United States. Radioactive and other hazardous wastes are produced as a by-product of some of that work. For nearly fifty years operations focused on "getting the job done," and relatively little thought was given to the problem of what to do with hazardous waste. The methods DOE (and its predecessor agencies) used to handle, treat, store, and dispose of hazardous waste were generally in accord with commonly accepted practices of the time, but the cloak of secrecy that surrounded those agencies led many people to doubt and mistrust their motives and methods of operation. We know now that waste disposal methods used decades ago were and are not adequate to safeguard health and the environment to today's standards.

As public awareness of the problems associated with toxic wastes grew, so did scrutiny of DOE's waste management and environmental restoration operations. That increased scrutiny accompanied fundamental changes that DOE has experienced recently. There were two broad categories of change. The mission was changed, away from solely weapons work to serious environmental cleanup, and management systems were changed to facilitate that new mission. One sign of both types of change is the newly created position of Assistant Secretary for Environmental Restoration and Waste Management (EM) within DOE.

There have been many reports pointing out DOE's shortcomings in dealing with its hazardous waste problems. In addition, many stakeholders, including DOE employees, contractors, and other knowledgeable observers, are critical of DOE's accomplishments to date. They point to vast amounts of money spent—EM's budget is greater than six billion dollars this year, up from two billion in 1990—for little real cleanup. If the costs associated with cleanup are staggering, so are the management problems. The issue of organizing and managing EM so that people can interact with its management systems in a manner that promotes cleanup is vitally important.

In what follows, we examine some aspects of DOE's organizational alignment—the fit between people, tasks, and management systems—and explore some consequences of misalignment.

### COMPLIANCE AGREEMENTS

A compliance agreement is a formal, binding document negotiated between and signed by the regulators of a DOE site (EPA and/or the state), DOE, sometimes its contractors, and occasionally other parties. DOE has, in principle, a procedure for negotiating compliance agreements, embodied in a so-called Strategy Document. It was apparently conceived as a means to achieve a proper balance of responsibilities between Headquarters and the Field in compliance agreement negotiations. The document is issued from Headquarters to the Field and sets forth policies, guidelines and essential points which must be adhered to by DOE in the negotiations. Presumably, the field office is empowered to conduct negotiations and to make subsidiary commitments as long as it remains within the confines of the Strategy Document. The document could work as an effective delegation of authority if it were prepared and approved by Headquarters in advance of the negotiations.

The Strategy Document is not always used in this manner. Often, it is drafted in the field concurrently with the negotiating process. It is written and amended to reflect decisions that have already been made, and is completed largely as a *pro forma* requirement for submission to Headquarters. In effect, it serves more as a summary of the negotiations than as a charter for them. Since the Strategy Document is written retrospectively, and is approved by Headquarters only after the underlying decisions have been made, it has little or no utility in guiding the negotiations. On the contrary, the general negotiating approach by DOE is to address each issue as it arises, and to coordinate proposals and seek Headquarters approval separately, in the sequence presented. This process tends to negate any separate authority of the field office. Managers in the field feel that the duties relegated to them are not commensurate with their position, and that their credibility suffers because they can not make decisions without lengthy Headquarters review and approval.

## PROJECT MANAGEMENT

The nature and scope of DOE's EM programs and projects are vastly different from anything DOE has done in the past. The tasks of cleaning up hundreds of square miles of contaminated land and decommissioning and decontaminating nuclear facilities have few precedents. Current EM project management models emphasize managing to schedules and budget. They appear to be misaligned with the degree of complexity inherent in cleanup projects, which are characterized by incomplete information, task uncertainty, and ambiguity. The project management system in use was fashioned after one designed to manage construction projects. It requires plans for quality assurance, data management, systems engineering—concepts that are difficult to adapt to cleanup, where the nature and extent of contamination are not known.

Existing project management systems do have change control mechanisms, but the changes anticipated in conventional projects are not adequate models for the changes that occur in EM projects. The result of this misalignment between the project management system and EM work is that DOE frequently fails to meet performance criteria, and gets criticized and penalized for that failure. Regulators are willing to listen to reasonable explanations of unanticipated difficulties and can extend deadlines so that penalties may be avoided, but there are internal problems too. DOE staff and contractors become dissatisfied with their own performance and frustrated because they don't know how to improve within the constraints of the existing system. The emphasis on schedules and budget discourages risk taking and learning-by-doing, leaving little room for innovation and new ideas.

## TRUSTING RELATIONSHIPS

Any group or agency is formally organized and has procedures to help it accomplish its tasks. In addition, there is an informal organization that meets needs unfulfilled by the formal organization. The hallmark of an effective informal organization is good working relationships among and between members of an agency and other groups with whom they deal. Relationships between DOE and the public, between Headquarters and field offices, and between DOE and its regulators are all important, but the relationship between DOE and its contractors is fundamental because virtually all of DOE's work is performed by contractors.

Historically, DOE has worked in partnership with its contractors to meet goals primarily related to weapons production. As the new mission of cleanup has come forward, accompanied by increased outside scrutiny, that relationship has been strained. Examples include new rules issued by DOE to hold contractors more accountable for their performance, measures intended to give DOE more control over contractors' actions, and environmental laws that make individuals criminally liable for certain violations.

Contractors' reactions to those changes have had undesired results. They ask for more money so that they can do more studies and characterization, similar to some doctors' response to the threat of malpractice lawsuits. They are unwilling to take chances which could expedite the cleanup, but instead seek DOE approval for everything they do, in order to spread that liability around. The results: higher costs and longer time to get anything done.

Control is another aspect of the changing relationship. DOE has been criticized by the General Accounting Office and others for "losing control" of its contractors. To exert more oversight and control, DOE has, quite naturally, brought on more people. But DOE doesn't have authority to hire unlimited numbers of permanent employees, so they have to hire contractors to help. There are questions of cost and propriety that arise when support service contractors review the work of maintenance and operating contractors. Using support service contractors can cost significantly more than using permanent workers would. Conflict of interest problems can arise. In one example, a (contractor) member of an audit team wrote several findings in a certain area, and then later inquired if his company could help fix those deficiencies. In another case, company A beat out company B for a contract to do some work. Later on, company B was hired for to provide some support services, and ended up reviewing the work of company A. Such incidents raise serious doubts about the use of support service contractors to help oversee and control operating contractors.

## CONCLUSION

When workers fail to follow procedures, we are interested because the reasons are likely to include ergonomics issues—perhaps the procedures were poorly written, equipment was poorly designed, workers didn't have proper training, etc. Similarly, but at a higher level, when an agency's formal organization, procedures, and management systems don't yield desired outcomes, it may be because those structures are poorly designed, or because they don't fit the people and/or tasks that must be accomplished.

DOE has several misaligned management systems. Procedures for negotiating compliance agreements don't work the way they were meant to work, and DOE officials in the field are frustrated by their inability to make decisions which could improve the process. The project management system emphasizes adherence to budget and schedules, and isn't well-suited to respond to the kinds of changes encountered in waste management and environmental restoration. Working relationships between DOE and its contractors are affected by changes intended to achieve greater accountability and control, but those changes have unintended and undesirable consequences. New upper-level managers at DOE have taken steps to address some of these problems, but only time will tell if these latest changes result in management systems that produce the desired consequences.