EARNING PUBLIC TRUST AND CONFIDENCE: REQUISITES FOR MANAGING RADIOACTIVE WASTES

FINAL REPORT OF THE
SECRETARY OF ENERGY ADVISORY BOARD
TASK FORCE ON RADIOACTIVE WASTE MANAGEMENT

TABLE OF CONTENTS

EXECUTIVE SUMMARY

The Task Force on Radioactive Waste Management was created in April 1991 by former Secretary James D. Watkins, who asked the group to analyze the critical institutional question of how the Department of Energy (DOE) might strengthen public trust and confidence in the civilian radioactive waste management program. The panel met eight times over a period of 27 months and heard formal presentations from nearly 100 representatives of state and local governments, non-governmental organizations, and senior DOE Headquarters and Field Office managers. The group also commissioned a variety of studies from independent experts, contracted with the National Academy of Sciences and the National Academy of Public Administration to hold workshops on designing and leading trust-evoking organizations, and carried out one survey of parties affected by the Department's radioactive waste management activities and a second one of DOE employees and contractors. What follows is a summary of the logic and the conclusions upon which the unanimous recommendations of the Task Force are based.

PUBLIC TRUST AND CONFIDENCE AS A CRITICAL INSTITUTIONAL ISSUE

On a pragmatic level, public trust and confidence is generally essential for agencies to carry out effectively missions assigned to them. More fundamentally, however, trust and confidence makes a central contribution to sustaining the legitimacy of public organizations within the American system of governance. That contribution derives from a democratic ideology that demands that public institutions operate in a transparent manner, that they adopt processes that not only permit but encourage broad segments of the population to participate, and that no segment finds itself permanently a "loser" in policy controversies.

MAJOR FINDINGS

Although the Task Force recognized that there might be particular instances that run contrary to a given finding, it believed that the conclusions set forth below represent strong central tendencies.

- Despite some progress over the last four years, there is widespread lack of trust in DOE's radioactive waste management activities. That distrust is not irrational, nor can it be discounted merely as a manifestation of the "not-in-my-back-yard" syndrome.

- This distrust will continue for a long time, will require sustained commitments from successive Secretaries of Energy to overcome, and will demand that DOE act in ways that are unnecessary for organizations that have sustained trust and confidence.

- Measures to strengthen public trust cannot simply be appended to on-going activities. They must be an outgrowth of an agency-wide recognition that most programmatic *choices* have consequences for institutional trustworthiness.

- The behavior of organizations responsible for managing radioactive waste and the results they produce will be far more important in creating or inhibiting public trust and confidence than will be their organizational forms and structures.

- The inherent demands of the program conducted by the Office of Civilian Radioactive Waste Management (OCRWM) seriously reduce its ability to take some steps that might strengthen public trust and confidence. It does, however, retain enought discretion to take others.

- OCRWM has a relatively constricted view of what is required to restore trustworthiness; it has not implemented any consistent approach to doing so; and has rarely considered explicitly the consequences of its actions for public trust and confidence.

- The institutional context within which the Office of Environmental Restoration and Waste Management (EM) operates presents opportunities for developing institutional trustworthiness.

- EM has a broader conception of what is needed to build trustworthiness and has set in place an elaborate structure for doing so. It has not demonstrated, however, that it can maintain trustworthiness as it grapples with contentious issues nor has it developed a strategy for managing emerging constraints that might limit its capacity to sustain public trust and confidence.

RECOMMENDATIONS

The Task Force advanced an elaborate set of detailed, specific recommendations, which cannot be easily summarized or distilled in an Executive Summary. Instead, the *design basis* for them is presented below.†

INTERACTIONS WITH EXTERNAL PARTIES

Especially when agencies are the initiators of programs that could be seen as levying more potentially harmful effects than benefits on citizens and communities, agency leaders must give all groups of citizens and their representatives opportunities for involvement and must demonstrate fairness in negotiating the terms of their immediate relationship. In general, the agency should commit itself to:

- Early and continuous involvement of state and/or local advisory groups as well as national advisory bodies on which a broad range of stakeholders (including, but not limited to the nuclear industry, electric utilities, public utility commissions, potential host and corridor states, communities, and tribes, environmental and public interest groups) are represented. That involvement would be characterized by frequent contact, complete candor, rapid and full response to questions, use of at least some suggestions, and assistance in increasing the technical and oversight skills of the community;

- Carrying out agreements unless modified through an open process established in advance;

- Consistent and respectful efforts to reach out to state and community leaders and to the general public for the purpose of informing, consulting, and collaborating with them about the technical and operational aspects of Departmental activities;

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† The Task Force is not prepared to say that its suggestions are *sufficient for increasing institutional trustworthiness*. In the first place, the group cannot assert in good conscience that it has identified all of the changes that are important for strengthening public trust and confidence in DOE's radioactive waste management programs. There may be some others that it has not contemplated. Second, while it is convinced that all of its recommendations are useful and important and that every effort must be made to put them *all* into action, it cannot predict with any certainty the precise consequences of not carrying out one-tenth, one-sixth, or one-quarter of them. Third, the Task Force recognizes that, regardless of what DOE does, some segments of the public will never accord it much trust and confidence. They are opposed as a matter of principle or tactics to the missions the Department of Energy has either been charged to undertake by Congress or has undertaken on its own discretion. Notwithstanding this caveat, the Task Force does believe that adopting its advice is sufficient for DOE to show that it is *worthy of trust*. For some affected parties that showing is of little consequence. For others, it may be too little value bought at too high a price. And for still others, it may be critical.

- Active, periodic presence of very high-level agency leaders making themselves visible and accessible to citizens and their representatives;

- Unmistakable agency and program residential presence in the locality that contributes its energies to community affairs and pays through appropriate mechanisms its fair share of the tax burden; and

- Assuring the availability of negotiated benefits for the community along with the resources to affected host and corridor communities that might be needed to detect and respond to unexpected costs.

INTERNAL OPERATIONS AND PROGRAMMATIC CHOICES

When the various segments of the public gain access to programs, they should discover activities taking place within the organization that increase institutional trustworthiness not decrease it. The higher the potential hazard associated with those activities, the more critical is their proper conduct. In general, the agency should commit itself and require its contractors to:

- Maintain a high level of professional and managerial competence, continually honed by rigorous training;

- Establish and meet reasonable technical performance measures and schedule milestones that are dictated by a project's intrinsic scientific requirements;

- Pursue technical options and strategies whose consequences can be persuasively communicated to broad segments of the public;

- Reward honest self-assessment that permits the organization to get ahead of problems by identifying them and airing them and resolving them before they are discovered by outsiders;

- Develop tough internal processes that include stakeholders for reviewing operations and discovering potential and actual errors; and

- Institutionalize responsibility for promoting and protecting the internal viability of efforts to sustain public trust and confidence throughout the organization.

The individual recommendations that are contained in the body of this Report could be interpreted as being consistent with simply endorsing current practices or offering marginal changes to the status quo. The Task Force, however, wishes to make clear that its advice should not be properly viewed in that light; the recommendations are not simply choices on a ***menu*** *— something from Column A can be picked to go along with something from Column B; rather they represent the panel's* ***recipe*** *for what the Department should do to strengthen public trust and confidence; they are threads of roughly comparable importance that make up a fabric. This does not mean that Departmental decision-makers must implement them all or at once; there will clearly be situations when other considerations have to take precedence. But DOE leaders need to realize that unless they commit to changing fundamentally how DOE conducts its business, they will increasingly encounter situations that further erode public trust and confidence. Pursuit of a menu of separate choices versus acceptance of a recipe for integrated basic change is a proper standard for evaluating how the Department responds to the Task Force's advice.*

INTRODUCTION

This report presents the unanimous views of a Task Force established in April 1991 by then-Secretary of Energy James D. Watkins.[1] He asked the group to recommend measures the Department might take to *strengthen public trust and confidence* in the civilian radioactive waste management program.[2] From the start he understood that the trustworthiness of the Department was an issue that transcended any one particular activity. In September 1991, Watkins not only formally expanded the scope of the Task Force's work to include the environmental restoration and defense waste management program, but he also encouraged the group to develop its recommendations so that they would be broadly applicable within DOE.[3]

The Task Force wishes to make clear how it has interpreted Watkins' charge. He did not issue a mandate for an overall program review, let alone a management audit or a blueprint for redirecting organizational resources. Consequently the group has strictly concentrated on the narrow—albeit quite important—issue of public trust and confidence, and it has tried not to stray from that focus. Thus some potentially critical and even defining programmatic issues will not be addressed in the pages below because they do not carry clear and direct implications for institutional trustworthiness.

The panel adopted from the beginning two fundamental operating principles. The first was that it would conduct itself in a manner that inspired trust and confidence among the broad range of stakeholders, Departmental personnel, and contractors with whom it would have to interact.[4] This meant, at a minimum, that its activities had to be transparent to all those who inquired about what it was doing. It also meant that it would take proactive steps to inform as many potentially interested parties as possible of its existence and undertakings. The Task Force leaves to others the assessment of how well it succeeded in accomplishing those objectives. It can, however, attest to

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[1] The members of the Task Force, all drawn from outside the Department of Energy, are listed in Appendix A. Although the group operated under the auspices of the Secretary of Energy Advisory Board (SEAB), the Task Force was independently chartered under the Federal Advisory Committee Act.

[2] The Task Force's initial Terms of Reference is reproduced in Appendix B.

[3] The former Secretary's request is found in Appendix C.

[4] At its eight public meetings, the Task Force spoke with over 100 members of the public, representatives of non-governmental organizations, state, local, and tribal governmental officials, and representatives of DOE programs and their contractors. Task Force members and/or staff visited the Yucca Mountain site, the Hanford Reservation, Rocky Flats, the Savannah River Site, and the Waste Isolation Pilot Plant. Informal conversations were conducted with DOE and contractor personnel at those sites as well as with representatives of non-governmental organizations and state and local governments. A complete description of those activities is found in Appendix D.

the fact that at least trying to build trust and confidence carries with it tremendous transaction costs including extensive informal consultations, difficult negotiations over appropriate meeting venues, and continual attention to details that have an annoying tendency to be overlooked.

The second operating principle was that this effort could not rest on mere opinion—albeit one that was founded in the wide experiences of its members. Instead, the Task Force undertook an extensive analytical exercise to learn not only relevant information about the two waste management programs but also to understand the theoretical and empirical foundations for designing trust-evoking organizations. It both carried out and sponsored original research.[5] One consequence of this operating principle is that the group traces out the logic, evidence, and assumptions that it used to reach its conclusions. Those who disagree, then, will be able to identify precisely where their views diverge from those of the Task Force.

The recommendations advanced by the panel are themselves a bit unusual. They are not simply choices on a *menu;* rather they represent the Task Force's *recipe* for what the Department should do to strengthen public trust and confidence; they are threads of roughly comparable importance that make up a fabric. This does not mean that Departmental decision-makers must implement them all; there will clearly be situations when other considerations have to take precedence. But DOE leaders need to realize that each time they choose not to adopt a recommendation or choose to do so in a way that is half-hearted or superficial, they are likely to erode further public trust and confidence.[6]

PERSPECTIVE

The Department of Energy is a conglomerate, having responsibilities that are as disparate as basic scientific research and nuclear weapons production. It is part of the Executive Branch, yet must take into account the diverse—and often conflicting—wishes of legislators. It operates in multiple, complex political environments populated by actors whose intensely held interests are frequently at odds. It is, therefore, like most other federal bureaucracies in many—but certainly not all—respects. And with those organizations (and other institutions), it shares the persistent demand of finding ways to carry out its functions while retaining and sustaining the trust and confidence of the public.

About efforts as dissimilar as designing equitable tax packages to certifying pesticide residues for fruits and vegetables to crafting new forms of regional compacts, a

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[5]That research is described in Appendix E.

[6]Although it encourages the reader to follow carefully the logic and evidence it has developed, the Task Force recognizes that some individuals will want to skip immediately to the "bottom line." Those wishing to do so should proceed to the section entitled "Findings."

frequent and common refrain of distrust, suspicion, and alienation is heard. The roots of those complaints may be found in the Vietnam War's credibility gap or in the actions of individuals who betray their oaths of office. But regardless of origin, their impact is cumulative; and it is being felt. It is no coincidence, for example, that in 1991 the governors of the two largest states in the Midwest took as a theme of their inaugural addresses the need to restore public trust and confidence in government. Yet, as the data in Figure 1 suggest, sustaining it may be a constant struggle.[7]

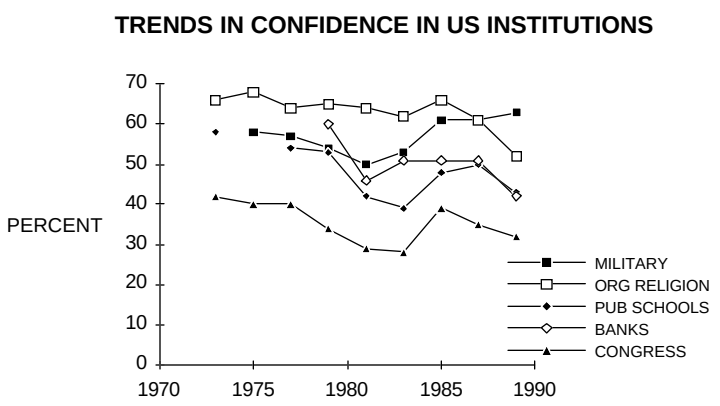

Figure 1

Unlike issues such as the state of the economy or national security, there is neither a central organizational focus nor a clearly defined constituency for addressing questions of public trust and confidence. By default, responsibility falls to each institution to engage the matter as it sees fit. Some agencies do nothing or simply pay lip-service. Their inaction rarely exacts a direct toll, for the public's concern about trustworthiness is like white noise that is almost indistinct and fades away over time. Ironically, those organizations that try genuinely to struggle with the issue of trust expose themselves to the greatest risks. Often their established patterns of external support and internal processes are disrupted and have to be recreated and reconstructed.

Ultimately what is at stake is not well reflected in the calculation of immediate rewards and sanctions. Lack of public trust and confidence is more than just a shibboleth uttered by losers of policy controversies. Rather trust is the foundation upon which the peculiarly American structure of governance rests; it is the critical manifestation of the consent that lies at the heart of our declaration of independence. Although the relationship is by no means straightforward or uncomplicated, high levels of trust and confidence buttress the legitimacy of action in the public sphere. Conversely, low levels erode that legitimacy and call into fundamental question the bond between those who govern and those who are governed.

The Task Force is cognizant of the imperatives and dictates arising from the calculation of immediate rewards and sanctions. Balancing strongly conflicting interests, maintaining coalitions that are only tenuously joined, and somehow weighing the

[7]Data based on published Gallup Polls.

requirements of one complex program or initiative against another can especially tax the skill and patience of those policy-makers who are sincerely committed to sustaining a high level of public trust and confidence. In presenting this report to the Secretary, the Task Force recognizes the far-reaching changes implied by its findings and recommendations, and it realizes that implementing them may further tax the skill and patience of the Department's leaders who have to manage the fundamental changes in institutional culture already set in motion. But as DOE makes a transition to a post-cold war environment, the alternative to what the group suggests may be even less appealing.

RADIOACTIVE WASTE MANAGEMENT

The Department's varied programs for managing radioactive waste are especially appropriate for considering the question of trust because they are the ones where the challenges and time spans for sustaining trustworthiness are arguably the most compelling. A brief description of those activities and, more importantly, a distillation of what constitutes their programmatic cores is necessary to set the stage properly for what follows.

DOE has traditionally organized its radioactive waste management activities on the basis of who produced or owned the materials. Efforts associated with spent fuel generated by commercial nuclear power plants are the responsibility of the Office of Civilian Radioactive Waste Management (OCRWM). Activities associated with all other waste forms, including those generated in the course of producing, fabricating, and testing nuclear weapons, operating research reactors, and powering the nuclear navy, are the responsibility of the Office of Environmental Restoration and Waste Management (EM).[8]

An extraordinarily varied range of efforts falls under the rubric of radioactive waste management within the Department of Energy.[9] Examples include:

- Stabilizing uranium mill tailings piles;
- Solidifying high-level waste from the now-defunct Nuclear Fuels Services' reprocessing operation in West Valley, New York or from the reprocessing carried out at the Hanford Reservation and the Savannah River Site;

[8]One important exception to this division of labor arises from a 1985 decision by President Reagan to "co-mingle" in a single geologic repository high-level waste from the defense program with high-level commercial waste. Consequently OCRWM will establish criteria for accepting EM's solidified material.

[9]In addition to OCRWM and EM, DOE's Offices of Energy Research, Nuclear Energy, and Defense Programs have some responsibility for managing radioactive wastes arising from their programmatic activities. These efforts, however, fall outside the scope of this *Report.*

- Providing storage facilities for spent fuel from commercial reactors;
- Cleaning up the environmental damage caused by the production of nuclear weapons material;
- Designing, financing, building, obtaining permits for, and operating facilities for disposing of different types of wastes; and
- Developing a transportation system to move wastes from the place they were created to the place they will be stored or disposed of.

This diverse activity, of course, creates a corresponding diversity of interests and constituencies. Some stakeholders are involved across the board; others concentrate on specific undertakings that are particularly salient to them.

COMMERCIAL RADIOACTIVE WASTE MANAGEMENT

In 1970, the Atomic Energy Commission (AEC) promulgated a rule apportioning responsibility for the back-end of the nuclear fuel cycle — reprocessing and waste management.[10] Private firms could own fuel reprocessing plants. But they had to solidify their high-level liquid waste within five years of its generation; no later than five years afterwards, they had to transfer the material to a repository for disposal. Over the objections of some small companies but with little formal supporting analysis, the Commission concluded that only the federal government could design, build, own, and operate the repository. Although excursions regularly have taken place through an alphabet of temporary storage initiatives, the core mission of OCRWM and its predecessors has remained constant: *to site repositories and to demonstrate that the facilities are capable of isolating from the environment specified fractions of the extremely toxic high-level waste and spent nuclear fuel for long periods of time.*

Strategies for selecting sites acknowledge either implicitly or explicitly that the location ultimately chosen has to pass through *both* a filter that takes into account the technical characteristics associated with the site such as regional hydrology and host-rock type *and* through a filter that takes into consideration non-technical factors such as a community's familiarity with nuclear power operations and facilities. One interagency analysis noted nearly fifteen years ago that the order in which the filters are applied may not be critical as long as they are not applied in biased or arbitrary fashion.[11] Over the years, the emphasis given each of the filters by DOE and its predecessor agencies has varied. Finding the proper balance, however, has proven

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[10] 10 *Code of Federal Regulations* 50, Appendix F.

[11] Interagency Review Group on Nuclear Waste Management, *Subgroup Report on Alternative Technological Strategies for the Isolation of Nuclear Wastes,* TID-28818 (Draft), 1978, p. 81. Importantly, different sites might be selected depending on the ordering of the filters.

quite difficult. For that reason, Congress passed the Nuclear Waste Policy Act (NWPA) in 1982.

Among other things, the law established an elaborate process for winnowing down potential sites for the first two repositories.[12] That process soon bogged down as DOE missed key schedule milestones and political opposition arose.[13] In an attempt to expedite programmatic progress, legislation was enacted in 1987 that instructed the Department to characterize—determine its suitability for a repository—a single site at Yucca Mountain in Nevada.[14] OCRWM developed in a bottom-up fashion a nine volume, 6200 page blueprint for investigating that site. Extensive surface testing began in July 1992, and construction of an underground Exploratory Studies Facility (ESF) started in April 1993. According to its latest estimates, OCRWM will need to spend at least $4 billion more over the next eight to nine years to complete its $6.2 billion scientific evaluation of the site.[15]

If, based on the Department's recommendation, the President believes that site is suitable, and if the state of Nevada does not object or if its objections are overridden by Congress, DOE will then apply to the Nuclear Regulatory Commission (NRC) to construct a repository. That license will only be granted if there is "reasonable assurance" that the engineered and geologic barriers that comprise the repository system will meet or exceed the radionuclide release requirements set by the Environmental Protection Agency (EPA). The EPA standards, however, have been in a state of flux since 1987 when key elements were overturned in court.[16] The situation was further clouded by a provision of the 1992 Energy Policy Act that compels EPA to repromulgate promptly new standards that are consistent with the findings and guidance of a congressionally mandated National Academy of Sciences' study.[17]

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[12]Nuclear Waste Policy Act, Sections 112, 113, and 114.

[13]The most comprehensive discussion of the politics and implementation of the NWPA is found in Luther Carter, *Nuclear Imperatives and Public Trust: Dealing with Radioactive Waste,* (Washington: Resources for the Future, 1987).

[14]Nuclear Waste Policy Act Amendments, Section 160. This legislation also deferred consideration of a second repository for at least thirty years.

[15]DOE's official cost estimates have been greeted skeptically by many observers. See, for example, General Accounting Office, *Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties,* RCED-93-124, May, 1993.

[16] *Natural Resources Defense Council v. U.S. EPA*, 824 F.2nd 1258 (1st Ctr. 1987).

[17]Energy Policy Act of 1992, Section 801(a)(1). The Act also instructed the EPA to apply those new standards only to a potential repository at Yucca Mountain. The possibility therefore exists that the Department's repository for transuranic wastes in New Mexico, the Waste Isolation Pilot Plant, will have to meet a different protective level.

In support of its core mission to develop a repository, OCRWM is engaged in two other major efforts. First, it is working with the Nuclear Waste Negotiator to identify and reach a voluntary agreement with one or more localities or Indian tribes to host a Monitored Retrievable Storage (MRS) facility.[18] The MRS could receive spent nuclear fuel rods from utilities pending their ultimate disposal. As of September, 1993, no such agreement had been arrived at. DOE has taken the position that, if a voluntary host cannot be found, a federal process for selecting a MRS site might be initiated.[19]

Second, OCRWM is laying the groundwork for a transportation system that would carry radioactive waste from the place it is generated to a MRS and to a repository. This effort involves the design of casks and containers, the selection of potential routes, and, in consultation with states, local governments, and Indian tribes, the development of response procedures to handle accidents or other emergencies.[20]

ENVIRONMENTAL RESTORATION AND DEFENSE WASTE MANAGEMENT

At the height of World War II, new towns sprang up virtually overnight in obscure locations such as Oak Ridge, Tennessee, Richland, Washington, and Los Alamos, New Mexico. Each made a unique and historic contribution to the design and development of the weapons dropped on Hiroshima and Nagasaki. From that small nucleus of communities blossomed a large and widely scattered complex dedicated to manufacturing and maintaining the country's nuclear arsenal. Events of the past few years reinforce the general impression of how well those who manned and ran the complex actually performed the tasks assigned by a nation confronted with an external threat.

But the exigencies of war — both hot and cold — compounded by yesterday's understanding about the biological effects of radioactive material and by yesterday's sensibility about the fragility of the environment meant success came with a stiff price. It is an inescapable fact that the weapons complex is profoundly polluted by myriad varieties of hazardous waste, mixed waste, and radioactive waste. And by-products from the production reactors sit in tanks and storage pools, their final

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[18]Congress established the Office of the Nuclear Waste Negotiator in 1987 with the passage of the Nuclear Waste Policy Act Amendments. The Negotiator is authorized to reach a proposed agreement between the United States and states or Indian tribes under which the latter sovereign entities would voluntarily host an MRS or repository. The agreement would have to be approved by Congress. (See Part D of the Amendments Act.)

[19]See letter to J. Bennett Johnston, December 17, 1992.

[20]Jurisdictions laying along transportation routes are often called "corridor" states and localities.

disposition uncertain. In principle, EM's core mission can be stated succinctly: *to reduce to socially acceptable levels the risks posed by the wastes and the contamination generated in the course of producing and fabricating nuclear weapons.*[21]

The simplicity of this description by no means reflects the challenges that lie ahead, especially with respect to minimizing the gap between what DOE has been charged to do and what it ends up doing. Since its creation in 1989, the EM program has grown explosively both in assigned or reassigned functions and in funding to the point where it now spends over $6 billion per year — nearly one dollar out of every three appropriated to DOE. It has negotiated numerous compliance agreements with regulatory authorities and agreements-in-principle to facilitate state oversight of EM activities. It has relieved the complex's landlord, the Office of Defense Programs (DP), of the clean-up responsibility. EM has taken over the sprawling Hanford Reservation in Washington, where the nuclear age began, as well as the Feed Materials Production Center in Ohio, where uranium was fabricated into fuel rods that were irradiated in production reactors. Soon it will become the landlord at Rocky Flats, where the nuclear triggers or "pits" for weapons were forged.

EM's activities can be sorted into three major sets. The first, environmental restoration, is perhaps the most visible of the organization's efforts. Over the next few decades, EM will have to identify the extent of the damage inflicted upon the environment at DOE installations, develop new technologies for mitigating that damage, and decontaminate and decommission defense complex facilities that are no longer needed. All of those efforts must be carried out as two broad, but intertangled, normative debates rage over the appropriate level of environmental restoration and the ability and willingness of the country to spend the vast resources needed to achieve that appropriate level.

EM has begun the lengthy and arduous process of assessing the level of contamination at the more than 3700 waste sites that fall within its domain. Several dozen remedial actions have been undertaken; approximately twenty have been completed. Expedited cleanup has commenced at three sites at Hanford. Yet, given the quite substantial amount of money that has been spent in this portion of the EM program, there are very few tangible signs that the situation has markedly improved over the last four years.

The second set of activities involves the management of large quantities of defense radioactive wastes. For example, tanks holding liquid wastes at Hanford, Savannah River, and West Valley must be constantly monitored to ensure that they neither leak

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[21] Unlike the disposal of high-level waste, there are no national standards for establishing an acceptable level of risk posed by the contamination in DOE's weapons complex. The Resource Conservation and Recovery Act and the Comprehensive Environmental Response, Compensation, and Liability Act provide a framework for making social decisions on this question. Other approaches, such as the Hanford Future Land Use dialogue, may also lead to a specification of socially acceptable levels of risk.

nor set off uncontrollable chemical reactions. EM is also responsible for treating that material and for constructing facilities to solidify it at each of those locations. In carrying out its charge, EM has encountered substantial problems. It has not been able to stabilize the chemical brew stored in at least one tank at Hanford. The solidification facility at Savannah River has fallen far behind its schedule for start-up and has been plagued by serious cost overruns. And construction of its sister plant at Hanford has been delayed several times.

The third set of activities involves the siting, construction, and operation of treatment, storage, and disposal facilities as well as developing a transportation system to move, if necessary, the material from where it is generated. By far the most prominent of these activities are the ones connected with the construction of a repository—christened the Waste Isolation Pilot Plant (WIPP)— to demonstrate safe geologic disposal of transuranic (TRU) waste produced in the defense complex. Authorized by Congress in 1979, WIPP is located outside of Carlsbad, New Mexico.[22] After some initial setbacks and political controversy, the first shaft was sunk in July 1981. Surface facilities, initial storage areas, and test alcoves were completed in 1989. The planned operations demonstration, however, did not start at that time because expanded safety and environmental requirements had not yet been met. These were finally satisfied in October 1991. But shipping waste to WIPP from defense complex sites was postponed for a year while Congress debated and ultimately passed land withdrawal legislation.

That law authorized the emplacement of no more than 1100 drums of waste for testing purposes. In addition, more than 120 separate requirements had to be satisfied. Many of those involve new regulatory and oversight responsibilities by other federal agencies. EPA, for instance, must review the Department's plans for conducting tests at WIPP and determine through a formal rulemaking process whether the experiments will yield data that is "directly relevant to a certification of compliance with applicable regulations."[23] Furthermore, EPA, not DOE, will determine whether those standards are met.[24] If WIPP can be shown to comply with applicable regulations, emplacement of waste for disposal can begin sometime around the year 2000. After a quarter-century period of loading the repository, the underground openings will be sealed. As of fiscal year 1993, approximately $1.5 billion has been appropriated for WIPP; the project's life-cycle costs are estimated at more than $6 billion.

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[22]DOE National Security and Military Applications of Nuclear Energy Authorization Act of 1980, Section 213.

[23]WIPP Land Withdrawal Act, Section 5(a).

[24]WIPP Land Withdrawal Act, Section 8(d).

COMMON CHOICES AND TENSIONS

Although their activities differ considerably in the specifics, the OCRWM and EM programs are linked by common social choices that create common tensions and dilemmas. These are intrinsic to what are in principle the programs' core mission, existing independently of how they are organized or implemented. The choices place extraordinary demands on the managers of OCRWM and EM and on the Department's senior leaders as well.

VALIDATING THE CONSEQUENCES OF CHOICE

Both waste management programs intend to design and deploy technological systems to carry out their core mission. Some portions of those systems are well understood. Others represent first-of-the-kind undertakings, which by their very nature are subject to considerable uncertainty. Scientific investigations can reduce the degree of ambiguity, but they cannot eliminate it entirely. For example, both programs recognize that release rates of radionuclides or hazardous material from a repository designed in a particular manner cannot be predicted with complete precision. Thus, inherent in the process of validating the consequences of choosing among technical alternatives lies a social judgment on how much uncertainty can be tolerated and whether that level has in fact been reached. That social judgment will likely be made in one or more regulatory arenas where affected parties have the right to participate. The judgment might, however, be rendered in the legislative arena where very different participatory rules apply.

DETERMINING ACCEPTABLE TRADE-OFFS AMONG COMPETING VALUES

Both waste management programs have to resolve difficult value trade-offs. These include, but are hardly limited to, the level of risk, geographical distribution of risk (as, for example, reflected in siting decisions), cost, schedule commitments, and the benefits derived not only from undertaking the enterprises that create the waste but also from treating, storing, or disposing of it. Balancing those disparate factors would be an intimidating task under the best of circumstances. But what makes it even more daunting is the combination of how support is distributed for any given value and the strong correlation among them all. A decision to site unwanted facilities at a particular location will often evoke an intense response on the part of those immediately affected. As Figure 2 suggests, while an overwhelm-

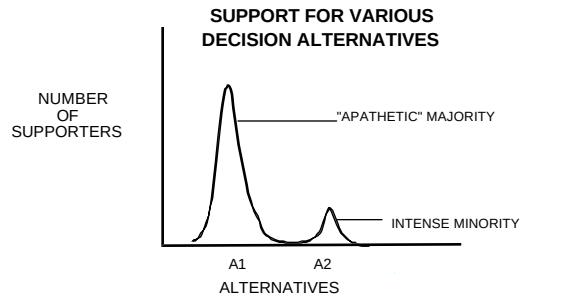

Figure 2

ing, but relatively apathetic, majority—who live elsewhere—might favor the siting proposal (A1), a committed minority might strongly favor siting the facility anywhere else (A2). In the American political system, adoption of alternative A1 (or A2 for that matter) is by no means a foregone conclusion.[25]

PROBLEM-SOLVING STRATEGIES

Problem-solving strategies vary depending on (1) how well established the connection is between actions and the outcomes they engender and (2) how much agreement there is on what the value trade-offs implicit in an outcome should be.[26] Figure 3 illustrates four simplified combinations and indicates appropriate strategies corresponding to each. Three ought to be familiar. If agreement exists among internal and external stakeholders on how values should be traded off and if there is firm understanding about the consequences of choice, then decisions should be based on *calculation.* Building a bridge on a foundation of granite versus constructing it on an adjacent site composed of sandstone is an example when a calculational strategy is appropriate. If stakeholders disagree about how values are traded off but if the consequences of choice are well known, then decisions should be reached by *bargaining.* Determining the level and distribution of farm subsidies provides an illustration of when this strategy is sensible. If stakeholders agree on value trade-offs but if there is substantial uncertainty about the consequences of choice, then decisions should emerge through a *trial-and-error* strategy. Deciding whether to decentralize the management of public schools might be an instance when this approach should be adopted.

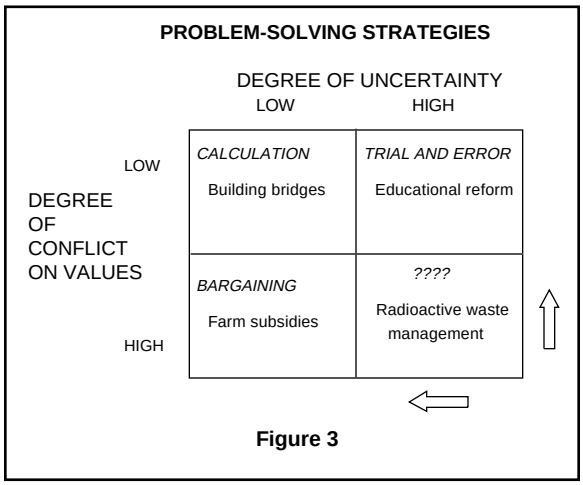

Figure 3

If there is profound disagreement about value trade-offs and significant uncertainty about the consequences of choice—a circumstance that, in the Task Force's view, attaches to radioactive waste management, none of the three strategies is appropriate for solving problems. Students of organization have proposed that decision-makers

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[25]See Robert Dahl, *A Preface to Democratic Theory,* (Chicago: University of Chicago Press, 1956).

[26]James D. Thompson and Arthur Tuden, "Strategies, Structures and Process of Organizational Decision," in James D. Thompson *et al.,* (eds.), *Comparative Studies in Administration*, (Pittsburgh: University of Pittsburgh Press, 1959).

adopt a fourth strategy, variously labeled "heuristic," "inspirational," or "charismatic." But those scholars cannot readily connect the labels to any well-identified, over-arching approach to problem-solving. This failure is more than just an intellectual curiosity. It suggests that there may be a *fundamental mismatch* between the characteristics of at least some of the radioactive waste management problems that must be solved and the strategies available to solve them. As the arrows in Figure 3 suggest, the best DOE managers may be able to do is to oscillate between a trial-and-error approach for managing uncertainty and a bargaining approach for obtaining agreement. To the extent that the two approaches produce inconsistent policies and outcomes, problem-solving in this domain will likely not be effective. Moreover, should those responsible adopt a strategy of calculation for managing radioactive wastes, the likelihood of effective problem-solving will decline even more precipitously.

Precisely because substantial uncertainty and intensive value conflicts spawn intrinsic and formidable challenges to successful policy-making, the Task Force believes that sustaining a large reservoir of public trust and confidence is crucial. The basis for that belief is detailed in the next section.

PUBLIC TRUST AND CONFIDENCE

Public trust and confidence is one of those concepts — like fairness or justice — that is comprehended intuitively but escapes crisp and concise definition. As a result, its value in policy discourses and debates has depreciated as it has been appropriated for rhetorical appeals and arguments. Thus, the discussion below begins with an examination of what the Task Force takes the concept to mean. It then considers how well DOE has done in maintaining trust. It concludes with an extended discussion of the critical role of public trust and confidence in radioactive waste management policy-making and an examination of the link between trust and power.

THE MEANING OF PUBLIC TRUST AND CONFIDENCE

Despite its frequent use, the term "public trust and confidence" has rarely been defined with any great precision.[27] For some, the concept is taken to mean a belief in the competence and integrity of the object of one's faith. To be trustworthy, then, is to be reliable, reliable in doing what is "right," right in the sense of both technical competence and meeting normative expectations. Others rely on a fiduciary conception of trust; and still others see trust as the supplement to contracts that is the

[27]The panel can state at the outset what connotations it does not associate with the concept. Public trust and confidence is not the same as the largely discredited notion of "public acceptance" nor is it a rubric for carrying out a public relations campaign.

necessary condition for markets to operate efficiently or perhaps even to operate at all.[28]

Individuals who represent organizations that deal with the Department's radioactive waste management programs were asked in a survey to indicate in their own words what they understood the concept to mean.[29] What was striking was the fact that nearly one-third had a difficult time articulating an answer. Those who did, however, overwhelmingly focused on "honesty and believability." Other important attributes connected with trust and confidence included "acting in the public's best interests," "keeping commitments," and "technical competence."

A different perspective on the meaning of the concept was obtained by examining how individuals' level of confidence in DOE was associated with various beliefs about the organization. There is remarkable consistency. As indicated in Table 1, virtually the same attributes were strongly connected with the notion of institutional

ATTRIBUTES OF CONFIDENCE

ATTRIBUTE	FULL SAMPLE		STATE/LOCAL OFFICIALS		ENVIRONMENTAL GROUP REPRESENTATIVES	
	RANK	CORRELATION	RANK	CORRELATION	RANK	CORRELATION
DOES THE RIGHT THING	1	0.74	2	0.62	1	0.68
MAKES IMPARTIAL DECISIONS	2	0.68	4	0.60	4	0.61
TELLS THE WHOLE TRUTH	3	0.68	1	0.63	2	0.64
GIVES EVEN HANDED TREATMENT	4	0.65	3	0.60	12	0.43
DOES NOT DISTORT FACTS	5	0.64	7	0.48	3	0.63
KEEPS PROMISES	6	0.63	8	0.48	6	0.58
ACTIONS CONSISTENT WITH WORDS	7	0.61	5	0.59	7	0.55
PROVIDES INFORMATION	8	0.60	6	0.51	5	0.58
TOO INFLUENCED BY POLITICS	19	0.23	19	0.22	19	0.11

Table 1

[28]The reader should also consult two papers reprinted in a companion document, *Compilation of Reports Prepared for the Secretary of Energy Advisory Board Task Force on Radioactive Waste Management:* Jack Citrin, "Political Trust and Risky Policy" and Craig Thomas, "Public Trust in Organizations and Institutions: A Sociological Perspective."

[29] These surveys were commissioned by the Task Force and were administered by the Social and Economics Research Center at Washington State University. Details about the surveys and the sample's responses can be found in Appendix F of this *Report.*

confidence, regardless of whether the entire sample was analyzed or whether subsamples of state and local officials or environmental group representatives are considered.[30] This consistency was also observed even for those attributes that were *not* associated with confidence, such as whether or not DOE waste management programs were "too influenced by politics."[31]

Based on the popular and academic literature, the comments presented to the Task Force at its meetings, and the survey data, the group adopts the following terminology:[32]

> *PUBLIC: This refers to the range of non-governmental groups and associations, state, local and tribal governments, and individuals that have a potential or actual interest in the Department of Energy's radioactive waste management programs. The term is used synonymously with stakeholders.*[33]
>
> *TRUST: The belief that those with whom one interacts intend to behave in a manner that takes into account one's interests even in situations where neither partner is in a position to evaluate and/or thwart a potentially negative course of action.*
>
> *CONFIDENCE: The judgment that those with whom one interacts are competent to carry out their responsibilities and have the capacity to fulfill their commitments even in situations where considerable effort must be expended.*

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[30]The attributes were presented to the respondents in a battery of 19 closed-ended questions. The correlations reported are with an index derived from standard measures of *confidence* in DOE headquarters, field offices, and contractors. Because "trust" and "confidence" are so frequently joined in common language and because distinctions between them are rarely drawn, the Task Force is willing to use these results to inform its definition of both terms. For precision sake, however, the following analysis of the survey will employ the more restrictive language of "confidence" rather than the broader language of "trust and confidence."

[31] The subsamples of other classes of stakeholders, such as industry representatives, tribal leaders, and labor unionists, were too small to be analyzed reliably.

[32]The Task Force recognizes that the definition of these terms is often contested and that, in ordinary language, they are used vaguely and take on overlapping meanings. It is well, however, to recall the words of C. Wright Mills, who observed: "When we define a word, we are merely inviting others to use it as we would like it to be used; for the purpose of definition is to focus argument upon fact, and the proper result of good definition is to transform argument over terms into disagreements about facts, and thus open arguments to further inquiry." *Sociological Imagination,* (New York: Oxford University Press, 1959), p. 34.

[33]It should be noted that transportation routes from the places where the waste was generated to places where it will be stored and disposed of have not been specified. There are many groups, governments, and individuals who have not had the occasion to consider themselves stakeholders.

TRUSTWORTHY: Meriting both the trust and confidence.

Trust then has to do with *expectations* about behavior; confidence speaks to the *quality* of that behavior.[34] This distinction channeled the Task Force's attention in two directions. It considered how the OCRWM and EM programs interacted with external parties to create expectations. And it considered how they conducted their internal operations to realize quality.

CONFIDENCE IN THE DEPARTMENT OF ENERGY'S RADIOACTIVE WASTE MANAGEMENT PROGRAMS

In order to measure confidence in the Department's headquarters, fields offices, and contractors, individuals who represent organizations that deal with its radioactive waste management programs were asked to respond to a standard question used for many years by the Gallup Poll. The results displayed in Figure 4 confirm the more impressionistic evidence that the Task Force has gathered. Although DOE contractors and field offices were viewed overall more positively than DOE headquarters, not only was that

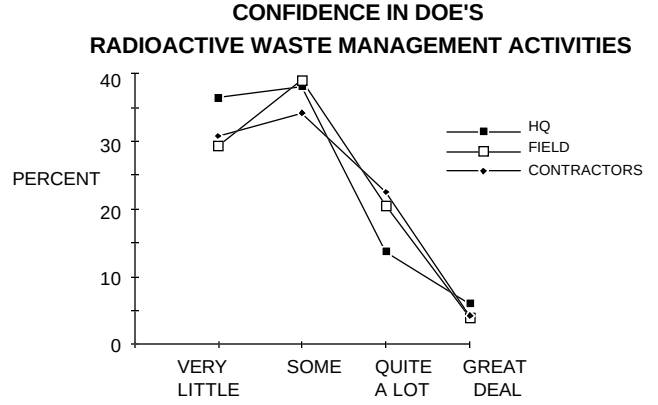

Figure 4

[34]Consequently, there does not appear to be any logical or necessary connection between trust and confidence. It is quite possible for one individual or organization to trust, but to have no confidence in, another. It is also possible, but less likely, for one individual or organization to have confidence in, but not trust, another.

The relationships are more complex when it comes to policy agreement. In the Task Force's view, trust and confidence are important for their own sake and not simply as instruments for obtaining policy agreement. Yet, if there is trust or confidence, agreement is much more likely to follow. And, by the same token, to the extent that it reflects a commonality of interests, agreement generally leads to trust (although not necessarily confidence). But the converse of those propositions may not necessarily hold. Policy disagreement does not preclude the development of trust and, just as importantly, trust does not preclude disagreement. The key to sustaining trustworthiness in the face of dissensus seems to lie in a mutual understanding by the parties that neither seeks actively to thwart the interests of the other and that neither wants the other to be a permanent loser in policy disputes.

difference small but all three elements did quite poorly.[35]

There were, however, some important differences among the major stakeholders as Figure 5 shows.[36] State and local officials did not see DOE as a partner that merits much confidence. The views held by representatives of industries that interact with the two waste management programs were somewhat surprising. Their lack of confidence is pronounced; they are no more supportive than the government officials interviewed. Environmental group representatives, however, were by far the most critical of the Department, and the distribution of their views was the most skewed.

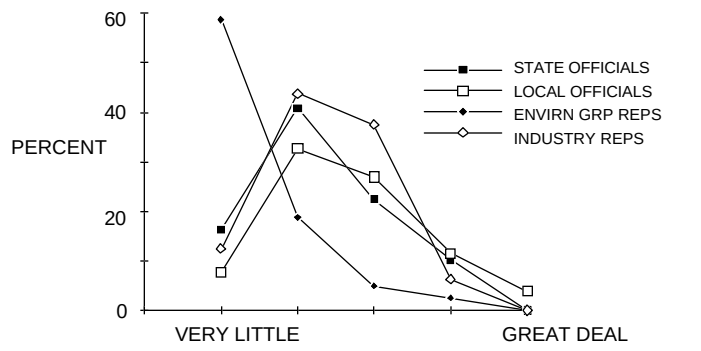

Figure 5

[35]The low level of confidence is, of course, due in part to a generalized lack of trust in many governmental and non-governmental institutions. The survey respondents were asked how much trust they had in 14 of them, ranging from the military to organized religion to electric utilities to the Environmental Protection Agency. Only Congress was distrusted more than the Department of Energy. See Appendix F for further details.

[36]The reader will note that "confidence" in Figure 4 is measured on a 4-point scale while in Figure 5 it is measured on a 5-point scale. The latter is actually a collapsed index that aggregates the respondents' answers about confidence in DOE headquarters, field offices, and contractors. See Appendix F for details.

The data displayed in Figure 6 suggest that DOE has recently reversed what was generally recognized as a continuing and substantial decline in confidence.[37] Nearly three-quarters of those questioned indicated that the Department's waste management

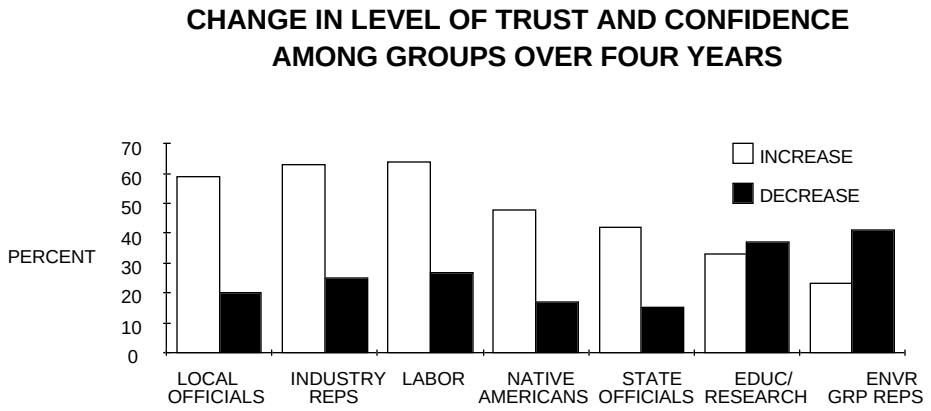

Figure 6

programs merit at least as much confidence as they did four years ago. The biggest gains in public trust and confidence came from individuals who dealt solely with the EM program; trust among OCRWM stakeholders rose more modestly. There were, however, important difference across the respondents. Among the state and local officials, labor unionists, representatives of business associations, and tribal leaders who reported changes in their level of trust, two-thirds accorded DOE greater trust now than in the past. Yet some important stakeholders markedly departed from the prevailing pattern demonstrating progress earning public trust and confidence. Leaders of educational and research organizations were just as likely to report increased as decreased trust. Representatives of environmental groups indicated that their level of distrust had substantially increased over the last four years.

Although one could undoubtedly point to exceptions and qualifications, these data suggest that DOE is generally confronted with the task of recovering trust rather than just sustaining it. This distinction goes beyond terminology; it has practical implications for measures the Department will need to take. In particular, if the agency's

[37]Survey researchers debate whether such retrospective evaluations are valid. Since any measurement error is not likely to be associated with any particular group of stakeholders, the Task Force is prepared to use the data for this limited purpose. In any event, the reader should not forget that, notwithstanding the improvement, DOE is still quite distrusted by all groups of stakeholders.

leaders want to restore public trust and confidence, they will have to commit greater amounts of energy and resources, over a longer period of time, and expect less in the way of progress than if they were trying to establish or maintain an already acceptable level of trustworthiness. In effect, they will have to recreate and reestablish relationships that have become, over time, extremely dysfunctional. To believe that there is some other magical shortcut that will accomplish that end is unrealistic. To believe that "doing more of the same" only better will accomplish that end is equally unwarranted.

THE IMPORTANCE OF PUBLIC TRUST AND CONFIDENCE

In the opening pages of this report, the Task Force described the central contribution that trust and confidence makes to the legitimacy of public organizations within the American system of governance. That contribution derives from a democratic ideology that demands that public institutions operate in a transparent manner, that they adopt processes that not only permit but encourage broad segments of the public to participate, and that no segment finds itself permanently a loser in policy controversies.

On a more pragmatic level, trust and confidence is generally essential for effectively carrying out activities in the public sphere. The genius of American government—checks and balances, division of powers, federal structure—is that it provides innumerable opportunities for opponents to delay, frustrate, and otherwise block what others call progress. A reservoir of trust and confidence is, of course, no guarantee that intense interests will accept unpalatable initiatives, but it does increase the likelihood that they will view matters in as favorable a light as possible. Moreover, a high level of trustworthiness is like money in the bank as it provides a public organization with the leeway it needs to operate effectively. Lapses, if not forgiven, are understood. Actions are not constantly challenged. Complex arrangements and internal assumptions do not always have to be justified.

In the realm of radioactive waste management problem-solving, public trust and confidence is especially critical. This assertion is hardly novel; it simply reiterates a theme that has been advanced for nearly two decades. The first systematic Administration-wide study of radioactive waste management noted: "It is important to the development and implementation of any technology that public concerns be identified and addressed to the fullest extent possible."[38] A report by the Office of Technology Assessment made the point even more emphatically: "[D]istrust may, indeed, be the single most complicating factor in the effort to develop a waste disposal system that is acceptable technically, politically, and socially."[39] Independent scholars and

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[38] *Subgroup Report*, p. 48.

[39] Office of Technology Assessment, *Managing the Nation's Commercial High-Level Radioactive Waste,* OTA-O-171, (Washington: Government Printing Office, 1985), p. 95.

analysts concur. Wrote one, "The struggle over nuclear waste policy has gone on so long that the mutual suspicions that divide the familiar players run deep and are likely to persist."[40]

But these comments do not explicitly recognize that it is the *intrinsic properties* of DOE's core radioactive waste management missions that reinforce and intensify the importance of trust. As Figure 7 suggests, the time horizon—how long it takes for an activity to occur[41]—and the clarity of feedback about their success or failure significantly affect the *level* of trustworthiness that is required for various activities. When the time horizons of an activity are short and feedback about success or failure is clear, substitutes for trust and confidence can often be found. For example, states, localities, and Indian tribes can enter into binding arrangements concerning the transportation of radioactive waste through their jurisdictions.

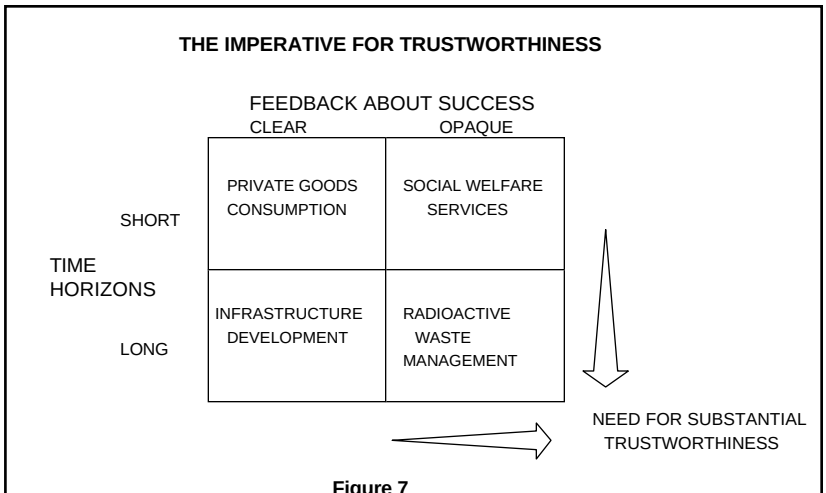

Figure 7

Conversely, when the time horizons of an activity are long and feedback about success or failure is ambiguous, there may be no viable substitute for trust.[42] Our political, legal, and social mechanisms for securing accountability have generally been designed for other tasks. For example, even if all goes as planned, the first high-level

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[40]Carter, p. 427.

[41]Congress gave the Secretary of Energy the responsibility to forever prevent any activity at the site that poses an unreasonable risk of breaching the repository's engineered or geologic barriers or increasing the exposure of individual members of the public to radiation beyond allowable limits. Energy Policy Act of 1992, Section 801(c).

[42]Put somewhat differently, when there is little basis for according confidence, trust becomes especially critical for organizational achievement and performance. Niklas Luhmann makes a closely related argument when he considers the role trust plays in reducing the complexity of perception and experience brought on by advanced technologies. A translation of Luhmann's *Vertrauen: Ein Mechanismus der Reduktion socialer Komplexitaet,* (Stuttgart: Enke, 1973) can be found in Tom Burns and Gianfranco Poggi, eds., *Trust and Power,* (New York: Wiley, 1978).

waste repository will be closed by our great- great- grandchildren. At the same time, whether a disposal facility is performing as anticipated may be hard to ascertain. Cataclysmic disruptions are likely to be discovered, but more subtle failure modes may very well escape detection until the level of release becomes unacceptably evident. And it is quite conceivable that the defense complex clean-up will require the exclusion of the public from some areas for extended, but yet undetermined, times. At the same time, it remains difficult to argue that future generations will not be exposed to harmful levels of radiation, especially given the unpredictable reliability of extended institutional controls. In a very concrete sense, then, it is unlikely that agreements will be reached to manage radioactive waste absent a solid foundation of institutional trustworthiness. This analysis becomes even more compelling when a series of questions is raised about the consequences of not maintaining institutional trustworthiness. Will the changes that will inevitably arise in technical and operational plans be shared candidly so that binding compacts and contracts might be renegotiated? Will considerable discretion continue to be delegated to and will status continue to be conferred on scientific and technical practitioners? Will political power have to be relied upon indefinitely to promote technical programs? Will the normal processes for ensuring scientific and technical excellence function effectively?

Notwithstanding the critical importance of earning and sustaining public trust and confidence, the Task Force does not advocate maximizing institutional trustworthiness at the expense of all other goals. There may be occasions when choices must be made that lead to diminished trust. Yet the panel believes that, in the long run, increased trustworthiness makes deadlines easier to meet, expedites the resolution of technical disputes, and reduces unexpected surprises from the political environment. The Task Force, however, does not underestimate the power of a short run perspective to discount the importance of long run considerations and to create an unsubstantiated impression that building trust is incompatible with other objectives.

TRUST AND POWER

One of the most important factors that color trust relationships is whether power among the parties is distributed roughly equally or unequally. In the former circumstance, trust is not essential, especially when the interaction involves short time horizons and clear feedback measures. Each party is in a position to protect its interests either in the absence of trust or if the relationship breaks down. Nonetheless, trust is useful. As just noted, it reduces long-term transaction costs, facilitates exchanges and intercourse, and preserves discretion. In the latter circumstance, however, the trust relationship is more essential for the dependent or less powerful party. Yet maintaining it is more tenuous because the more powerful party may believe that its interests will not be adversely affected if trust breaks down.

But the distribution of power is rarely stable. An example that is especially relevant to discussions about radioactive waste management illustrates this point clearly. Although the Department has traditionally held the upper hand with respect to over-

sight by state governments of the defense complex, that situation changed dramatically with the passage of the Federal Facility Compliance Act. DOE now finds itself hoping that the states can be trusted to take *its* interests into account as they exercise their new regulatory authorities.

The lesson to be learned here is that the Department of Energy cannot afford to view trust building as a discretionary activity; later if not sooner its ability to carry out programs will depend on how well it has developed relationships of trust with many parties, some of whom are, for the moment at least, relatively weak. To re-create and reestablish relationships with those publics in particular, DOE, as the stronger party, should be prepared to run some risks. It may have to offer accommodations that, in some sense, it need not extend. For instance, it may, on its own volition, restructure the distribution of power in some areas. By doing so, it recasts the interaction to make trust less essential, but it also opens the way for agreement on "confidence-building" measures that can ultimately lead to greater mutual trust.

OBSERVATIONS AND FOUNDATIONS

A sense of responsibility to the Secretary and to those interested enough to read this obliges the Task Force to lay out as explicitly as possible the logic and the evidence that led it to the Recommendations contained in this *Report*. A statement of *first principles*, the elements that form the lens through which the Task Force viewed its charge, is an appropriate starting point. These principles are subject to neither analytic nor empirical confirmation; rather they represent underlying beliefs that were brought to the table or were crystallized at it. They are akin, therefore, to axioms in geometry; alter them and the conclusions may change radically.

- *Public trust and confidence is not a luxury. DOE not only has an obligation to earn it, but it also has a compelling need to do so.*

- *Public trust and confidence is not a one-way street. DOE must trust the public before it can expect the public to trust it. By the same token, the public and its representatives must be held to a standard of behavior that is itself trustworthy.*

- *Under almost all circumstances currently relevant to DOE's waste management programs, it is preferable to make decisions in an open, pluralistic forum than in a closed one that excludes actual or potential stakeholders.*

Based on deductions from the existing social scientific literature, inductions from its review of the OCRWM and EM programs, and ideas presented to it by interested groups and individuals, the Task Force adopted the following design perspective. This perspective does not produce a unique and infallible solution to the problem of public trust and confidence. It does, however, suggest some of the essential *condi-*

tions that any steps toward a solution must satisfy. (Those that affect trust are presented first; those that influence confidence are then laid out.)

- The parties (organizational members and stakeholders) must have a reasonably high respect/regard for each other based on general familiarity and a perceived high degree of mutual understanding and integrity (openness and honesty).

- The parties must possess the competence to understand the technical and institutional problems others face and the solutions advanced to address them.

- The parties must have a reasonably equal part in defining the terms of the relationship.

- The parties must be able to determine unambiguously the effects of their relationship on each other in a full and timely fashion.

- One party must not be compelled to work against the interests of any other party.

- All parties must take into serious account the implications of their actions for sustaining the relationship.

- The parties must maintain a positive history of relationship during which agreements have been kept, even in the face of apparently very demanding challenges.

- Scientific and technical norms held by employees and contractors must override bureaucratic ones.

- Organizational and managerial incentives must be structured to reward problem-solving and to penalize the cover-up of error.

To the extent that all these conditions obtain, the organization will almost certainly be well positioned to produce and maintain trust and confidence. To the extent that any one of these conditions cannot be satisfied *or cannot in some other way be compensated for,* the organization's ability to evoke trust will diminish. These conditions should be kept in mind as the two radioactive waste management programs are set within their institutional context.

INSTITUTIONAL CONTEXT OF RADIOACTIVE WASTE MANAGEMENT

Today's OCRWM and EM programs operate in an institutional context that has been shaped by past choices of their predecessor organizations, by their own past actions, by their legal mandates, by their interaction with stakeholders, and by their organizational cultures. Despite the complexity, it is essential to distill the essence of their intensely political environments (as of early 1993). For that is what directly affects the choices the Department makes and indirectly affects its capacity to strengthen public trust and confidence.

CIVILIAN RADIOACTIVE WASTE MANAGEMENT PROGRAM

In less than a decade, civilian radioactive waste management moved from off stage to front stage. Emblematic of that transformation was the elevation of the effort from a single branch within the Atomic Energy Commission's Reactor Development Division to a major office within DOE headed by a presidential appointee. Along the way, however, a trail of disappointing initiatives was left. Words and acronyms such as Lyons, Kansas, RSSF, AFR still resonate in the minds of those who have followed the program's fortunes over the years.

In 1982, Congress sought to reconcile, at least for the moment, a series of unresolved issues, to place a greater stamp of authority on the agency's efforts, and to build a framework that would permit greater programmatic progress. Blending the intellectual frameworks advanced by President Jimmy Carter's Interagency Review Group and the Office of Technology Assessment with measures that recognized and provided remedies for the widespread lack of trust in DOE, it passed the Nuclear Waste Policy Act.

The resulting legislative amalgam established four bargains. The *ethical bargain* committed the country to pursue geologic disposal aggressively in the belief that the uncertainties associated with the technology could be managed and that the generation benefiting from nuclear power should have the responsibility to solve the problem of the wastes left behind. The *economic bargain* gave the nuclear industry a fixed schedule for every stage of the repository development process and a date for the opening of a disposal facility; as importantly, it gave utilities a date for the government to accept title to the waste—something that was seen as a prerequisite for the industry's future growth—in return for a surcharge on the cost of nuclear-generated electricity to cover fully the ratepayers' share of costs of repository development and operation.

The *technical bargain* provided that a conservative program philosophy, subject to an intricate external review and independent oversight process, would be followed by investigating multiple sites in differing geologic environments. Yet for the first repository, only a small handful of locations could be considered. The *political*

bargain called for a second repository, which was likely to be situated outside the region of the first. It also offered the host state and affected tribes the right to participate in a wide range of program decisions, oversight authority, and disapproval over the final choice of site. But that objection could be overridden by a vote of both chambers of Congress.

Importantly, each of these bargains was struck in large part because some affected party neither trusted nor had much confidence in the Department of Energy. The ethical bargain was necessary because the environmental community felt that DOE would settle for temporary surface storage to avoid addressing the complicated issue of geologic disposal. The economic bargain was struck because the nuclear power industry had little confidence in the Department's ability to manage an expensive project of indefinite duration and minimal accountability. The technical bargain was reached because virtually no party trusted DOE to make critical siting decisions in an objective manner. Only the political bargain's quest for geographic equity in sharing the burdens of disposal seems to be predominantly motivated by factors other than lack of trust and confidence.[43]

The Department's efforts to implement all these bargains ran into difficulties almost from the very start. The most visible manifestation of this, illustrated in Figure 8, was that the projected date for opening a repository continued to slip. Ironically, this erosion of the economic bargain may have been caused by efforts to keep the technical and political ones. OCRWM's leaders, for example, point out that they offered greater opportunities to comment on technical and

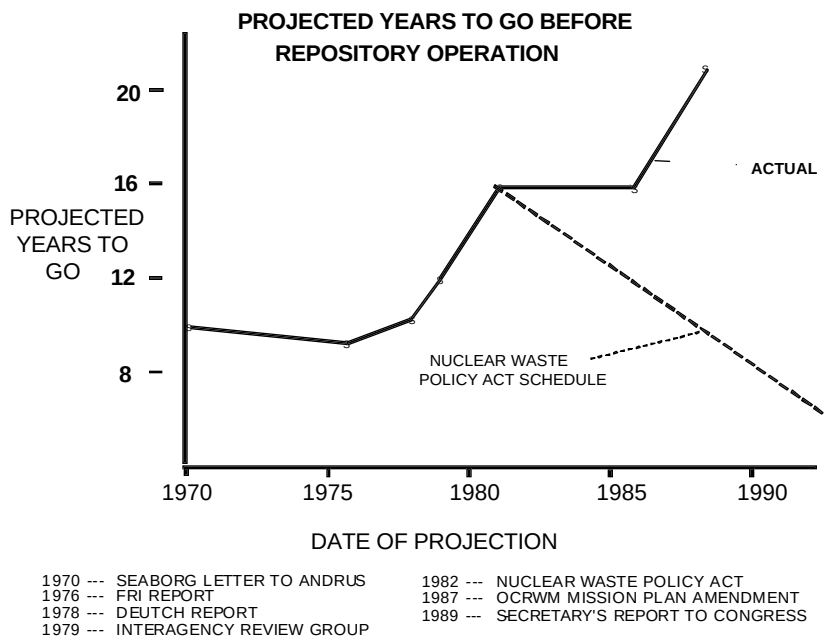

Figure 8

[43]See Carter, pp. 195-230

policy initiatives than was required by law. They also went to considerable lengths to respond to criticism from the National Academy of Sciences about the program's site comparison methodology.

At the same time the prospects for the first repository receded, the political bargain, which seemed so attractive in theory, turned into a nightmare in practice; the general public and politicians of seventeen states did everything they could to obstruct the process for selecting a site for the second repository. Indeed, barely three and a half years after passage of the NWPA, the Department announced that it was suspending that effort.[44] In the final analysis, trying to preserve the core of the political bargain exacted too high a price. Abrogating it unilaterally was, for many leaders at DOE, the only way to save the other three.

The subsequent passage of the Nuclear Waste Policy Act Amendments in 1987 codified the decision to break a key element of the political bargain by requiring DOE to focus its efforts on a single repository. By mandating that the Department characterize only the Yucca Mountain site, it also undid the part of the technical bargain that called for site comparisons. The economic bargain was also rewritten as Congress tacitly acquiesced to at least a twelve year delay in the schedule for opening a repository.

There is no way of knowing whether these four bargains are inherently contradictory and inconsistent and thus destined to fall apart or whether they might have been managed more astutely and effectively. What is apparent to the Task Force is that no stakeholder is satisified with the current state of affairs. Among the concerns voiced are the following:

- Utilities that rely on nuclear power believe that the erosion of the economic bargain presents them with a painful dilemma that they had hoped to avoid by signing formal contracts with DOE. As schedules slip, they are faced with the prospect of having to spend additional money and find space to store spent fuel for some indeterminant length of time. But their options may be limited if their rate regulators do not permit them to recover those expeditures or prevent them from passing on to consumers their contributions to the Nuclear Waste Fund. The utility's dilemma becomes even more excruciating if a repository is not built at Yucca Mountain. Neither they nor their regulators have much confidence that the Department will manage that project any better in the future than it has done in the past.

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[44]There has been considerable speculation about how that decision was reached. For one of the best discussion of this event, see Carter, pp. 408-414.

- The state of Nevada believes that DOE is at least partially responsible for its being singled out to bear the costs of recasting portions of the technical and political bargains. Moreover, state leaders have repeatedly claimed that having only one site under consideration taints the Department's technical objectivity. Thus they believe that portions of the technical bargain involving review and oversight, which have not been explicitly abrogated, have been rendered irrelevant as a practical matter. Furthermore, they expect that normal bureaucratic incentives coupled with institutional momentum means that the site is not likely to be abandoned. These circumstances make it almost impossible for many Nevadans to trust DOE.

- Some members of the environmental community believe that DOE's commitment to expanding the nuclear power option predisposes it to resolve technical uncertainties so as to maintain the viability of the Yucca Mountain site. They do not trust the Department to heed objective technical advice from truly independent experts. Consequently, they have become less committed to the ethical bargain and advocate extended monitored retrievable storage of spent fuel usually at reactors.

In sum, the OCRWM program operates in a political environment in which each of the affected parties seeks to maintain in their original form those bargains that protect its central interests while expecting other parties to accept revisions in the remaining ones.

Once it became apparent that the repository program was falling nearly two years further behind as each year passed, the Department developed an almost single-minded dedication to construct a repository as expeditiously as possible. That dedication reflects a commitment to implementing the NWPA and to preserving its ethical and economic bargains. It aligns the program's activities with the most visible and comprehensible indicator of success—meeting schedule milestones. It is also a natural and expected consequence of being responsive to the views and the priorities of legislators and constituencies who are the most salient to the agency's policymakers. Indeed one might well argue that to behave otherwise would be to breach the confidence of one vital sector of the public—electric utilities and Public Utility Commissioners—who can neither understand nor accept the Department's inability to maintain a schedule or to control costs. DOE's position is all the more understandable given the uncertain returns from behaving differently.

But this determined pursuit of a repository has had unfortunate ramifications in three interconnected areas: the Department's response to technical overseers, its defense of the technical integrity of its efforts, and its stance with regard to complying with regulatory standards. All of these areas are relevant to the Department's quest for public trust and confidence.

Law and tradition have placed four external bodies in a position to give independent

advice on the technical aspects of the program. The National Academy of Sciences' (NAS) Board of Radioactive Waste Management has been involved since 1955. The Nuclear Waste Technical Review Board (NWTRB), a group of presidentially appointed experts, was established by Congress in 1987. Under the NWPA as amended, the host-state, Nevada, and the *situs* county, Nye, have the right to designate a representative to conduct on-site oversight activities. In addition, the state of Nevada as well as Nye County and the nine counties in Nevada and California contiguous to it can undertake a wide review of the Department's site characterization efforts.

DOE has treated advice received from them all as just that, advice. Sometimes it has accepted the recommendations. For example, the Department abandoned plans to drill and blast shafts to gain access to Yucca Mountain's undergound features. At considerable cost and schedule delay, it decided to redesign the Exploratory Studies Facility. Other times, DOE rejected, as it had every legal right to do, the advice offered by its independent technical overseers. For many stakeholders, however, including those who wish the Department to succeed in developing a geological disposal system and who are open-minded about the suitability of the Yucca Mountain site, what is troubling is the *rationale* for acceptance or rejection. While no general pattern holds true in every instance, the best predictor of whether the recommendations are ignored seems not to be their intrinsic technical merit but whether they significantly alter the prevailing program philosophy or imply changes in approach that are perceived to cause serious delays in repository development.[45]

Fifteen years ago, the Department was cautioned that organizational and political commitments could so attach themselves to a particular site that "insufficient weight might be given to technical data developed later on. Because of the presence of this risk, a program...might lose some degree of public support. Care would have to be taken that technical adequacy remained a prerequisite for site selection, and *the public must be provided adequate assurance* that this is so [emphasis added]."[46]

More recently, this concern was raised in a report from the NWTRB. The Board observed that the civilian radioactive waste management program was being driven by "unrealistic deadlines [that] may force DOE to make important technical decisions without first performing the appropriate technical and scientific analyses."[47] It noted in particular that the project's current schedule may not provide enough time to gather data from the exploratory studies facility and from underground experiments or to make informed choices on critical issues such as waste package design and

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[45]This seems especially the case with respect to recommendations from the NAS and the NWTRB. There is at least a perception that DOE finds it extremely difficult to listen seriously to overseers, who, by its standards, are judged to be less technically qualified.

[46]*Subgroup Report*, p. 81.

[47]Nuclear Waste Technical Review Board, *Special Report to Congress and the Secretary of Energy,* March, 1993, p. 4.

repository thermal loading.

OCRWM's leaders recognize these fears, and they have offered two forms of assurance. First, they have stated unambiguously that if information is uncovered in the course of site characterization that demonstrates the unsuitability of Yucca Mountain, they would recommend that work not continue and that the site be abandoned. Second, they have pointed to the elaborate layers of technical oversight, including independent external advisors and ultimately the licensing authority of the NRC.

Because an atmosphere of distrust pervades the program, it is hardly surprising that these declarations of intent have been greeted by many with skepticism. And given the OCRWM's mixed record of responding to outside advice, technical adequacy cannot be guaranteed on this basis. Moreover, because the level of trust and confidence accorded NRC does not appear to be appreciably higher than that bestowed on DOE, the licensing exercise may also not be sufficient. Indeed, many stakeholders find it difficult to imagine that NRC would reject an application after so much time and resources had been committed to exploring one piece of geology, especially since no other site would be available as a back-up.

Finally, OCRWM's determination to develop a repository as expeditiously as possible can subtly subvert its repeated public commitments to comply with all applicable health and environmental regulations. At the same time OCRWM was promising regulatory compliance in its *Draft Mission Plan Amendment,* the Department incorporated into its National Energy Strategy a bill to preempt Nevada permitting authority. OCRWM leaders have complained that EPA's high-level waste standard is ill-conceived and fails to justify with health benefits the substantially increased cost of development it seems to dictate. They have also hinted that NRC's regulations are overly burdensome. Any regulated entity, including DOE, can legitimately seek redress from rules it regards as unworkable or ill-conceived. But as noted above, those standards and regulations represent a social judgment about acceptable levels of risk and uncertainty; and therefore, the process by which they are modified takes on considerable importance. By choosing (perhaps as a last resort) to engage in a rather closed and truncated process, the Department sent clear signals to the range of affected parties. Some interpreted the agency's actions a welcome indication of a willingness to "play hardball" to fulfill commitments and thus as source of confidence in the Department. Others viewed them as confirmation of the fear that DOE will alter the rules of the game as needed to get a repository built at Yucca Mountain and thus as evidence for not trusting the Department.[48]

The Task Force fully recognizes that complex programs require target dates to provide an incentive to participating personnel, to facilitate the drafting of work schedules, to emphasize the need for timely completion of tasks, to justify budgets, and to

[48] Of course, those initial reactions may be tempered by the outcome of the study of the EPA standard that has been undertaken by the National Academy of Sciences.

allow different agencies to coordinate their internal programs into a coherent whole. The panel also appreciates the views of the utility industry and their rate regulators that fulfilling schedule commitments is key to maintaining public trust and confidence.

But the schedules that are attached to the civilian radioactive waste management program derive from a time when there was very incomplete understanding of what work needed to be accomplished in this first-of-a-kind undertaking. The Department has, of course, adjusted various program targets in the past. But there remains the fear that the current over-emphasis on the importance of specific dates may be counterproductive to building, sustaining, and restoring public trust and confidence. Establishing, in consultation with all affected parties, a more flexible schedule consisting of realistic milestones for gathering specific types of information may better ensure the Department's long term credibility.

ENVIRONMENTAL RESTORATION AND DEFENSE WASTE MANAGEMENT

As noted above, EM program activities fall into three broad catagories: environmental restoration of defense complex sites, management of large quantities of radioactive and hazardous wastes at many sites, and disposal of waste at WIPP and other locations. For the purposes of the discussion that follows, the first two sets of activities will be considered separately from the third.

DEFENSE COMPLEX CLEAN-UP AND ON-SITE MANAGEMENT OF WASTE

DOE and its predecessor agencies have been managing radioactive waste from the defense program since 1944. As a practical matter, however, that management has just consisted of a series of interim measures and improvisations for storing (rather than disposing permanently) the by-products. Similarly AEC scientists and leaders, and their successors, were well aware that if radioactive materials were released or escaped, they could harm plants, animals, and people. Yet, because national security needs took precedence and because there were few organizational incentives to protect the environment, they failed to take adequate steps to prevent widespread contamination and pollution. Furthermore, because of prevailing industrial standards and its unique concern with radioactive material, DOE did not fully recognize the non-radiological hazards of its production and waste streams.

On several occasions during the 1970's and early 1980's, state governments and environmental groups sought relief and remedies for a situation that showed no sign of improving. Those actions challenged a long-standing organizational imperative that was, if anything, even more dominant and supported by powerful interests than the organizational commitment to develop a repository expeditiously: the defense program could not permit itself to be subjected to external control and monitoring.[49] To be sure, that imperative flowed logically from legitimate concerns about national

security. But it did send an emphatic message to interested parties: if there is a need to alter the way defense wastes are managed or the way weapons-related activities affect the environment, the agency shall be the sole judge of what should be done and how well it should do it.

The discovery in 1983 of numerous substandard hazardous waste disposal practices at the Y-12 Plant at Oak Ridge was the catalyst that forever changed the Department's world. The Legal Environmental Assistance Foundation (LEAF) and the Natural Resources Defense Council filed suit, accusing DOE of failing to comply with the requirements of the 1976 Resource Conservation and Recovery Act (RCRA).[50] The Court firmly denied DOE's claims that it was exempt from regulation under the Act.[51] Within a year, the states of Tennessee, Washington, Ohio, and South Carolina were asserting their jurisdiction over hazardous waste management on DOE reservations. In 1986, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was reauthorized with specific language that brought federal facilities within its reach.[52] Thus, in the space of two years, DOE's long-standing policy of preventing outside intervention in the defense complex had become severely eroded. The host-states and EPA could, in principle, decide how the Department should clean up its messes and how it should store, treat, and dispose of its hazardous radioactive waste.

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[49]The difference in the approach taken by Congress, at the strong urging of the Department, to licensing a defense TRU-waste repository (WIPP) and the approach taken to licensing a civilian high-level waste repository is a striking example of this imperative.

[50]RCRA, as currently interpreted, sets the details for the management of hazardous wastes, including the hazardous components of radioactive mixed waste, at currently operating facilities. It requires that DOE obtain permits for facilities that treat, store, or dispose of hazardous or radioactive mixed wastes, and it established standards for those facilities. The law also mandates the assessment and clean-up of all releases of hazardous waste and hazardous waste constituents; it provides as a condition of a permit the clean-up of all releases and for correction action orders. EPA possesses the original authority to administer RCRA, but the agency may delegate to states. The states, in turn, may choose to apply their own standards so long as they are at least as stringent as the ones EPA would apply.

[51]See *LEAF v. Hodel*, 586 F.Supp. 1163 (E.D. Tenn, 1984). After considerable internal debate, DOE concluded that at least some mixed waste was subject to RCRA and initiated rulemaking to determine what the fraction was. For an instructive discussion by one of the environmental attorneys in *LEAF* and the Department's reaction to it, see Barbara Finamore, "Regulating Hazardous and Mixed Waste at Department of Energy Nuclear Weapons Facilities: Reversing Decades of Environmental Neglect," *Harvard Environmental Law Review*, 9, (1985).

[52]CERCLA, popularly called the Superfund Act, provides for compensation, liability, cleanup and emergency response for hazardous substances released into the environment. It also provides a regulatory structure for cleaning up inactive hazardous waste sites. EPA was again given original jurisdiction to implement the law but delegated to DOE the authority to respond to releases or threats of releases at DOE facilities.

Aware that the old order had passed and that it was vulnerable to civil suits and even criminal prosecution, DOE, beginning in 1986 and accelerating thereafter, negotiated a series of facility compliance agreements, settlement agreements, consent orders, and agreements-in-principle with states and EPA. Those pacts set standards and schedules for compliance with environmental laws, committed the Department to undertake specific activities, set up the ground rules under which the state and federal regulators would have access to the sites and to data, and, in some instances, obligated DOE to seek full funding to meet detailed clean-up and waste management milestones. By mid-1992, over eighty different agreements had been reached. Just as significantly, the Department had to initiate an extensive program of public involvement in order to satisfy its RCRA and CERCLA obligations. Thus, in a fundamental break from the past, not only were regulators literally allowed inside the gates for the first time, but members of the general public and representatives of interested groups were also figuratively admitted.

As might be expected, this transition has not always been smooth. Old patterns of interaction are hard to shed, and when they are repeated, they may suggest arrogance and insensitivity. For example, DOE stumbled in 1992 when it appeared to change unilaterally negotiated agreements and delay the starting of construction of the Waste Vitrification Plant at Hanford. It dealt badly with the local population and state officials when a small amount of tritium leaked into the Savannah River. It has often seemed inflexible in dealing with the needs of local emergency planners. It is premature to know whether the Department shall draw the correct lessons from failings such as these.

The Task Force was struck, however, by the earnestnesss of the EM leaders it heard from. They have erected an elaborate structure for carrying out the program's core mission including rolling five-year plans, system integration studies, programmatic and site-specific environmental impact statements, and a rich program for fostering public involvement. But they recognize, as do the various stakeholders, that the true test of the program's mettle still has not occurred. There are at least six interrelated issues that will offer significant challenges over the next few years. Unless the Department's leaders manage them carefully and skillfully, EM will likely find itself faced with a serious crisis with respect to public trust and confidence.

RESOURCES: Any estimate of the total cost of the defense complex clean-up and on-site waste management is bound to be misleading. There are too many uncertainties about the scope of the problems, the costs of various remediation activities, and how much residual risk the society is prepared to accept. Ballpark estimates begin at $100 billion and move up from there. Whatever the ultimate cost, it is, by any standard, a substantial sum. Through the 1994 Fiscal Year, the Office of Management and Budget and Congress have been forthcoming and responsive to the Department's budgetary requests. Whether that cooperation will continue is inherently uncertain. Should support for the program decline, what is now essentially a "win-win" situation among regions could be transformed into a "win-lose" one. Then DOE will have to make and justify tough decisions allocating scarce resources among competing activities and facilities. EM's past experience creating and defending prioritization

schemes indicate how difficult that task might be.[53]

REGULATORY REGIME: Although the basic foundation has been established for regulating DOE's defense complex clean-up and on-site waste management activities, there are two issues that loom over the future. The first is the classic question of how clean is clean. Experiments in land-use planning for the Hanford Reservation just began in 1992. These were innovative and appear to have committed the Department to interact with stakeholders in a manner that is likely to promote trust and confidence. But some questions still remain. How much restricted use will communities be prepared to accept? Will the last community demand more stringent clean-up standards than the next-to-last, especially if it is not required to share the costs?

More fundamental is the relationship between *any* standard and the benefits it produces. It is widely acknowledged that the data from which exposure, release, and contamination standards are derived are sufficiently uncertain that they might not be an adequate reflection of environmental and health risks. What can or should be the program's stance? Will, for example, a vigorous effort at risk communications help or will it merely be perceived as a facade that hides an uncaring attitude toward environmental and health hazards?

SCHEDULES: Each of the CERCLA/RCRA agreements with the states contains a detailed schedule for completing specific remedial actions and carrying out waste treatment, storage, and disposal operations. The agreements do provide for altering the schedule under certain pre-established conditions. And EM has already succeeded into getting state and EPA concurrence to change some dates. The program, however, is in its earliest stages. Since the milestones negotiated were often derived from estimates provided by DOE, there is likely to be a built-in reluctance on the part of the regulators to continually make adjustments because commitments cannot be met. Importantly, to the extent that a relationship of trust can be established and sustained with the states, changes in schedules will be easier to negotiate.

TECHNOLOGY: Approximately ten percent of the EM budget is allocated to developing new technologies and bringing them on-line in time to facilitate compliance with applicable laws, regulations, and agreements and to reduce the costs of doing so. There have been some accomplishments in areas such as horizontal well technologies and penetrometer electromagnetic mapping. It is too soon, however, to judge how many truly new technologies will be developed and how useful they, in fact, will prove to be. More fundamentally, there is some question about whether current schedules allow sufficient time for technology development. To the extent

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[53]EM's effort to secure resources marks a departure from that traditionally taken by DOE (and its predecessors). For over fifty years, those agencies' budget requests were in support of *national* programs. Environmental restoration and on-site defense waste management have a much more *local* focus. That difference, of course, raises the possibility of competition for scarce dollars, a competition in which DOE may find it hard to be widely viewed as neutral. (And perhaps it should not be.)

that effort does not succeed within its "window of opportunity," many of the pressures the EM program now confronts will only be exacerbated. This logic suggests that a very conservative and prudent approach be taken for planning purposes. Miscalculations about the pace of development are much more likely to reap windfalls than to force dramatic and costly readjustments.

SITING: Current program operations are being conducted on the defense complex sites. Future ones related to waste storage, treatment, and disposal of low-level and mixed waste will require the siting of numerous new facilities. One of the issues that EM's Programmatic Environmental Impact Statement is expected to address is where, in general, those operations should be located. But ultimately specific sites will have to be selected, and EM will have to forge a process for making those choices.[54] As OCRWM can attest, devising a method for equitably and openly picking places is a daunting task.

FACILITY TRANSITION: As noted above, EM has taken ownership from DP of the Hanford Reservation and the Feed Materials Production Center, and it will soon become the landlord at Rocky Flats. At some time in the near future, it may become responsible for the Mound and Pinellas Plants. Those transitions, and the others that probably will follow as the weapons complex further shrinks, will raise issues such as worker retention and retraining and the creation of planning mechanisms that will permit close collaboration with state, local, and tribal governments.

For facilities that remain under DP control but which still have a large EM presence, the situation may pose its own special dilemmas. If the two DOE units adopt differing philosophies or promote diverging organizational cultures, mixed messages could be sent to the interested and involved publics. In such a case, hard-fought efforts to sustain trustworthiness may be unwittingly damaged.

WASTE ISOLATION PILOT PLANT

In the early 1970's virtually all the economic and political leaders in Carlsbad, New Mexico decided that a nuclear waste repository carved out of a salt formation due east of town would be just the right antidote to the steep decline in the local potash industry. Although some residents of the community opposed the idea, the leaders launched a sophisticated campaign using connections with both state and national political figures, and eventually the project was endorsed by DOE and Congress. While tensions periodically arose between the Department and the state of New Mexico, relations have never deteriorated to the point that they have in Nevada. While not an entirely welcome guest, WIPP is a familar one whose presence serves not only the interests of the Department but those of many constituencies in the state.

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[54]These facilities will have to be funded, designed, operated, and maintained by still-to-be-established elements of DOE.

Nonetheless, there seem to be some chronic irritants that, if not treated as genuine concerns, have the potential for undermining the Department's position and eroding public trust and confidence.[55] The Department has urged EPA to modify that agency's disposal standards in order, in the minds of many parties, to facilitate the certification of WIPP. Of more general concern to the state is the scientific justification and validity of DOE's test phase plans. Only quite late in the design and construction of WIPP were concerted efforts made to formulate experiments to support claims about the long-term performance of the facility. The National Academy of Sciences' WIPP Panel criticized a 1992 study that sought to lay out a research strategy. It noted, among other things, that "the plan to conduct a large number of expensive bin tests and to terminate the experiments after five years has no discernible scientific basis."[56]

A more fundamental problem may lie just over the horizon: EM understands only in the most general terms what specific types and quantities of waste will be coming to WIPP. That information may be critically important to DOE's application for a RCRA Part B permit allowing waste emplacement for disposal. EPA may need that information as well in order to modify the no-migration determination it has issued for the test phase. Neither the state nor the Department's sister agency have not yet specified their requirements for waste characterization. Because the cost and schedule implications for the WIPP of having to develop a detailed description are significant, the possibility of substantial disagreements arising with the state and federal regulators cannot be ruled out. Such a circumstance would hardly strengthen public trust and confidence.

COMPARISON OF THE TWO INSTITUTIONAL CONTEXTS

The discussion just concluded suggests that a fundamental and complex interaction of factors affects public trust and confidence in the Department's radioactive waste management activities. Some are specific actions, choices, and policies that each program has made; others include characteristics of the core mission and governing regime, both of which are not fully under either program's control. Table 2 below presents the Task Force's judgments about the institutional contexts within which waste management activities are conducted.

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[55] Unlike Nevada, New Mexico does have an interest in the expeditious start of WIPP's test phase. Not only will employment at the site be stabilized but the $20 million per year for 15 years that Congress has authorized for economic assistance will be paid out once TRU waste is shipped to the facility.

[56] Letter to Leo Duffy, June 17, 1992.

ASPECTS OF INSTITUTIONAL CONTEXT AFFECTING PUBLIC TRUST AND CONFIDENCE

CHARACTERISTIC	CIVILIAN RADIOACTIVE WASTE MANAGEMENT	COMPLEX CLEAN-UP/ON-SITE WASTE MANAGEMENT	WASTE ISOLATION PILOT PLANT
CORE MISSION			
DISTRIBUTION OF BENEFITS	PERCEIVED AS A "GAME" WITH CLEAR WINNERS AND LOSERS	POSIBILITY OF MANY WINNERS	BENEFITS LARGELY DISTRIBUTED ALONG THE SAME LINES AS RISK
MAJOR PUBLIC FOCUS	WASTE DISPOSAL	CLEAN-UP	WASTE DISPOSAL
MOVEMENT OF WASTE	ARRIVING AT A SINGLE SITE LEAVING MANY SITES	STAYING AND/OR POSSIBLY LEAVING	ARRIVING AT A SINGLE SITE LEAVING MANY SITES
ORIGIN OF WASTE	CIVILIAN NUCLEAR POWER PLANTS	WEAPONS PRODUCTION	WEAPONS PRODUCTION
CURRENT PROGRAMMATIC ACTIVITY	EXPLORATION/DESIGN	SITE ASSESSMENT/SOME CLEAN-UP	DEMONSTRATING REGULATORY COMPLIANCE
LOCUS OF ACTIVITY	CONCENTRATED AT A SINGLE SITE	DISPERSED	CONCENTRATED AT FEW SITES
OPERATIONS	WILL CONTINUE FOR MANY GENERATIONS	WILL CONTINUE FOR A FEW GENERATIONS	WILL CONTINUE FOR A FEW GENERATIONS
GOVERNING REGIME			
DOMINANT LEGISLATION	PROGRAM SPECIFIC	GENERAL ENVIRONMENTAL LAW	PROGRAM SPECIFIC
TYPE OF PUBLIC INPUT LEGISLATIVELY MANDATED	"HOW TO DO THE JOB"	"SHOULD THE JOB BE DONE" "WHAT JOB TO DO" "HOW TO DO THE JOB"	"HOW TO DO THE JOB"
TYPE OF POWER SHARING WITH STATES MANDATED BY LAW OR AGREEMENT	LIMITED WITH THE EXCEPTION OF A VETO THAT CAN BE OVERTURNED BY CONGRESS	CONSIDERABLE	CONSIDERABLE
AFFECTED CONSTITUENCIES	MANY	MANY	MANY
REGULATORY STANDARDS	EVOLVING	INCOMPLETELY UNDERSTOOD	MOSTLY UDNERSTOOD
DOMINANT MODE OF POLITICS	CLOSED	RELATIVELY OPEN	RELATIVELY OPEN
ORGANIZATIONAL CULTURE AND PHILOSOPHY			
INHERITED LEGACY	POOR	POOR	POOR TO ACCEPTABLE
BUDGETARY HISTORY	STABLE/SLIGHTLY GROWING	STABLE	RELATIVELY STABLE
RESPONSE TO REGULATION	TRIES TO MODIFY TO EASE CHALLENGE TO PROGRAM	EXPECTS MORE STRINGENT REGULATION	TRIES TO MODIFY TO EASE CHALLENGE TO PROGRAM
ATTITUDE TOWARD EARNING PUBLIC TRUST AND CONFIDENCE	NO EXPLICIT ACKNOWLEDGEMENT OF LOW LEVEL; APPROACH TO BUILDING IS NARROW	ACKNOWLEDGES LOW LEVEL; APPROACH TO BUILDING IS MORE BROADLY CONCEIVED	ACKNOWLEDGES LOW LEVEL; APPROACH TO BUILDING IS RELATIVELY OPEN-MINED

Table 2

In virtually every case, the civilian program must overcome greater obstacles to recover and sustain trustworthiness that the defense complex clean-up and on-site defense waste management programs. WIPP generally occupies a position between the other two. It is for this reason that, in the following pages, the Task Force paints a bleaker picture with respect to public trust and confidence for the civilian radioactive waste management program than for the environmental restoration and defense waste management program. One clear implication that follows from this analysis is that OCRWM's capacity to restore trust and confidence critically depends on the decisions of its partners in the governing regime, namely the Congress, the Nuclear Regulatory Commission, and the Environmental Protection Agency.[57]

FINDINGS

Based on its interaction with a broad range of stakeholders and DOE employees and contractors and on the research that it commissioned and conducted, the Task Force made a number of Findings. The group realizes that there might be particular instances that run contrary to any given Finding. Nonetheless, it believes that the conclusions set forth below represent strong central tendencies. The Findings are organized into four sets. The first two are applicable to both radioactive waste management programs and, when noted, to the Department as a whole, the third to OCRWM, and the fourth to EM.

GENERAL FINDINGS

I. There is widespread lack of public trust and confidence in the Department of Energy's radioactive waste management activities.

The Task Force has been struck by the intensity of views that it has received. By any conceivable indicator, the Department rouses little trust and confidence from *any* sector of the public. Even parties that generally agree with the agency's policy choices express a deep concern about how reliable a partner it has been or will likely be. As one representative of an industry association put it: "DOE just does not have a good reputation for following through." State and local government officials, many of whom worked closely with the Department over the years, echo that view. DOE does especially poorly among representatives of environmental and public interest groups. It is not surprising, therefore, that many agency employees and contractors voiced without any prompting the opinion that the Department "has no friends, just temporary allies."

[57]Perhaps the most articulate expression of that dependence is found in an August 1992 letter from Governor Mike Sullivan of Wyoming to the Fremont County Commissioners. In it, the Governor explains why he could not permit the county to continue its study of whether or not to host a MRS. The letter is reproduced in Appendix G.

2. There has, however, been some progress made generally and at individual facilities in improving public trust and confidence over the last four years.

The survey of stakeholders indicates that confidence in the Department's radioactive waste management programs has increased—albeit from a quite low level. A strong plurality of respondents report that they regard DOE as more trustworthy than they did in the past.[58] The Task Force also heard testimony that major strides have been made in earning the public's trust at places such as Oak Ridge, Hanford, and Rocky Flats. Panel members or staff have paid extended visits to each of those sites and spoke with DOE employees and contractors as well as a variety of stakeholders. Although the Department still encounters many challenges at those places and undoubtedly will encounter many more in the future, there does seem to be evidence — albeit largely impressionistic— generally confirming claims of headway in strengthening public trust and confidence.

3. The lack of trust and confidence that remains is a direct consequence of various publics' experience with the Department. It is not an irrational reaction nor can it be discounted merely as a manifestation of the "not-in-my-backyard" (NIMBY) syndrome.

One of former Secretary Watkins' first pronouncements after taking over stewardship at DOE was a candid "State of the Department" assessment. He acknowledged the numerous lapses in its past practices at the weapons' complex including inattention to the environmental implications of its activities, excessive secrecy about releasing health and safety data, dissembling about the effects of above-ground nuclear weapons tests, and an inadequate record in consulting with many who were affected by policy choices. Those prior deficiencies stemmed largely from the fact that the Department played a major role in the national security arena. A war mentality naturally arose and served to justify actions that, in retrospect, appear unfortunate. It is easier today to understand why those actions occurred than to excuse them, especially when the threats that engendered them seem to have receded. Many portions of the public resent what was done and feel that they were betrayed by an agency that was supposed to be looking after their best interests.

Past activities were not quite as ill-conducted by those in charge of managing civilian radioactive wastes. But there, too, a series of misguided choices periodically soured even those who supported OCRWM's core mission of developing a geologic

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[58]Differences across groups are presented in Figure 6 above. There are also differences between those who deal exclusively with the EM program and those who deal exclusively with the OCRWM program. A significantly larger fraction of the former group sees progress in building trust than does the latter group. The reader is reminded that, notwithstanding this improvement, most groups still judge the Department harshly.

repository. Early attempts at selecting sites were heavy-handed. Later efforts were more sophisticated yet also put the Department in awkward positions. Suggesting, for instance, that a site located under Lake Sebago in Maine might be suitable for a repository may have been technically defensible, but it was seen by many as evidence that DOE functioned in a reality that was far different than most.

This track-record informs and structures public reactions to what the Department wishes to do today. To the degree that it evokes negative expectations, trust will likely not be forthcoming, nor can the Department demur. Neither can it attribute the public's reaction purely to selfish NIMBY-ism. To be sure, few communities show much enthusiasm for inviting noxious facilities into their midst. But the task of persuading them is made considerably more difficult when they have grounds for believing that the invitee will later if not sooner exploit their hospitality.

In holding that DOE's actions have been a major contributor to the lack of public trust and confidence, the Task Force is not suggesting that other factors have played no part. When the Department becomes the object of intense political controversy, as it has in the state of Nevada, it is less likely to be seen as trustworthy. Moreover, the social amplification of risk and the role of the media in that phenomenon may have lead to a degradation of trust.[59]

4. If DOE is to restore public trust and confidence, it will have to take steps that might be considered unnecessary for an organization that has maintained public trust and confidence over long periods of time.

Organizations that have earned public trust and confidence have greater policy-making flexibility than those that have not. Because that consideration had previously been well integrated into the former organizations' choices, they can better afford, on occasion, to adopt measures that will reduce trustworthiness in the future. The Department of Energy does not have that luxury since it is precariously balanced on a steep slope that corresponds to the trajectory needed to build trust and confidence. It requires substantial efforts to make even a modicum of progress; one slip leads to an accelerated decline.

This means that Departmental leaders will have to make choices that consistently and unambiguously demonstrate an interest in strengthening trustworthiness. Those choices may not appear cost-effective in a conventional sense. Moreover, they may disrupt some internal routines as well as some long-standing external relationships. But it is the strong view of the Task Force that DOE stands little chance of strengthening public trust and confidence unless it recognizes that its decision-making behavior will have to change fundamentally.

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[59]See Roger Kasperson *et al.*, "The Social Amplification of Risk: A Conceptual Framework," *Risk Analysis,* 8, (August 1988), pp. 177-187.

5. The legacy of distrust created by the Department's history and culture will continue for a long time to color public reaction to its radioactive waste management efforts. Only a sustained commitment by successive Secretaries of Energy can overcome it.

The term "legacy" is used deliberately; distrust, like the albatross, passes to each new organizational leader and his or her administration. The only open question is whether the burden, passed in turn to the next leader, shall become heavier or lighter. Whereas distrust lingers and adheres, trust is always provisional and transitory. After DOE had done a poor job in explaining the consequences of a very small tritium leak, one senior manager at the Savannah River facility observed, "Decades of responsible interaction have gone by the board; the loss of trust is irreparable." Put starkly, the Department has little slack to draw upon; it cannot count on receiving the benefit of the doubt. These circumstances suggest not only that trust will not be earned overnight but also that policy-makers will have to continually keep its production "high on their screens."

6. Efforts to restore and sustain public trust and confidence cannot simply be appended to on-going activities. There must be a recognition among senior policy-makers and managers that most choices have consequences for institutional trustworthiness.

Whether DOE comes to merit public trust and confidence will ultimately depend not on mechanics but on a sustained commitment to promoting trust and confidence. In many respects, therefore, its challenge to maintain public trust and confidence is analogous to its challenge to demonstrate sensitivity to the environment. Just as few would assert that writing of an impact statement is anything more than a *necessary* step in fulfilling the Department's environmental obligations, simply increasing the opportunities or improving the process for stakeholder involvement is not *sufficient* to increase trustworthiness.

It is widely recognized that the priorities of agency policy-makers are reflected in all of their choices. Importantly, even ostensibly technical questions, such as the diameter of the tunnels used to explore Yucca Mountain or the design of casks for transporting transuranic (TRU) waste from Colorado to New Mexico, have ramifications for public trust and confidence. Are those consequences explicitly evaluated? Do they become part of the deliberations that occur inside the agency? Are agency leaders prepared to forego something of value in exchange for additional institutional trustworthiness? Unless those things happen, perhaps not always but at least frequently enough so as to be visible, the Department's professions of wanting to strengthen trust and confidence will not ring true.

7. The lack of public trust and confidence is not only being recognized by stakeholders as an obstacle to programmatic progress, but it is also being used increasingly as a reason for opposing initiatives that are important to programmatic progress.

For officials of the state of Nevada, DOE's untrustworthiness is a *prima facie* reason for ceasing work immediately on characterizing the Yucca Mountain site. But they are not alone. A group of governors from every state that hosts major complex facilities but one wrote Secretary Watkins shortly after he took office: "The magnitude, history, and nature of the nuclear weapons waste problems make public confidence and acceptance crucial to cleanup success...To win public confidence, the decision-making and review process must be open..."[60] As he vetoed further exploration of whether a monitored retrievable storage facility for commercial radioactive waste should be located in his state, the Governor of Wyoming observed, "Let us not deceive ourselves—we are being invited through continuing study to dance with a 900-pound gorilla...I am absolutely unpersuaded that Wyoming can rely on the assurances we receive from the federal government."[61]

8. Actions taken by any one unit within DOE influence the level of public trust and confidence in other units. That coupling is strong when the effect of the action is to reduce trustworthiness; the coupling is quite weak when the effect of the action is to strengthen trustworthiness.

The Task Force listened to OCRWM managers tell how their efforts to build public trust and confidence have sometimes been compromised by actions taken by EM and other DOE programs. EM leaders related parallel stories. Both program managers were, of course, describing a fact of life: stakeholders rarely distinguish among units within DOE. It is not OCRWM or EM *per se* that has a credibility problem, it is the agency as a whole. Nor, in the Task Force's view, should the public have to make fine distinctions. It is at the Departmental level of leadership where responsibility for sustaining confidence lies.

One reason for that is the asymmetrical coupling among actions taken. Critics of the WIPP project point to events at Yucca Mountain to support the assertion that DOE cannot be trusted to assess objectively the performance of a repository. Or they recall how the Department managed the tank farms at Hanford to underscore their lack of confidence in the agency to move radioactive waste from Fort St. Vrain, Colorado to Idaho. Because those claims have a surface plausibility, they appear to have a real impact. Conversely no one, not even DOE officials, cites successes at Oak Ridge or

[60] Letter to James D. Watkins, April 14, 1989.

[61] Letter to Fremont County Commissioners.

elsewhere as evidence that the Department might in fact be worthy of public trust in managing commercial radioactive waste. It is not out of modesty that such arguments are not made. Rather it is because everyone seems to realize they are not likely to be very compelling.

FINDINGS WITH RESPECT TO ORGANIZATION

1. The behavior of organizations responsible for managing radioactive waste and the results they produce will be far more important in creating or inhibiting public trust and confidence than will be their organizational forms and structures.

Reorganization—either internal shuffling of functions and units or the more drastic shifting of responsibilities to other or new bureaucracies—is often seen as a solution to critical problems that confront the management of radioactive wastes.[62] The Task Force found no persuasive evidence linking any particular organizational form and the maintenance or recovery of institutional trustworthiness.[63]

Furthermore, the Task Force believes that the more extensive any reorganization is, the more uncertain will be its effects. In particular, it is extremely difficult to predict the consequences for behaviors and processes that *are* directly linked to the building of public trust and confidence.[64] The group, therefore, does not see reorganization as either a panacea or as a substitute for the recommendations presented below. Internal reorganizations might be undertaken to signal that the Department values highly the

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[62]The NWPA, for example, sought to elevate the civilian program's visibility and importance by establishing OCRWM, by requiring that its Director be a Senate-confirmed, Presidential appointee, and by making it a direct responsibility of the DOE Secretary. In addition, beginning with a study by one member of the Task Force, recommendations have been put forward for over a decade and a half to remove the civilian program first from the Energy Research and Development Administration and then from its successor agency, the Department of Energy. See Mason Willrich and Richard Lester, *Radioactive Waste: Management and Regulation*, (New York: The Free Press, 1977).

[63]This conclusion differs from that reached by the Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Management Facilities (*Managing Nuclear Waste—A Better Idea* [1984]) and by the Office of Technology Assessment (*Managing the Nation's Commercial High-Level Radioactive Waste* [1985]). Unfortunately, the underlying theoretical and empirical bases for those earlier conclusions were never explicitly articulated. See a paper by Craig Thomas, "AMFM's Corporate Solution for Radioactive Waste Management: Appealing But Inappropriate," included in the companion document, *Compilation of Reports Prepared for the Secretary of Energy Advisory Board Task Force on Radioactive Waste Management*.

[64]See Thomas, "Reorganizing Public Organizations: Alternatives, Objectives, and Evidence," included in the companion document, *Compilation of Reports Prepared for the Secretary of Energy Advisory Board Task Force on Radioactive Waste Management*.

production of trust or to overcome cultural resistance to change. Reorganization, however, is only one possible, but not necessarily essential, ingredient for building public trust and confidence.

It is important to note that, in arriving at this Finding, the Task Force has not examined, nor is it taking any position on, whether some form of reorganization, including removal of some or all of OCRWM's functions from the Department, might be beneficial for *reasons other than* strengthening public trust and confidence. That question goes beyond the group's Terms of Reference. If such a reorganization does occur, however, it could affect how the Task Force's recommendations are carried out. This possibility should be kept in mind in analyzing any such change.

2. The Department currently lacks the institutional capacity to design, implement, and evaluate measures to strengthen public trust and confidence.

Although there is a general recognition within the Department of the importance of strengthening public trust and confidence, the Task Force has been unable to identify any individual or unit that has clear responsibility for securing that end. The panel does not believe that a special "public trust and confidence" organization should be created. In fact, it feels that unless that responsibility is widely dispersed throughout DOE, trustworthiness is not likely to increase. Yet that responsibility cannot be so generalized that it is neither accountable nor effective. Steps need to be taken to incorporate and institutionalize the specialized skills and experiences that are needed to design, implement, and evaluate whatever measures the Secretary chooses to adopt.

3. Because of the Department's extensive use of contractors in carrying out its radioactive waste management activities, any attempt to strengthen public trust and confidence will have to include those individuals in order to be successful.

Overall there is one DOE employee for every seven contractor personnel who work for the Department. The Task Force in its site visits has dealt as often with contractor as it has with federal personnel. Contractors play such key roles as designing and implementing institutional relations programs for the Yucca Mountain Project and public outreach programs at Hanford and Savannah River. As our survey discovered, stakeholders' views of DOE contractors are virtually indistinguishable from their views of the Department as a whole.

Because of this blurring in the roles of employee and contractor, the Task Force feels that any steps taken by the Department to strengthen public trust and confidence will also have to be taken by those it hires. If that fails to happen, broad segments of the public will receive mixed signals, and DOE's efforts to improve trustworthiness will be attenuated.

FINDINGS WITH RESPECT TO OCRWM

1. OCRWM is caught up in a series of interlocking vicious cycles that cross-pressure it and seriously reduce its discretion.

The institutional context within which OCRWM operates has evolved to where it is today because of deliberate choices made by DOE and because of responses by stakeholders who felt that the agency could not be trusted to make and implement its choices properly. As a result of the relatively poor track record of the Department's predecessor organizations, OCRWM has lost over the last ten years a very large portion of its autonomy. Congress adopted legislation that contained quite detailed and prescriptive requirements; EPA and NRC issued standards and regulations specifically designed to limit DOE's discretion in selecting sites; the nuclear industry entered into contracts to protect its interests.

More fundamentally, the ethical, technical, political, and economic bargains discussed above have proven to be contradictory and almost irreconcilable. Conducting sound exploratory studies may set back schedules. Expediting schedules may require less stringent regulations. Exploding costs may foreclose the possibility of addressing concerns about equity. Ignoring equity considerations may increase political opposition. Failing to resolve significant uncertainties may cast doubts on the technology of geologic disposal. Lacking a core mission may increase pressures to temporize and to postpone finding a solution until later generations. And so it goes.

OCRWM has not been able to surmount these interlocking vicious circles. When it has tried to break out of one, it usually got caught up in another. And in the process it discovered a harsh reality: Winning the trust of one segment of the public often involves losing the trust of some other.

2. Although OCRWM has recently placed more emphasis on building public trust and confidence, the program has a relatively constricted view of what is required to restore it.

Over the last two decades, the managers of civilian radioactive waste have shifted slowly but not completely from the language of "public acceptance" to the language of "public trust and confidence." In the 1991 *Draft Mission Plan Amendment*, for example, OCRWM leaders go so far as to state, "In making management, technical, and institutional decisions for the program, we must recognize the importance of public concerns and address the implications for building and maintaining public trust and confidence."[65] In many respects, that statement seems to mark a clear and

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[65] Office of Civilian Radioactive Waste Management, *Draft Mission Plan Amendment*, RW-0316P, (Washington: US Department of Energy, 1991), p. 8.

positive departure from the past, especially when taken with a declaration about the importance of "substantive and early [public] involvement in decision-making."[66] But if one inquires about what specifically the program intends to do differently, the departure is less striking and far-reaching than it appears at first glance. In particular, the overwhelming focus remains on communicating better with interested parties. While OCRWM is certainly correct in believing that effective two-way communication must occur if trust is to be restored, it fails to appreciate how much more will have to be done.

3. Notwithstanding its public statements, OCRWM has not implemented any consistent approach to building public trust and confidence.

The *Draft Mission Plan Amendment* did contain an initiative to establish and convene a Director's Forum for predecisional participation by stakeholders. The Forum met once. But based on informal comments from many who attended, it appears that expectations were largely unsatisfied, and no further meetings are scheduled.[67] Nor have there been other opportunities for predecisional public input. Since the *Draft Amendment's* publication, the program has grappled with such critical issues as strategies for site characterization and philosophies for repository development. To those deliberations, few outsiders were called. As a practical matter, then, it is hard to detect anything beyond marginal changes in how OCRWM interacts with broad segments of the public.

4. Many critical decisions about siting, policy, and technical design have been made in an arena open to few stakeholders. The broader public participated in those choices only formally and with little impact.

DOE and OCRWM, of course, still retain some autonomy over important choices. That discretion was exercised, for example, in picking three sites out of five candidates for extensive characterization, in deciding how much emphasis should be placed on robust engineered waste packages, and in selecting a strategy to develop a repository. In all those instances, as well as others that could have been cited, the choice was made by program managers and policy-makers who consulted closely with few, if any, interested parties. To be sure, public comments were requested in each case. But as a practical matter, the comments received had little effect. The underlying structure of the choice was rarely changed.

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[66] *Draft Mission Plan Amendment*, p. 124.

[67] Among the complaints heard was that the meeting was held in Chicago when it dealt exclusively with a topic that was of greatest concern to the citizens of Nevada and that the format and agenda was decided upon unilaterally by OCRWM. Nonetheless, many of those who appeared before the Task Force supported OCRWM's attempt to bring affected parties together.

5. In making decisions, the implications of the program's actions for public trust and confidence have generally not been considered explicitly.

As noted in the previous section, the choices OCRWM makes have a wide range of impacts. Its actions can, for example, affect the economic health of the nuclear industry, the ease in which a license can be obtained from the NRC, or the performance of a repository. Those same actions can also affect the level of trust and confidence various groups accord the program. Whereas the first three impacts are routinely and systematically analyzed before a decision is made, the fourth is not. That difference likely stems from a combination of factors including OCRWM's narrow conception of what is required to build public trust and confidence and the low priority that objective has traditionally been assigned. But whatever the reason, if program leaders have, at best, only an intuitive understanding, they are not likely to recognize the cumulative effect of their choices on institutional trustworthiness. Nor are they likely to know early on how to compensate should the level begin to fall.

FINDINGS WITH RESPECT TO EM

1. The institutional context surrounding the environmental restoration and defense waste management program especially promotes efforts to build public trust and confidence.

Whether by accident or design, the Task Force believes that EM is operating in a political environment that facilitates rather than hinders efforts to sustain public trust and confidence. Power is distributed to states and tribes who tend to be responsive to a broader range of constituencies than are federal agencies. A relatively open and pluralistic process for making decisions has been mandated by law. And, for the moment at least, program managers are not so completely caught up in vicious cycles that their actions generate or reinforce the impression that a zero-sum game is being played.

Partly because of those more favorable circumstances, EM does not appear to be organizationally defensive. It tries to transform challenges into opportunities. It presumes, for instance, that the regulations it will have to satisfy will become more stringent, and it makes plans accordingly. That operational philosophy can create the flexibility necessary to expand options and permit programmatic adjustments. Without that flexibility, measures essential to building institutional trustworthiness might either be foreclosed or not be viable.

2. With some visible exceptions, the EM program has been sensitive to the public trust and confidence implications of its actions.

Given the institutional context within which it operates, EM really has no alternative but to strive to maintain public trust and confidence. Based on informal discussions with managers at headquarters and in the field, there appears to be widespread recognition of that reality. More significantly, those individuals also seem to appreciate that programmatic choices have a profound effect on institutional trustworthiness. They mentioned a number of instances in which modifications were made to proposed actions so as to improve their credibility.

This does not mean EM will inevitably pick the option that best safeguards its stock of trust and confidence; other considerations can take precedence. One example was the Department's unilateral decision, in early 1992, to miss a milestone connected with Hanford's waste vitrification plant. Although both the state Department of Ecology and the regional EPA eventually agreed to the substance of what DOE proposed, they were upset that the Department failed to use the agreed-upon process for altering schedules. Representatives of both organizations contended that DOE eroded its standing with precisely those parts of the public who had been encouraged by the Department's willingness to negotiate an agreement.

3. EM has established a number of access points that are designed to increase public involvement in its decision-making processes. It is too early to predict whether those mechanisms will end up strengthening or weakening trust and confidence.

Since its formation, EM has acknowledged that members of the public ought to have input into its deliberations. Thus it has convened a Stakeholders' Forum and the State and Tribal Government Working Group to review a number of program documents, especially its rolling *Five Year Plan.* It chartered an advisory committee to review the scope and implementation of the Programmatic Environmental Impact Statement (PEIS). Finally, EM published in 1992 a policy on public participation. Taken together, these efforts represent a serious commitment to consult with affected parties.

EM has also laid out an ambitious and quite comprehensive set of objectives it hopes to achieve as a result of its public involvement activities.[68] Indeed, it appears to be willing to use stakeholder input in ways that go beyond what is required by law. It is asking the many publics to raise issues, question assumptions, and, in effect, become partners in making the program succeed.

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[68]These are summarized in US Department of Energy, *Environmental Restoration and Waste Management Five Year Plan, 1992,* pp. 53-58.

Concerns have been raised that the promise of public involvement has not matched the reality. Examples often mentioned include the way managers responded to criticisms expressed at the Stakeholders' Forum. In addition, at the first meeting of the EM Advisory Committee, the group unanimously requested that a representative from one influential environmental organization be invited to join the panel; that request was not granted. Finally, some have wondered whether the program really was listening to public comments about the Implementation Plan for the PEIS. It appeared that a number of views advanced were dismissed without reason or explanation. Whether EM's good intentions translate into a meaningful process that strengthens institutional trustworthiness remains a question for which no clear answer is yet available.

4. EM has yet to demonstrate that it can sustain public trust and confidence when it grapples with highly contentious issues.

The environmental restoration and defense waste management program is carrying out work in over 100 jurisdictions. Thousands of discrete sites are being assessed; remedial actions are being undertaken; disparate waste streams are being treated and converted into forms suitable for storage and disposal; research is being supported to invent the technologies of the future. In all this activity, EM has not yet encountered issues that strongly polarize the affected parties.

Two issues in particular are likely to arouse considerable controversy: assigning priorities for allocating scarce resources and developing a process for siting new treatment or disposal installations. Each community tends to believe that money spent attending to its problems is money well spent and that it has already borne its fair share of the burden for hosting a noxious facility. By most accounts, DOE historically has not been able to resolve such contentious issues without experiencing a loss of public trust and confidence. Should EM succeed, it would be a signal accomplishment.

5. The EM program increasingly will be at risk of being trapped in vicious cycles that reduce its ability to maintain institutional trustworthiness.

Up until now EM has enjoyed a strong consensus on the need to address a serious national problem and a natural willingness to credit a new undertaking. Those conditions are not likely to last indefinitely. EM may find itself, like many other federal bureaucracies, plagued by insufficient resources, slipped schedules, and overly optimistic projections of technological advances. Pressures may build, in the not too distant future, to find solutions as inexpensively and expeditiously as possible. At that point, the potential increases for vicious cycles to take over.

It was not hard for the Task Force to construct a hypothetical scenario in which legislation passes that constrains state regulatory authority. Extensive use of exclusion

zones could be mandated as well. National clean-up standards could become the ceiling rather than the floor for what is required. At the same time, competing program priorities, both inside or outside the Department, might drain resources and force DOE policy-makers into making choices that transform a "win-win" situation to a zero-sum game. Then EM would find itself operating within a hostile institutional context. Under those circumstances, maintaining trust would be quite difficult. For many, this scenario becomes more likely and less hypothetical as time passes.

ADVICE FROM THE TASK FORCE

In the sections below, the Task Force first lays out the logic that led to the advice. It then presents its recommendations, considers whether they are both necessary and sufficient for sustaining public trust and confidence, and finally advances some suggestions on how to implement them.

UNDERLYING LOGIC

The Task Force regularly asked those who have appeared before it what measures they felt should be taken to strengthen public trust and confidence in the Department of Energy's radioactive waste management programs. A list of those suggestions fills nearly 22 pages. With many of them, the Task Force concurred. For some, however, the link between the action and its putative effect on increasing trust was not immediately apparent. Thus the panel was forced to pose for itself a prior question before it endorsed anything: *on what grounds* does it believe *any* given recommendation will have its expected impact on institutional trustworthiness? It concluded that its advice would have to:[69]

- Be consistent with the first principles that its members brought to the table or that crystallized at it;
- Clearly and positively affect at least one of the conditions that appear to promote institutional trustworthiness;
- Be appropriate for the peculiar institutional context within which the radioactive waste management programs function; and
- Take into account the programs' current status as laid out in the Task Force's Findings.

[69] A "roadmap" linking the recommendations to principles, conditions, context, and status is found in Appendix H.

The individual recommendations that follow could be interpreted as being consistent with simply endorsing current practices or offering marginal changes to the status quo. The Task Force, however, wishes to make clear that its advice should not be properly viewed in that light; the recommendations are not simply choices on a ***menu*** *— something from Column A can be picked to go along with something from Column B; rather they represent the panel's* ***recipe*** *for what the Department should do to strengthen public trust and confidence; put another way, they are threads of roughly comparable importance that make up a fabric. This does not mean that Departmental decision-makers must implement them all or at once; there will clearly be situations when other considerations have to take precedence. But DOE leaders need to realize that unless they commit to changing fundamentally how DOE conducts its business, they will increasingly encounter situations that further erode public trust and confidence. Pursuit of a menu of separate choices versus acceptance of a recipe for integrated basic change is a proper standard for evaluating how the Department responds to the Task Force's advice.*

RECOMMENDATIONS

The Task Force recognizes that some progress has been made in strengthening public trust and confidence. In the Task Force's opinion, whatever improvement has been made is directly tied to recent changes in institutional culture. That changes have occurred and that the efforts of many appear to be rewarded is no cause for complacency however. As the group has observed, trustworthiness is easier to lose than to sustain, let alone gain. It is in that spirit, then, that the Task Force turns to its recommendations.

The recommendations are organized initially into two sets: those that address how DOE should interact with external parties in order to build trust and those that pertain to how the Department should conduct its internal operations in order to build confidence. Within each set, the suggestions are sorted on the basis of whether they are applicable to both waste management programs and, by extension, to the Department as a whole or whether, because of the particular need to recover trust, they are directed towards the civilian waste management program. General design premises or guidelines are introduced first, followed by objectives the Department must realize to strengthen public trust and confidence. For each objective, the Task Force presents a number of specific steps that the DOE's policy-makers should embrace. Measures necessary to sustain trust or confidence are listed first followed by additional measures that are likely to be required to recover trust or confidence. Recommendations that are especially relevant to recovering trust or confidence are designated with (*). The latter are more likely than the former to require greater effort and commitment to implement.

One last observation. The Task Force realizes, of course, that the Department has already undertaken activities that are consistent with some of its recommendations. Although the list is by no means exhaustive, the group regards as quite positive:

- The process OCRWM employed to resolve the technical issue raised by a DOE staff hydrologist concerning the effect of earthquakes on groundwater level at Yucca Mountain;

- DOE's support for the land use planning process at the Hanford Reservation;

- Steps taken to increase public trust and confidence at Rocky Flats and at Oak Ridge;

- DOE's willingness to negotiate and conclude "protocols" with both Nye and Lincoln counties in Nevada;

- The process whereby the Washington State Tri-Party Agreement was renegotiated;

- The decision not to conduct bin tests underground at WIPP;

- The Department's commitment to establish and work closely with site specific advisory boards; and

- The prominent position the building of trust occupies in Secretary O'Leary's vision for DOE.

Indeed, some of these actions were quite influential in shaping the group's thinking and in providing a reality check on the practicality of its advice. In those cases, the panel wishes not only to endorse types of initiatives that were adopted but also to advocate that they be *consistently and widely accepted throughout the relevant programs.* For it is critical that the Department take advantage of the positive lessons it has learned.

DESIGN BASIS FOR INTERACTING WITH EXTERNAL PARTIES

Especially when agencies are the initiators of programs that could be seen as levying more potentially harmful effects than benefits on citizens and communities, agency leaders must give all groups of citizens and their representatives opportunities for involvement and must demonstrate fairness in negotiating the terms of their immediate relationship. In general, the agency should commit itself to:

- Early and continuous involvement of state and/or local advisory groups as well as national advisory bodies on which a broad range of stakeholders (including, but not limited to the nuclear industry, electric utilities, public

utility commissions, potential host and corridor states, communities, and tribes, environmental and public interest groups) are represented. That involvement would be characterized by frequent contact, complete candor, rapid and full response to questions, use of at least some suggestions, and assistance in increasing the technical and oversight skills of the community;

- Carrying out agreements unless modified through an open process established in advance;*

- Consistent and respectful efforts to reach out to state and community leaders and to the general public for the purpose of informing, consulting, and collaborating with them about the technical and operational aspects of Departmental activities;*

- Active, periodic presence of very high level agency leaders making themselves visible and accessible to citizens and their representatives;*

- Unmistakable agency and program residential presence in the locality that contributes its energies to community affairs and pays through appropriate mechanisms its fair share of the tax burden;* and

- Assuring the availability of negotiated benefits for the community along with the resources to affected host and corridor communities that might be needed to detect and respond to unexpected costs.*

SPECIFIC MEASURES AND POLICIES THAT SHOULD BE ADOPTED THROUGHOUT THE DEPARTMENT

1. *To ensure that it can be relied upon, the Department should:*

- Periodically consult with affected parties regarding the status of various commitments, including project target dates and milestones, it has undertaken;

- Establish, as needed, collaborative mechanisms for formally or informally altering the terms of the commitment; and

- Inform affected parties at the earliest possible opportunity when fulfilling those commitments becomes problematic.*

2. *To empower the full range of stakeholders, including host, corridor, and affected communities and tribes and non-governmental organizations, the Department should:*

   - Offer predecisional involvement that includes review of methodology, data validity, and premises underlying analyses;

   - Scrupulously comply with all regulations. Follow an open and clearly explained process for changing regulations or for appealing those that may be administered unfairly;

   - Work with affected parties to create vehicles, such as trust funds and revolving accounts, that will ensure the provision of adequate and predictable resources to oversee waste management programs; and*

   - Organize Safety Review Boards, composed of DOE managers and representatives of stakeholders, that can temporarily suspend operations at a facility for a pre-established set of reasons.† *

3. *To make public involvement a means for creating partnerships, the Department should:*

   - Place greater emphasis on periodic informal consultations and interactions to supplement more formal public meetings, hearings, and updates;

   - When formal processes are used, devise agendas and formats jointly with representatives of stakeholders;

   - Create and rigorously enforce procedures that produce thoughtful and specific responses to public comments.

   - Obtain and use advice from stakeholders about what policy alternatives should be analyzed and evaluated; and*

   - Develop initiatives to ensure that a broad range of stakeholders is involved in the decision-making process beginning at the predecisional stage and continuing through its ultimate implementation.*

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†It is likely that legislation would have to be passed to enable DOE to implement this recommendation.

4. *To ensure that programs speak consistently to stakeholders, the Department should:*

   - Publish on a regular basis, perhaps every six months, a summary of major positions that represent program policy;*

   - Indicate how activities carried out since the last report have been either consistent or inconsistent with those positions; and*

   - Identify, to the maximum extent possible, positions that the program is planning to alter either unilaterally or with the concurrence of other parties. Any changes that affect negotiated milestones should be included as well as any efforts to modify applicable regulatory standards.*

5. *To improve the quality of its interaction with all public stakeholders, the Department should:*

   - Make training in public involvement principles and processes a requirement for managers, supervisors, and technical personnel who might interact with stakeholders;

   - Consult broadly about the design and implementation of such training;

   - Include, at a minimum, in that training consideration of the importance of candor, the implications of choosing various mechanisms, and differences between one and two-way communications;

   - Establish mechanisms to solicit and incorporate feedback from various sectors on the training program's effectiveness;

   - Appoint a senior advisor who would have an oversight and an assessment role in the training programs;

   - Make bonus awards, career advancements, and promotion dependent on successful demonstration of the capability to interact positively with a wide range of sectors in the public; and*

   - Require DOE contractors to conduct equivalent training for their employees. Their performance evaluations and awards should be structured to include contributions to the overall public involvement effort.*

6. *To provide information fully and rapidly, the Department should:*

- Identify and employ the information channels actually used by stakeholders;

- Disseminate without exception information about past practices that may raise questions about potential health, safety, and environmental risks;*

- Invoke the predecisional exemption in the Freedom of Information Act only under exceptional circumstances, which are candidly explained; and*

- Release, on request, any DOE-generated material that has been shared, even informally, with any other non-governmental organization. (Precautions should, of course, be taken to protect legitimate proprietary information.)*

SPECIFIC MEASURES AND POLICIES THAT SHOULD BE ADOPTED BY OCRWM

1. *To empower host, corridor, and affected communities and tribes, and citizen groups, the Department should:* †

- Give the Safety Review Board (mentioned above) the power to decide when a repository should be sealed and when retrievability of the waste is no longer essential; and*

- Permit state, local, and tribal authorities to have a voice in determining the pace at which waste will be shipped to a repository for disposal.*

2. *To make the program a stakeholder in and a contributor to a community that hosts a potential repository, OCRWM should, as formal determinations have been made increasing the likelihood of site suitability:*

- Encourage those working for the program to involve themselves in service to the community by, for example, enriching the general science curriculum of local schools or by increasing the technical skills of local businesses;

- Expand the local presence of key decision-makers so as to ensure greater public access to them;*

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†It is likely that legislation would have to be passed to enable DOE to implement these recommendations.

- Require local residence for all federal employees, contractor personnel, and National Laboratory scientists who spend the majority of their time working on the program;[70]*

- Favor local industries and firms as sources for supplying goods and services to the program; and*

- Obligate the vendors of hardware such as casks to manufacture them as near as possible to any site ultimately chosen for a repository.[†] *

3. *To demonstrate its commitment to taking into account the interests of the citizens of Nevada, OCRWM should:*

- Undertake public and private initiatives to conduct a dialog with state officials;*

- Be quite forthcoming with respect to what it offers but make clear that its goal is agreement on mutual trust- and confidence-building measures;*

- Not condition its willingness to develop mutual trust- and confidence-building measures on the state dropping its opposition to characterizing the Yucca Mountain site; and*

- Enter into discussions with affected and corridor local governments to develop mutual trust- and confidence-building measures regardless of whether or not agreement has yet been reached with the state of Nevada.*

DESIGN BASIS FOR INTERNAL OPERATIONS

When the various segments of the public gain access to programs, they should discover activities taking place within the organization that increase institutional trustworthiness, not decrease it. The higher the potential hazard associated with those activities, the more critical is their proper conduct. In general, the agency should commit itself and require its contractors to:

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[70]Since a repository is likely to be built in a sparsely populated area, the "locality" might be some considerable distance away from the site.

[†]It is likely that legislation would have to be passed to enable DOE to implement this recommendation.

- Maintain a high level of professional and managerial competence, continually honed by rigorous training;

- Establish and meet reasonable technical performance measures and schedule milestones that are dictated by a project's intrinsic scientific requirements;

- Pursue technical options and strategies whose consequences can be most clearly demonstrated to broad segments of the public;[71]*

- Reward honest self-assessment that permits the organization to get ahead of problems by identifying them and airing them and resolving them *before* they are discovered by outsiders;*

- Develop tough internal processes that include stakeholders for reviewing operations and discovering potential and actual errors;* and

- Institutionalize responsibility for promoting and protecting the internal viability of efforts to sustain public trust and confidence throughout the organization.*

SPECIFIC MEASURES AND POLICIES THAT SHOULD BE ADOPTED THROUGHOUT THE DEPARTMENT

1. To make the Department's scientific work even more credible, it should:

- Expand to the maximum extent possible its external independent peer review network to include experts from affected states, localities, and Indian tribes and other countries;*

- Involve stakeholders in the process of selecting external peer reviewers;*

- Jointly design and conduct experiments and share data at the earliest possible time with teams from host, corridor, and affected communities and tribes;*

- Seek authorization for joint auditing of quality assurance programs;*

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[71]The specific rationale for this criteria is laid out in pp. 18-20 above. One well-known example that satisfies the criteria is the robust engineered barriers that the Swedes plan to incorporate in their repository system.

- Be prepared to "bend over backwards" to address and resolve, if possible, plausible scientific arguments that might arise over the life time of the waste management programs;*

- Allow stakeholders to nominate, subject to negotiated preconditions, individuals who would participate in exercises that elicit the expert judgments that are often employed in safety and risk analyses; and*

- Clarify carefully and publicly the reasons when advice from technical overseers, such as the National Academy of Sciences and the Nuclear Waste Technical Review Board, is not accepted.*

2. *To build on the efforts to promote a new culture within the Department, it should:*

- Undertake an assessment to determine to what degree the current incentive structure actually rewards those whose behavior is consistent with the objectives of the emerging culture;

- Develop measures by which improvements or decrements can be objectively charted;

- Disseminate on a systematic basis throughout DOE experientially derived "best practices" for building, sustaining, or recovering public trust and confidence; and

- Consider the deployment of "trust and confidence" teams that would independently evaluate how different units performed.*

3. *To ensure that the public trust and confidence implications of critical Departmental activities have been properly identified and weighed, the Secretary should:*

- Order that any analysis of policy options presented to him/her or to secretarial officers include an explicit assessment of the impact on trust and confidence for various segments of the public;

- Support efforts to increase the objectivity of those assessments over time;

- Require a sound explanation for the recommendation of an option that is

likely to substantially weaken the trust and confidence of any significant segment of the public;

- Publish that explanation along with a plan for mitigating the causes of lower trust and confidence; and

- Review the predicted effects for degree of consistency with actual public reactions. Publicize such reviews both for internal managerial purposes and public understanding.*

4. *To ensure that organizational dysfunctions are not responsible for operational problems that could lead to decreased institutional trustworthiness, the Department should:*

- Devolve greater authority and responsibility to the Field Offices to manage issues that have significant trust and confidence implications at the local level;

- Enhance the connections between policy, program decisions, and budget;

- Determine whether increased organizational redundancy on activities critical to safety is required;

- Maintain sufficient employee technical and managerial capacity to oversee at a rather detailed level contractor activities;

- Support and develop mechanisms to learn from innovations by Field Offices that have increased public trust and confidence;*

- Institute overlapping self-regulatory processes; and*

- Reward the discovery and correction of error.*

5. *To ensure reliable and high-quality technical and programmatic performance, the Department should:*

- Establish incentives for quality work as well as measures of quality;

- Be willing to revise schedules rather than decrease quality;

- Work with affected parties in establishing both the measures of quality and schedules; and

- Adopt technical design and development strategies that most easily demonstrate to an attentive public that uncertainties have been reliably bounded.*

SPECIFIC MEASURES AND POLICIES THAT SHOULD BE ADOPTED BY OCRWM

1. *To acknowledge by deeds that the first-of-a-kind nature of its activities requires special attention to public trust and confidence, OCRWM should:*

   - Aim to design a repository system whose predictable performance exceeds by a substantial margin the standards set up by the regulators;*

   - Adopt a technical strategy that takes into account ways of making performance claims persuasive to broad segments of the public. This might involve the use of multiple, redundant barriers including robust engineered barriers;*

   - Devise a process for characterizing and developing potential repository sites that is sequential, incremental, and specifically designed to learn from and respond to new information;*

   - Leave no room for a mistaken impression to arise that the early site characterization process is in anything other than an exploratory mode; and*

   - Foster a culture that will resolve uncertainties in a manner that places the highest priority on protecting health, safety, and the environment.*

2. *To acknowledge the symbolic and real barriers to trust and confidence that arose when the bargains contained in the NWPA either have collapsed or are on the verge of collapse, OCRWM should:*

   - Support research and development in alternative technological approaches to disposing of radioactive waste;

   - Develop contingency plans should Yucca Mountain prove unsuitable for a repository;

   - Revisit the dual issues of multiple sites and multiple repositories using the opportunity provided by a recently mandated report to Congress;[72]

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[72] Energy Policy Act of 1992, Section 803.

- Emphasize that the primary driving force behind this program is the need to solve a serious national problem; and

- Explore ways of responding to concerns of nuclear utilities that derive from the difficulties the Department has encountered in constructing either central storage facilities or a geologic repository on a timely basis.[†*]

NECESSITY AND SUFFICIENCY

From the start of its deliberations, the Task Force grappled with the following questions: Can any set of recommendations do more than posit *necessary* conditions for strengthening public trust and confidence? Are there any guarantees that if all of them were adopted and implemented in good faith that institutional trustworthiness would increase?

Senior managers from OCRWM in their formal appearances before the panel and in informal conversations with Task Force members and staff were not hesitant to express skepticism that the second question had an affirmative answer. They point to the state of Nevada that appears implacably opposed to even studying Yucca Mountain, to an inherent programmatic tension that seems to promise only increased distrust from one group in exchange for increased trust from another, and to the intervention of outside parties, most notably Congress passing the Nuclear Waste Policy Act Amendments, which have created an institutional context that almost seems purposely designed to stimulate distrust. Those claims cannot be dismissed easily.

The Task Force, however, believes that those vicious cycles that now confront OCRWM were at least in part brought about because of choices DOE leaders consciously made. Indeed, for some, the Amendments Act can be seen not as a climax, but rather as a *denouement* whose climax occurred eighteen months earlier when the process for selecting a site for a second repository was, for all practical purposes, terminated. (Put in that perspective, the case may offer important lessons for EM today.)

But, even so, the Task Force is not prepared to say that its suggestions are *sufficient for increasing institutional trustworthiness*. In the first place, the panel cannot assert in good conscience that it has identified all of the changes that are important for strengthening public trust and confidence in DOE's radioactive waste management programs; there may be some others that it has not contemplated. Second, while the group is convinced that all of its recommendations are useful and important and that every effort must be made to put them *all* into action, it cannot predict with any

[†]It is likely that legislation would have to be passed to enable DOE to implement this recommendation.

certainty the precise consequences of not carrying out one-tenth, one-sixth, or even one-quarter of them. Third, the Task Force recognizes that, regardless of what DOE does, some segments of the public will never accord it much trust and confidence. They are opposed as a matter of principle or tactics to the missions the Department of Energy has either been charged to undertake by Congress or has undertaken on its own discretion. The Task Force, therefore, puts forward its recommendations for another reason. It believes that they probably are a sufficient basis for DOE to show that it is *worthy of trust*. For some stakeholders that showing is of little consequence. For others, it may be too little value bought at too high a price. And for still others, it may be critical.

IMPLEMENTATION OF ADVICE

In many respects, the Task Force has concluded its efforts at a propitious time. Fundamental organizational change is always easier at the outset of a new administration. Secretary O'Leary has launched a number of specific initiatives that, in spirit, are quite consonant with the general approach taken by the Task Force and that provide appropriate vehicles for transforming the group's advice into action. These include a public commitment to undertake an intensive and extensive review of the civilian waste management program as well as a reassessment, in the light of tighter budgets, of the environmental restoration and defense waste mangement program's baseline. Finally, informal accounts and, perhaps more dispassionate, news reports of the Secretary's recent visit to Hanford suggest that opportunities now exist to work collaboratively with stakeholders who have been distrustful of the Department and who have been reluctant to credit its sincerity.

Yet even in this relatively favorable environment, the Task Force realizes that implementation of its recommendations will require sustained and strenuous efforts and may encounter serious obstacles. To the extent the recommendations are perceived as disrupting established bureaucratic and programmatic routines, there will be resistance to change. That resistance may well take the form of assertions that especially those steps needed to restore public trust and confidence are "too time-consuming," "too expensive," or "too problematic" to adopt. Thus the Task Force feels compelled to speak to the question of "practicality."

With a handful of important exceptions, none of the recommendations seem to fall outside of DOE's present discretionary authority.[73] With a handful of exceptions, none of the recommendations involve the expenditure of large sums of money.[74] Indeed, compared to the billions of dollars the OCRWM and EM programs expect to

[73]Those exceptions, however, are key items that either empower affected parties, such as the creation of Safety Review Boards, or require changes in procurement practices, such as specifying where casks must be manufactured. Thus some new legislative authority would have to be sought.

[74]Addressing the concerns of utilities arising from the schedule delays in the federal government's acceptance of spent fuel could postentially be costly.

spend, the direct costs of the Task Force's advice are quite small. While adopting the group's recommendations may cause delays in the short run, it is quite likely that progress will be facilitated in the long run. But undoubtedly any decision to implement the proposals outlined above will require that some trade-offs be made, and undoubtedly some risks may have to be run to empower affected parties with no guarantee that they will pay off. Yet none of the trade-offs strike the Task Force as being so excruciating and none of the risks strike it as being so reckless as to render any specific recommendation "impractical."

In answer to a request contained in its Terms of Reference, the Task Force would like to offer its views on one possible approach that could lead to full and faithful implementation of its advice. The process begins with the Secretary directing the leaders of the OCRWM and EM programs, as well as other relevant Departmental elements such as the head of the Office of Defense Programs and the managers of each Field Office, to prepare within sixty days a response to this *Report*. It would contain, at a minimum, the following assessments for each specific recommendation:[75]

- Will it strengthen public trust and confidence?
- If so, why? If not, why not?
- What, if any, other critical programmatic objectives might be endangered if the recommendation were implemented?
- How might those objectives be otherwise preserved?
- Should the recommendation be accepted by the Secretary?

In addition, the response would document programmatic efforts currently in place to strengthen public trust and confidence. Among the information to be provided are the personnel and fiscal resources expended, performance indicators, and self and external evaluations of those efforts. Finally, the response would outline plans to consult formally and informally with customers and stakeholders on those recommendations that can only be implemented collaboratively. Importantly, the responses should be crafted in light of:

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[75]The Acting Director of OCRWM submitted a detailed set of comments on the December 1992 *Draft Task Force Report*. It is reproduced in Appendix I. The group appreciated this candid response, and it modified some of its advice accordingly. Furthermore, the Task Force was pleased that OCRWM expressed no disagreement with the overwhelming majority of the recommendations. The panel presumes that the civilian program will take steps to implement those proposals not yet been acted upon and that it will make public a detailed and full description of its initiatives in this area.

- The Secretary's oft-articulated interest in providing leadership in building public trust and confidence; and

- The Department's commitment to serving the needs of its customers and stakeholders through Total Quality Management.

Based on the information obtained from the directors of the relevant programs and from the field, from the newly created Communications and Trust Critical Success Factors team, and from the cognizant staff in her own office, the Secretary would issue a statement on her policy for building public trust and confidence. The statement would detail those steps she will take using her discretionary authority. It would also outline an integrated process for involving customers and stakeholders on those issues that require collaboration. Although the Task Force again notes that it advocates a *recipe* as opposed to a *menu,* it believes, as a minimum, that the statement must address the Department's technical credibility, its information dissemination practices, its accountability for commitments, its capacity to assess the implications of its actions for trustworthiness, and its willingness to empower stakeholders. If it fails to do so, the statement is not likely to be taken seriously by many of those who now distrust DOE.

The Task Force understands that adopting many of these measures runs the risk of *increasing* the trust and confidence of one segment of the public at the price of *decreasing* the trust and confidence of another. The group can only offer DOE leaders and managers three suggestions about how to wrestle with that predicament:

- Acknowledge candidly the fact that a choice was made that did weaken trust and confidence of some segment of the public;

- Make certain that no single stakeholder or group of stakeholders has its trust and confidence weakened consistently; and

- Endeavor to find ways of mitigating the situation by paying special attention in the future to those segments whose trust and confidence had been weakened in the past.

Finally, to increase the likelihood of its recommendations being implemented in full and good faith, the Task Force suggests that a number of mechanisms be set in place.

- The actions endorsed by the Secretary would be incorporated into each program's strategic planning process and into its Total Quality Management regime. Appropriate metrics for evaluating performance would have to be developed in consultation with affected stakeholders. Those "publics" would also have to participate in the assessment process.

- Personnel and resources targeted toward the strengthening of public trust and confidence would be identified as part of the the programs' internal budget review. The Secretary might choose to impose a one percent "tax" on the programs. Those proceeds would be redistributed based on both past performance in building trustworthiness as well innovative approaches that could be undertaken in the future.

- Senior managers would be required to establish performance standards in the area of sustaining public trust and confidence. That activity would become part of their job descriptions, and they would be evaluated accordingly.

- An individual reporting directly to the Secretary, such as her deputy, would oversee the implementation of the Task Force's recommendations. That individual would also assess annually the "State of the Department" with respect to institutional trustworthiness. The assessment would rely not only on information generated internally but would also solicit the views of a wide range of customers and stakeholders.

CONCLUSION

The Task Force is sensitive to the fact that its recommendations call for considerably broader changes in institutional culture and behavior in the Department of Energy than have taken place in recent years. This will be a daunting challenge for the leadership and the staff of DOE if only because the Task Force's ideas have never, to its knowledge, been adopted within the federal bureaucracy, and thus, there is little experience upon which to build.

The panel, however, does see in its suggestions to the Department something of a parallel with what generically has recently come to be termed a greater regard for quality among American firms and with efforts to "reinvent government." In both of those movements, which the Secretary enthusiastically endorses, the advocates and designers of a new approach to how business was conducted faced challenges and vast changes in corporate culture that often seemed insurmountable. And it, indeed, took hard work to make those changes, but it did prove feasible and valuable in the end. In hindsight, however, the challenge was not nearly as daunting as it first appeared. This gives us cause for optimism.

The Task Force believes that the changes it advocates will not only reap significant benefits to DOE, but, in a post-Cold War era, they may be less difficult to set in place than anyone currently expects. The group hopes that this prediction will be put to the test.

APPENDIX A:
TASK FORCE MEMBERS

TASK FORCE MEMBERS

DR. TODD LA PORTE --- CHAIRMAN
PROFESSOR, POLITICAL SCIENCE
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MS. BARBARA BERRY
DEPARTMENT OF HEALTH*
STATE OF COLORADO
DENVER, COLORADO

DR. WILLIAM BISHOP
VICE PRESIDENT
DESERT RESEARCH INSTITUTE
LAS VEGAS, NEVADA

MR. WILLIAM EICHBAUM
VICE PRESIDENT
WORLD WILDLIFE FUND
WASHINGTON, DC

MR. ROBERT FRI
PRESIDENT
RESOURCES FOR THE FUTURE
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MS. KRISTINE GEBBIE
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STATE OF WASHINGTON
OLYMPIA, WASHINGTON

DR. DONALD KETTL
PROFESSOR, POLITICAL SCIENCE
UNIVERSITY OF WISCONSIN
MADISON, WISCONSIN

MR. JOHN LANDIS
SENIOR VICE-PRESIDENT
STONE AND WEBSTER
BOSTON, MASSACHUSETTS

MR. DAVID LESTER
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COUNCIL OF ENERGY RESOURCE TRIBES
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MR. GENE LUCERO
PARTNER*
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CHAIRMAN*
FLORIDA PUBLIC SERVICE COMMISSION
TALLAHASSEE, FLORIDA

DR. MAYER ZALD
PROFESSOR, SOCIOLOGY
UNIVERSITY OF MICHIGAN
ANN ARBOR, MICHIGAN

DR. DANIEL METLAY
TASK FORCE DIRECTOR
OFFICE OF THE SECRETARY OF ENERGY ADVISORY BOARD
US DEPARTMENT OF ENERGY

*Position at time of appointment to Task Force.

Robert Fri participated fully in the work of the Task Force through the completion of the December 1992 Draft Report, in which he fully concurs. Subsequently, he became chair of a National Research Council committee to evaluate the technical basis for the health and safety standards at the proposed repository at Yucca Mountain. Thereafter, he did not participate in the meetings or deliberations of the Task Force, but did provide notes to the staff on the Proposed Final Task Force Report. Due to schedule conflicts, Mason Willrich was not able to attend a number of the public meetings. His contributions to the Task Force's deliberations were, therefore, based largely on his previous experience as an observer of the civilian radioactive waste management program.

APPENDIX B:
TERMS OF REFERENCE

TERMS OF REFERENCE
SECRETARY OF ENERGY ADVISORY BOARD
TASK FORCE ON CIVILIAN RADIOACTIVE WASTE MANAGEMENT

STUDY OBJECTIVES

The Department of Energy recognizes that the resolution of outstanding institutional issues, such as access to sites, social and economic impacts, and organizational design, is as critical to the ultimate success of the civilian radioactive waste management program as the resolution of outstanding technical issues. No institutional issue commands as much attention and is as widely regarded as pivotal and far-reaching as the question of public trust and confidence. It is, for example, a common theme in reviews by organizations such as the National Academy of Sciences, the Congressional Office of Technology Assessment, and the Nuclear Waste Technical Review Board.

Although numerous oversight and advisory bodies are examining the technical foundations of the program, there is currently little systematic analysis and guidance on developing the institutional framework for managing radioactive waste in a manner that ensures public trust and confidence. Such analysis and guidance would be helpful not only to the existing policy-making organizations that are conducting many of the program's immediate activities but also in the on-going creation and design of the technical development and operating organizations that will play increasingly critical roles in the program's future. The objective of the Secretary of Energy Advisory Board (SEAB) Task Force of Civilian Radioactive Waste Management is to begin to undertake those institutional analyses and to suggest approaches for establishing public trustworthiness so as to facilitate progress toward the Department's satisfaction of its statutory obligations.

As detailed below, the Task Force should examine what is meant by "public trust and confidence" and describe the conditions that are important for ensuring it. The group should explore what additional steps the program might take to strengthen public trust and confidence in efforts to dispose of radioactive waste. The Task Force should investigate whether attempts to increase public trust and confidence affect other objectives such as timely waste acceptance and cost-effectiveness. Finally, the group should consider how its recommendations and guidance might be implemented.

STUDY OBJECTIVES

THE MEANING OF PUBLIC TRUST AND CONFIDENCE

The phrase "public trust and confidence" is frequently used, but its meaning is rarely articulated with precision. Consequently, misunderstandings among parties with an interest in those ends may arise, and accusations of bad faith may be leveled, leading ironically to reduced trust and confidence. The Task Force should strive to develop a clear understanding of what it means for the radioactive waste management program to have public trust and confidence extended or withheld. The group should then analyze the factors and processes that cause it to be gained, maintained, lost, and reestablished. Among the questions the Task Force should address are:

- Whose trust and confidence is most critical? Why?
- What are the most important factors affecting the level of public trust and confidence in the program?
- What lessons has the program learned from the past? What can be done to build on past successes and avoid past failures?

OPPORTUNITIES OF ENSURING PUBLIC TRUST AND CONFIDENCE

The management of radioactive waste poses a number of challenges, which, in combination, may make the establishment and maintenance of public trust and confidence problematic. Hazardous materials must be processed and transported; the benefits of nuclear power are widely distributed, but many of the costs of waste management are geographically concentrated; political and technical accountability must be sustained over extended periods; a relatively large-scale technological system with a complex institutional infrastructure must be created; some errors may only arise in the far future, and others may be hard to detect. Based on the understanding and insights developed in the first phase of the study and through other means, the Task Force should consider questions such as these:

- How can the challenges that tend to make public trust and confidence in the radioactive waste management program problematic be addressed?
- Under what circumstances, if any, can alternative financial, organizational, and regulatory arrangements for the program promote public trust and confidence?

- Can the organizational structures and processes adopted for similar programs in other nations provide models for increasing the perceived trustworthiness of the U.S. program?

CONSEQUENCES OF ENSURING PUBLIC TRUST AND CONFIDENCE

Actions taken to ensure a significant reservoir of public trust and confidence may affect other program objectives such as the timely acceptance of waste, cost-effectiveness, and confidence in the program's schedule. Those other factors must be taken into account as any long-term implementation plan is developed. If trade-offs between conflicting goals have to be made, it is important that the stakes be clarified and the balancing of advantages and disadvantages of various approaches be done explicitly. To inform choices that will have to be made, the Task Force should investigate these questions:

- To what degree would additional efforts to foster public trust and confidence disrupt established program routines and organizational interactions?

- How would efforts to ensure high levels of public trust and confidence influence the timeliness and the cost of the radioactive waste management program?

- To what extent would initiatives to increase public trust and confidence affect or be affected by the regulatory regime for developing and licensing a repository?

RECOMMENDATIONS

Having assessed alternative approaches for ensuring public trust and confidence and having considered in general terms what the central advantages and disadvantages of each might be, the Task Force should present recommendations to the Secretary of Energy. Included in those recommendations should be guidance on what steps can be taken to implement them. In particular, the Task Force should note which actions can be taken under authority already vested in the Department, which actions require new authority, and which actions depend on the cooperation of other governmental and non-governmental entities.

In pursuing these objectives, the Task Force can

- Obtain the advice of recognized experts in organizational design;

- Examine program decisions and policies over the last decade that have strongly contributed to the current level of public trust and confidence;

- Solicit the views of informed and interested individuals both inside and outside of government;

- Secure information from DOE program offices and contractors that helps identify the characteristics of the policy-making, technical design and development, and operating organizations of the radioactive waste management system.

APPENDIX C:
EXPANSION OF SCOPE

APPENDIX D:
TASK FORCE ACTIVITIES

FIRST MEETING
WASHINGTON, DC
MAY 14, 1991

PURPOSE

To receive and discuss charge from Secretary James D. Watkins

PRESENTATIONS

John Bartlett — Director, Office of Civilian Radioactive Waste Management

Robert Bernero — Director, Office of Nuclear Materials Safety and Safeguards, US Nuclear Regulatory Commission

David Leroy — US Nuclear Waste Negotiator

Loring Mills — Vice President for Nuclear Activities, Edison Electric Institute

D. Warner North — Member, Nuclear Waste Technical Review Board

Dan Reicher — Senior Attorney, Natural Resources Defense Council

PUBLIC COMMENTS

Michael Baughman — Representing Lincoln County, Nevada

Philip Niedzielski-Eichner — Representing Nye County, Nevada

SECOND MEETING
OAKLAND, CALIFORNIA
NOVEMBER 6-7, 1991

PURPOSE

To obtain information about efforts to strengthen public trust and confidence at specific DOE facilities

To hear views of representatives of the State of Nevada and affected counties

PRESENTATIONS

William Adams — Assistant Manager for Environmental Restoration and Waste Management, Oak Ridge Field Office

Hugh Anderson — President, Nevada Nuclear Waste Study Committee

Michael Baughman — Representing Lincoln County, Nevada

Dennis Bechtel — Department of Comprehensive Planning, Clark County, Nevada

Beth Brainard — Director of the Office of Public Affairs, Rocky Flats Field Office

Bruce Church — Assistant Manager for Environment, Safety, and Health, Nevada Field Office

Jack Citrin — Professor, Political Science, University of California, Berkeley

Elgie Holstein — Representing Nye County, Nevada

Ron Izatt — Director, Environmental Restoration Division, Richland Field Office

Robert Loux — Executive Director, Nuclear Waste Projects Office, Nevada

Phil Niedzielski-Eichner — Representing Nye County, Nevada

Vernon Poe — Office of Emergency Management, Mineral County, Nevada

Craig Thomas — Institute of Governmental Studies, University of California, Berkeley

Judy Treichel — Director, Nuclear Waste Task Force

PUBLIC COMMENTS

Jackie Cabasso — Director, Western States Legal Foundation

Joan Donelan — Executive Director, Physicians for Social Responsibility

Michael Franks — Nuclear Waste Coalition

Marla Painter — Executive Director, Rural Alliance for Military Accountability

Jonathan Oldfather — Citizen, Marin County, California

Marc Pilisuk — Professor, School of Public Health, University of California, Berkeley

THIRD MEETING
WASHINGTON, DC
JANUARY 9, 1992

PURPOSE

To obtain information on the environmental restoration and defense waste management program

PRESENTATIONS

Gerald Boyd — Acting Director, Transportation Management Program, Office of Environmental Restoration and Waste Management

Leo Duffy — Assistant Secretary for Environmental Restoration and Waste Management

Mark Frei — Director of Waste Management Projects Division, Office of Environmental Restoration and Waste Management

Tom Isaacs — Director, Office of Strategic Planning and International Programs, Office of Civilian Radioactive Waste Management

Jerry Saltzman — Director, Office of External Relations, Office of Civilian Radioactive Waste Management

Roger Whitfield — Deputy Assistant Secretary for Environmental Restoration

PUBLIC COMMENTS

Dennis Bechtel — Department of Comprehensive Planning, Clark County, Nevada

Ron Callen — Director, Nuclear Waste Programs Assessment Office, National Association of Regulatory Utility Commissioners

Phil Niedzielski-Eichner — Representing Nye County, Nevada

FOURTH MEETING
IRVINE, CALIFORNIA
FEBRUARY 4-5, 1992

PURPOSE

To discuss the results of workshops sponsored by the National Academy of Sciences and the National Academy of Public Administration

ROUND TABLE DISCUSSANTS

John Ahearne — Executive Director, Sigma Xi

George Akin — Major General, US Army (Retired)

Tom Grumbly — President, Clean Sites

Brett Hammond — Vice President, National Academy of Public Administration

Richard Scott — Professor, Department of Sociology, Stanford University

PUBLIC COMMENTS

Dennis Bechtel — Department of Comprehensive Planning, Clark County, Nevada

Ron Callen — Director, Nuclear Waste Programs Assessment Office,
National Association of Regulatory Utility Commissioners

Chuck Lempesis — Chief of Staff, US Nuclear Waste Negotiator Office

Kim Madison — Member, Don't Waste California

John Petterson — Representing Clark County, Nevada

Andrew Tonkovich — Westside SANE/Freeze

SITE VISIT
PROPOSED YUCCA MOUNTAIN REPOSITORY SITE
MAY 1, 1992

PURPOSE

To visit the site where characterization work is underway to determine suitability for constructing a repository

BRIEFINGS RECEIVED

Yucca Mountain Project Office staff and contractors on what the operational demands of a repository might be.

Yucca Mountain Project Office staff and contractors on the scientific investigations being carried on at the site.

FIFTH PUBLIC MEETING
PART ONE
AMARGOSA VALLEY, NEVADA
MAY 1, 1992

PURPOSE

To listen to the views of public residing in the County where Yucca Mountain is located

To receive a formal briefing from the Yucca Mountain Project Office

PRESENTATIONS

Stephen Bradhurst — Representing Nye County, Nevada

Carl Gertz — Associate Director, Office of Geologic Disposal, Office of Civilian Radioactive Waste Management

Juanita Hayes — Nuclear Project Office, Esmeralda County, Nevada

Brad Mettam — Planning Department, Inyo County, California

Barbara Raper — Chairman, Nye County Commissioners

PUBLIC COMMENT

Kenneth Garey — Nye County Yucca Mountain Nuclear Waste Citizens' Advisory Committee

Mike Gilgan — Resident, Nye County

FIFTH MEETING
PART TWO
LAS VEGAS, NEVADA
MAY 2, 1992

PURPOSE

To listen to the views of the people residing in the largest population center in Nevada

To hear from a panel of social scientists on what is know about public trust and confidence in the Department's radioactive waste management activities

PRESENTATIONS

Robert Fulkerson — Executive Director, Citizens Alert

John Haslam — Business Representative, Southern Nevada Building and Construction Trades Council

Robert Loux — Executive Director, Nuclear Waste Projects Office, Nevada

John Madole — Executive Director, Associated General Contractors

David McNelis — Vice President, University of Nevada, Las Vegas

Vernon Poe — Office of Emergency Management, Mineral County, Nevada

Don Schlesinger — Commissioner, Clark County, Nevada

David Solnit — American Peace Test

ROUND TABLE DISCUSSANTS

Ann Bisconti — Vice President for Research, US Council for Energy Awareness

James Flynn — Senior Associate, Decision Research

William Freudenburg — Professor, Department of Rural Sociology, University of Wisconsin — Madison

Ross Hemphill — Research Scientist, Argonne National Laboratory

Hank Jenkins-Smith — Professor, Department of Political Science, University of New Mexico

Alvin Mushkatel — Professor, School of Public Affairs, Arizona State University

Elizabeth Peelle — Research Scientist, Oak Ridge National Laboratory

John Petterson — President, Impact Assessment, Inc.

James Short — Professor, Department of Sociology, Washington State University

Paul Slovic — President, Decision Research

PUBLIC COMMENTS

Bill Andrews — University of Nevada, Las Vegas

Frank Clements — Resident, Boulder City, Nevada

Cynthia of the Desert — Activist

Ron Greene — Earth First

John Loeffler — Phoenix, Arizona

John Stangle — American Peace Test

SITE VISIT
HANFORD RESERVATION
JUNE 15, 1992

PURPOSE

To visit a site with significant environmental restoration and defense waste management activity

BRIEFINGS RECEIVED

Extensive briefings on EM activities at the site by:

DOE project managers
Contractors from
- Westinghouse
- Pacific Northwest Laboratory

SIXTH MEETING
RICHLAND, WASHINGTON
JUNE 16-17, 1992

PURPOSE

To begin discussions on the logic and structure of the Task Force Report

To learn about the origins and implementation of the Tri-Party Agreement

ROUND TABLE DISCUSSANTS

Warren Bishop — Member, Washington State Nuclear Advisory Council

Craig Buchanan — Mayor of Richland Washington

Paul Day — Site Representative at Hanford, Region X, US Environmental Protection Agency

Mike Grainy — Assistant Director, State of Oregon Department of Energy

Ron Izatt — Director, Environmental Restoration Division, Richland Field Office

John Lindsay — President, Tri-City Industrial Development Council

Hank McGuire — Director of Restoration, Westinghouse Hanford Company

Narda Pierce — Washington State Department of Ecology

Gerald Pollett — Executive Director, Heart of America

Bob Quay — Mayor of Kennewick Washington

Dan Silver — Assistant to the Governor, Washington State

Terry Strong — Washington State Department of Health

Robert Whitelatch — Director, Washington State Farm Bureau

John Wagoner — Manager, Richland Field Office

Jim Worthington — Executive Secretary, Central Washington Building Trades Council

PUBLIC COMMENTS

Richard Hammond — Resident, Richland Washington

Russell Jim — Manager, Environmental Waste Management Program, Yakima Indian Nation

Wanda Munn — American Association of Engineering Societies

John Thomas — Benton County Treasurers' Office

James Wilkenson — Project Coordinator, Confederated Tribes of the Umatilla Indian Reservation

SEVENTH MEETING
SAN DIEGO, CALIFORNIA
DECEMBER 10-11, 1992

PURPOSE

To discuss Draft Working Paper of Report

PUBLIC COMMENTS

Jim Firkins — Energy, Minerals, and Natural Resources Department, State of New Mexico

John Gervers — Representing Clark County, Nevada

Juanita Hayes — Nuclear Project Office, Esmeralda County, Nevada

Tom Isaacs — Director, Office of Strategic Planning and International Programs, Office of Civilian Radioactive Waste Management

Harry Kelman — Clark County, Nevada

D. Warner North — Member, Nuclear Waste Technical Review Board

Marla Painter — Executive Director, Rural Alliance for Military Accountability

David Swanson — Senior Vice President, Energy and Environmental Activities, Edison Electric Institute

EIGHTH MEETING
JULY 8, 1993
WASHINGTON, DC

PURPOSE

To review proposed final version of Task Force Report

PUBLIC COMMENTS

Jim Firkins — Energy, Minerals, and Natural Resources Department, State of New Mexico

Mary Olson — Nuclear Information Resources Center

John Gervers — Representing Clark and Esmeralda Counties in Nevada and Inyo County, California

APPENDIX E:
RESEARCH CONDUCTED FOR TASK FORCE

MATERIALS PREPARED FOR THE TASK FORCE

COMMISSIONED PAPERS

George Akin, "Management Lessons Learned in Clean-Up Situations"

Jack Citrin, "Political Trust and Risky Policy"

Frank Dobbin, "Institutional Legitamcy in the Public Sector: A Synopsis of Recent Research"

Thomas Grumbly, "Building Public Trust By Letting Go: The Problem of Institutional Credibility in Turned-Off America"

National Academy of Public Administration, "Recovering Public Trust and Confidence in Managing Radioactive Waste: Summary of Workshop Proceedings"

National Research Council, "Workshop on Establishing Institutional Credibility: Summary of Proceedings"

Dan Reicher, "Gaining Public Trust and Confidence in the US High-Level Nuclear Waste Program"

Mark Suchman, "On the Control of Legitimacy in Organizational Life: Strategic and Institutional Approaches"

Craig Thomas, "Reorganizing Public Organizations: Alternatives, Objectives, and Evidence"

"AM-FM's Corporate Solution for Radioactive Waste Management: Appealing But Inappropriate?"

"Public Trust in Organizations and Institutions: A Sociological Perspective"

ACTIVITIES OF SEAB STAFF IN SUPPORT OF THE TASK FORCE

SITE VISITS

Hanford Reservation
Savannah River Site
Waste Isolation Pilot Plant
Yucca Mountain Site

CASE STUDIES

Development of DOE's Repository Siting Guidelines
Decision to narrow site investigation from five to three locations
Decision to site the Waste Isolation Pilot Plant at Carlsbad, New Mexico
Process leading to the passage of the 1987 Nuclear Waste Policy Act Amendments
Decision to suspend work on the second high-level waste repository
Proposed located of an MRS in Oak Ridge, Tennessee
Early efforts to identify environmental contamination at DOE facilities
Negotiation of the Tri-Party Agreement
Evolution of the Departmental thinking about robust engineered barriers
Development of Quality Assurance procedures for site investigation

SURVEY DESIGN AND ADMINISTRATION

Survey of DOE employees and contractors
Survey of stakeholders

APPENDIX F:
SURVEY RESEARCH

SURVEY RESEARCH

On behalf of the Secretary of Energy Advisory Board (SEAB) Task Force on Radioactive Waste Management, the Social and Economic Sciences Research Center (SESRC) at Washington State University administered a telephone survey. The primary objective of this study was to obtain views and opinions from representatives of organizations who have frequent and direct contact with the Department of Energy's (DOE) radioactive waste management and environmental restoration programs. The Task Force was specifically interested in recommending steps that the Department might stake to strengthen public trust and confidence in the conduct of those activities.

SURVEY ADMINISTRATION

SAMPLE

Stakeholder organizations located throughout the United States who were known to have frequent and direct communication with the DOE or its contractors with regard to the Department's environmental restoration and civilian and defense radioactive waste management programs comprise the population from which a sample was drawn to conduct this study. (Only non-federal and non-contractor organizations were included.)

The listing of representatives from those organizations was compiled, updated, and edited by the Waste Policy Institute and the Center for Survey Research, Virginia Polytechnic Institute and State University, Blacksburg, Virginia. The data base of stakeholders that was created included 949 organizational contacts derived from the following sources: a) organizational representatives appearing on Department of Energy Field Office community relations mailing lists; b) organizational representatives who had commented on the Environmental Restoration and Waste Management Programmatic Environmental Impact Statement; c) organizational representatives who commented on the Environmental Restoration and Waste Management Five-Year Plan; and d) names provided by organizational representatives who were either replacements for themselves or additional representatives of their organizations. In cases where an individual was a representative of two organiza-

tions, they were called to ask which one they wanted to be associated with and whether they could provide an alternative or replacement contact for the other organization. (See Table 1 below.)

The data base contained many local government representatives. If possible, the city manager was chosen as the city representative rather than the mayor. Mayors were included if the city manager was unavailable. The chairman of the county commission was chosen as the county representative. If the chairman was unavailable, a member of the country commission was included. One representative was selected from each of the tribal or Native American organizations listed.

CHANGES TO ORIGINAL SAMPLE DATA BASE	
ORIGINAL SAMPLE	**949**
REPLACEMENT REQUESTS	*-31*
	31
DELETION REQUESTS	*-9*
DUPLICATES REMOVED	*-21*
ADDITION REQUESTS	*22*
FINAL SAMPLE	**941**

Table 1

QUESTIONNAIRE DESIGN

A working group composed of DOE officials initially specified the types of information they hoped the survey would gather. Focus groups were conducted with members of various stakeholder organizations to get their views on: a) what factors influenced public trust and confidence; b) what measures might be adopted by the Department of Energy to increase trustworthiness; c) how public trust and confidence might be conceptualized; and d) the utility of various mechanisms for public involvement. SESRC researchers then developed several drafts of a questionnaire. To keep the instrument to a manageable length, the Working Group selected those questions that were of greatest importance. SESRC sought peer reviews on preliminary questionnaire from stakeholder groups, academic researchers, and private sector polling experts. (The evaluation form sent to the peer reviewers is reproduced in Appendix A of this volume.) The final questionnaire contained a total of 96 items, of which eight

were completely open-ended, seven were semi-structured, and the rest close-ended. (The entire questionnaire and the scripted answers interviewers were to give to questions from the sample are reproduced in Appendix A of this volume.)

SURVEY IMPLEMENTATION

PRETEST: A pretest of the questionnaire was conducted on September 3, 1992. Since few changes were made to the wording of the questions as a result of the pretest, the data obtained at that time was included in the final results.

PRIOR LETTER: Each person in the sample data base was sent a letter announcing the study. This letter explained the purpose of the study and indicated why it was important for respondents to participate. The letter also assured respondents that participation was voluntary and that the information provided would be kept confidential. An enclosure accompanying the letter described the Secretary of Energy Advisory Board Task Force and its objectives. (A copy of the prior letter and the enclosure is reproduced in Appendix A of this volume.)

INTERVIEW PROCEDURES: Interviewers received four hours of interviewer training and four hours of training on the telephone questionnaire on September 8, 1992. Telephone interviews began on September 9, 1992. The average length of interview was 34 minutes. The longest interview conducted was 57 minutes. Up to eight attempts were made on eight separate days, including approximately half of the attempts during morning hours (8:00 AM to 12:59 PM) and half of the attempts in the afternoon (1:00 PM to 5:00 PM) for all time zones in the United States. The last interviews were conducted on October 12, 1992. The calling period spanned 24 business days and 34 calendar days. Respondents were provided the opportunity to reschedule a call if the contact was at an inconvenient time. They could reschedule any time during the day or evening and on any day of the week. Altogether 4,535 phone calls were made during the interview period.

The interviews were conducted out of the Public Opinion Laboratory of the SESRC. The interviewers used the micro-computer assisted telephone interviewing (MATI) facilities to aid in the telephone interview. This system displays questions on a computer monitor from which the interviewer can read the question to the respondent and then enter the response directly into a micro-computer for data storage.

RESPONSE RATES: The response rate obtained for the sample is listed in Table 2 below. Of the 941 representatives in the data base, 340 completed interviews and 11 partially completed interviews were conducted. The cooperation rate (the ratio of the number of completed interviews to the total number of completed plus refused interviews) was 85.0%. The completion rate (the ratio of completed interviews to the total number of potential respondents) was 56.4% The response rates were affected by both the high ineligibility of respondents and by interviewers not being able to reach respondents.

COMPLETION RATE STATISTICS

REPRESENTATIVES OF ORGANIZATIONS

CATAGORY	NUMBER	PERCENT
POTENTIAL RESPONDENTS		
COMPLETE INTERVIEW	340	36.1
PARTIAL COMPLETE	11	1.2
SUB-TOTAL	*351*	*37.3*
REFUSAL	62	6.6
RESPONDENT NOT AVAILABLE	9	1
UNABLE TO REACH AFTER EIGHT ATTEMPTS	170	18
REACHED ANSWERING MACHINE	29	3.1
DEAF, HANDICAPPED, ETC.	1	0.1
SUB-TOTAL	*622*	*66.1*
EXCLUDED FROM SAMPLE		
INELIGIBLE -- LACK OF INVOLVEMENT WITH DOE	271	28.8
NON-WORKING/WRONG TELEPHONE	18	1.9
OTHER ELECTRONIC DEVICE	30	3.2
SUB-TOTAL	*319*	*33.9*
TOTAL	**941**	**100**

Table 2

SURVEY RESULTS

In Table 3 and Table 4 below, information about the survey respondents (N=351) is presented. *(Table 3: Q100 - Q101. Table 4: Q10.)**

COMPOSITION OF SAMPLE

GROUP REPRESENTATIVE	PERCENT
STATE GOVERNMENT	20.51
LOCAL GOVERNMENT	14.81
ENVIRONMENT/PUBLIC INTEREST GROUP	22.79
LABOR UNION	3.13
INDUSTRY/TRADE	4.56
NATIVE AMERICAN	6.84
ENDUCATIONAL/RESEARCH	8.55
OTHER	15.38
MISSING DATA	3.42

Table 3

COMPOSITION OF SAMPLE

PRIMARY PROGRAM INVOLVEMENT	PERCENT
ENVIRONMENTAL RESTORATION/ DEFENSE WASTE MANAGEMENT	47.29
CIVILIAN WASTE MANAGEMENT	18.23
BOTH PROGRAMS	33.05
MISSING DATA	1.42

Table 4

* "Q100- Q101" indicates the questions from which the data reported below are derived. See the survey questionnaire in Appendix A.

The respondents were asked a battery of questions, based on those employed by the Gallup Organization, in order to measure their confidence in selected institutions. Their responses are given in Table 5. *(Table 5: Q23-Q36.)*

CONFIDENCE IN SELECTED INSTITUTIONS

INSTITUTION (RANK)	GREAT DEAL	QUITE A LOT	SOME	VERY LITTLE	DON'T KNOW/ MISSING DATA	MEAN*
	(PERCENT OF RESPONDENTS)					
US MILITARY (2)	21.65	29.91	25.93	17.95	4.56	2.421
NUCLEAR REGULATORY COMMISSION (8)	10.83	23.36	33.05	28.49	4.27	2.827
ORGANIZED RELIGION (6)	11.97	16.81	36.75	23.93	10.54	2.812
DOE FIELD OFFICES (10)	3.99	20.51	39.03	29.34	7.12	3.009
BANKS (5)	4.27	26.78	51.01	13.96	3.99	2.777
NATIONAL ACADEMY OF SCIENCES (1)	27.35	38.75	20.23	4.27	9.39	2.016
DOE HEADQUARTERS (13)	5.98	13.68	38.18	36.47	5.71	3.115
ENVIRONMENTAL PROTECTION AGENCY (7)	4.84	22.79	54.99	14.53	2.85	2.815
NUCLEAR POWER INDUSTRY (12)	7.69	17.09	29.63	41.03	4.56	3.09
CONGRESS (14)	4.27	13.39	45.87	33.33	3.13	3.118
DOE CONTRACTORS (9)	4.27	22.51	34.19	30.77	8.26	2.997
NEWS MEDIA (11)	3.42	16.52	47.58	29.06	3.42	3.059
NATIONAL ENVIRONMENTAL GROUPS (3)	11.68	31.62	30.77	21.65	4.27	2.652
ELECTRIC UTILITIES (4)	7.69	29.91	43.3	15.67	3.42	2.693

**SMALLER = GREATER CONFIDENCE*

Table 5

A principal components factor analysis (pairwise deletion) using a varimax rotation was performed on the fourteen "CONFIDENCE" variables. Three factors having eigenvalues greater than one were extracted. The three factors accounted for nearly 55% of the total variance. The following loadings on one factor were obtained:

- DOE headquarters 0.783
- DOE Field Offices 0.798
- DOE contractors 0.701

Separate factor analyses were performed for state government, local government, and environmental/public interest group representatives. Although these yielded as many as five factors, the three DOE "CONFIDENCE" variables always loaded strongly on a single dimension.

An index measuring overall confidence was therefore constructed by taking the average response to the questions asking about confidence in each of the three elements of DOE. The resulting index was "collapsed" into five equal categories. Individuals with "MISSING DATA" on any of the three questions were coded "MISSING DATA" on the index. Frequency distributions of the collapsed index for the total sample and significant sub-samples are provided in Table 6. Frequency distibutions of the collapsed index by primary programmatic involvement of the respondents are presented in Table 7.

CONFIDENCE IN THE DEPARTMENT OF ENERGY BY GROUP REPRESENTATIVE

GROUP REPRESENTATIVE	VERY LITTLE	MODERATE			GREAT DEAL
	(PERCENT OF RESPONDENTS)				
TOTAL (N=303)	32.32	33.00	20.20	11.79	2.70
STATE GOVERNMENT (N=65)	16.92	46.15	21.54	12.31	3.08
LOCAL GOVERNMENT (N=43)	9.29	39.54	32.55	13.96	4.65
ENVIRONMENTAL/PUBLIC INTEREST GROUP (N=69)	68.12	21.73	5.80	2.90	1.45
LABOR (N=9)	33.33	11.11	11.11	33.33	11.11
INDUSTRY (N=16)	12.51	43.75	37.50	6.25	0.00
EDUCATION/RESEARCH (N=26)	53.85	11.54	26.92	3.85	3.85
NATIVE AMERICAN (N=22)	9.10	40.91	22.73	27.27	0.00

Table 6

A series of agree-disagree questions was asked of the respondents in order to

CONFIDENCE IN THE DEPARTMENT OF ENERGY BY GROUP REPRESENTATIVE

GROUP REPRESENTATIVE	VERY LITTLE		MODERATE		GREAT DEAL
	(PERCENT OF RESPONDENTS)				
ENVIRONMENTAL RESTORATION/ DEFENSE WASTE MANAGEMENT (N=142)	31.69	29.58	25.95	9.86	2.82
CIVILIAN WASTE MANAGEMENT (N=58)	20.89	39.65	18.96	18.96	1.72
BOTH PROGRAMS (N=102)	41.18	32.36	13.72	9.80	2.94

Table 7

A series of agree-disagree questions was asked of the respondents in order to gain additional insight into the attributes they associated with a trustworthy Department of Energy. In Table 8, the frequency distributions (for the entire sample) of that battery of items are presented. *(Table 8: Q47-Q65.)*

Pearson correlation coefficients were calculated between each attribute and the uncollapsed DOE CONFIDENCE INDEX. Table 9 presents their values and ranking for the entire sample and for signficant sub-samples.

As the Task Force's *Final Report* suggests, these correlations do not necessarily imply a "causal relationship" between a particular attitribute and confidence in the Department of Energy. Rather they more likely reveal the meanings the respondents attach to "trust and confidence." Thus, the higher the correlation, the closer cognitively the attribute is to the concept of trustworthiness.

At the time the questionnaire was being developed (Summer 1992), a number of researchers were suggesting that the concept of "trust and confidence" was multi-faceted. Competence, integrity, openness, credibility, consistency, fairness, and caring were among the dimensions proposed. Validated items for measuring each one were not, however, available. Nonetheless, in identifying potential attributes, efforts were made to construct items that might tap each of those proposed dimensions.

A factor analysis (principal components, varimax rotation, pairwise deletion) was performed to determine the attributes' dimensionality. The results were inconclusive. For the total sample, three factors were extracted, with virtually all attributes

ATTRIBUTES OF CONFIDENCE

ATTRIBUTE	STRONGLY AGREE	SOMEWHAT AGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE	DK/ MISSING
	(PERCENT OF RESPONDENTS)				
PROVIDES UNCLASSIFIED INFORMATION	11.41	25.64	27.64	32.19	3.13
DOES THE RIGHT THING	5.41	23.93	28.49	38.75	3.42
NECESSARY SKILLS FOR THE JOB	19.66	38.18	22.22	12.82	7.12
ACTIONS CONSISTENT WITH WORDS	6.55	30.48	27.64	29.91	5.41
TOO INFLUENCED BY POLITICS	42.74	31.62	14.25	5.13	6.27
TELLS THE WHOLE TRUTH	7.12	21.94	28.21	38.46	4.27
IGNORES SCIENTISTS WHO DISAGREE	25.93	26.78	25.64	15.11	6.55
DIFFICULTY EXPLAINING STUDIES	21.08	33.91	17.95	5.71	21.37
GIVES EVEN-HANDED TREATMENT	12.54	33.91	25.07	21.94	6.55
NOT SERIOUS ABOUT COMMITMENTS	18.81	23.08	25.36	24.22	8.55
FIRST CLASS SCIENTISTS	19.94	31.05	21.37	12.82	14.81
DOESN'T ACKNOWLEDGE MISTAKES	35.33	29.91	24.22	5.41	5.13
DISTORTS FACTS	25.36	32.48	19.94	14.81	7.41
DOESN'T EXPLAIN DECISIONS	23.65	41.61	23.08	7.12	4.56
MAKES IMPARTIAL DECISIONS	5.13	21.08	31.62	33.91	8.26
PURSUES RELEVANT STUDIES	9.12	35.61	23.36	14.81	17.09
KEEPS PROMISES	11.41	37.89	23.36	18.81	8.55
LISTENS TO PEOPLE LIKE YOU	24.79	29.63	28.49	12.82	4.27
CHANGES POLICY FOR NO GOOD REASON	14.25	28.49	30.77	9.69	16.81

Table 8

loading on a single dimension. For sub-samples composed of state government, local government, and environmental group representatives, four, five, and four factors were extracted respectively. There was also little consistency across the various samples with respect to which attributes clustered together.

Although it is difficult to identify antecedents to "trust and confidence" in the Department of Energy, at least one consequence is apparent. Respondents were asked whether they agreed or disagreed with the following statement: "It would be better if DOE's radioactive waste management and environmental restoration responsibilities were given to some other organization." Frequency distributions for the entire sample and significant sub-samples are presented in Table 10. *(Table 10: Q93.)*

RELATIONSHIP BETWEEN ATTRIBUTES AND CONFIDENCE IN DOE BY GROUP REPRESENTATIVE

ATTRIBUTE	TOTAL SAMPLE		STATE GOVT		LOCAL GOVT		ENVIR/ PUBLIC INT	
	(PEARSON CORRELATION/RANK)							
PROVIDES UNCLASSIFIED INFORMATION	0.598	8	0.572	10	0.331	9	0.581	5
DOES THE RIGHT THING	0.735	1	0.643	4	0.585	2	0.675	1
NECESSARY SKILLS FOR THE JOB	0.471	16	0.374	18	0.252	12	0.442	10
ACTIONS CONSISTENT WITH WORDS	0.614	7	0.647	2	0.426	3	0.553	7
TOO INFLUENCED BY POLITICS	-0.231	19	-0.286	19	-0.135	18	-0.111	19
TELLS THE WHOLE TRUTH	0.681	2	0.717	1	0.421	5	0.636	2
IGNORES SCIENTISTS WHO DISAGREE	-0.579	9	-0.531	14	-0.157	16	-0.477	9
DIFFICULTY EXPLAINING STUDIES	-0.385	18	-0.451	17	-0.207	14	-0.422	15
GIVES EVEN-HANDED TREATMENT	0.653	4	0.647	2	0.418	6	0.425	13
NOT SERIOUS ABOUT COMMITMENTS	-0.526	13	-0.604	7	-0.149	17	-0.535	8
FIRST CLASS SCIENTISTS	0.468	17	0.509	15	0.349	8	0.436	11
DOESN'T ACKNOWLEDGE MISTAKES	-0.533	11	-0.591	8	-0.172	15	-0.368	16
DISTORTS FACTS	-0.636	5	-0.587	9	-0.271	11	-0.629	3
DOESN'T EXPLAIN DECISIONS	-0.502	15	-0.535	13	-0.296	10	-0.309	17
MAKES IMPARTIAL DECISIONS	0.676	3	0.539	12	0.663	1	0.607	4
PURSUES RELEVANT STUDIES	0.531	12	0.354	11	0.424	4	0.433	12
KEEPS PROMISES	0.629	6	0.638	5	0.091	19	0.576	6
LISTENS TO PEOPLE LIKE YOU	-0.524	14	-0.508	16	-0.251	13	-0.278	18
CHANGES POLICY FOR NO GOOD REASON	-0.549	10	-0.613	6	-0.406	7	-0.423	14

Table 9

Correlation coefficients between the uncollapsed DOE CONFIDENCE INDEX and attitudes toward reorganization were computed. These are presented in Table 11. For the total sample and key sub-samples, the relationship is quite strong: the less an individual has confidence in the Department's waste mangement activities, the more likely that individual is to want to move those efforts to another organization.

ATTITUDES TOWARD REORGANIZING DOE'S WASTE MANAGEMENT ACTIVITIES

SAMPLE	STRONGLY AGREE	SOMEWHAT AGREE	SOMEWHAT DISAGREE	STRONGLY DISAGREE	DK/ MISSING
		(PERCENT OF RESPONDENTS)			
TOTAL SAMPLE	30.21	19.09	21.08	21.37	8.36
GROUP REPRESENTATIVE					
STATE GOVERNMENT	25.01	19.05	22.62	15.48	17.86
LOCAL GOVERNMENT	19.23	9.62	32.69	36.54	1.92
ENVIRONMENTAL/PUBLIC INTEREST GROUP	47.49	22.51	12.51	7.49	10.01
PRIMARY PROGRAM INVOLVEMENT					
ENVIRONMENTAL RESTORATION/ DEFENSE WASTE MANAGEMENT	27.71	19.88	25.91	21.69	4.82
CIVILIAN WASTE MANAGEMENT	31.25	23.44	21.88	20.31	3.13
BOTH PROGRAMS	34.48	16.38	14.66	22.41	12.07

Table 10

RELATIONSHIP BETWEEN CONFIDENCE IN DOE AND ATTITUDES TOWARD REORGANIZING WASTE MANAGEMENT ACTIVITIES

SAMPLE	PEARSON CORRELATION
TOTAL SAMPLE	0.572
GROUP REPRESENTATIVE	
STATE GOVERNMENT	0.608
LOCAL GOVERNMENT	0.409
ENVIRONMENTAL/PUBLIC INTEREST GROUP	0.433
PRIMARY PROGRAM INVOLVEMENT	
ENVIRONMENTAL RESTORATION/ DEFENSE WASTE MANAGEMENT	0.557
CIVILIAN WASTE MANAGEMENT	0.578
BOTH PROGRAMS	0.603

Table 11

Finally, respondents were asked how their level of trust and confidence in the Department of Energy's waste management activities had changed over the previous four years, i.e., since 1988. In general, a significantly larger number of people reported increased trustworthiness than reported decreased trustworthiness. These data are presented in Table 12. *(Table 12: Q43.)*

CHANGE IN RESPONDENTS' LEVEL OF TRUST AND CONFIDENCE

SAMPLE	GREATLY INCREASED	SOMEWHAT INCREASED	STAYED THE SAME	SOMEWHAT DECREASED	GREATLY DECREASED	DK/ MISSING
	(PERCENT OF RESPONDENTS)					
TOTAL SAMPLE	11.11	28.21	30.48	14.53	12.82	2.85
GROUP REPRESENTATIVE						
STATE GOVERNMENT	16.67	21.43	35.71	9.52	8.33	8.33
LOCAL GOVERNMENT	17.31	40.38	21.15	13.46	5.77	1.92
ENVIRONMENTAL/PUBLIC INTEREST GROUP	5.01	17.49	36.25	20.01	21.24	5.01
PRIMARY PROGRAM INVOLVEMENT						
ENVIRONMENTAL RESTORATION/ DEFENSE WASTE MANAGEMENT	11.45	38.55	29.53	12.04	8.32	0.11
CIVILIAN WASTE MANAGEMENT	17.19	20.31	37.51	10.93	10.93	3.14
BOTH PROGRAMS	7.76	18.97	29.31	20.69	20.69	2.59

Table 12

It is intriguing to consider the relationship between a respondent's current level of trust and confidence in the Department of Energy and that individual's assessment of how that level has changed over the last four years. Although there is generally a positive relationship (that is, the more one has trust and confidence now, the greater the improvement), the strength of that relationship varies considerably. The data for the total sample and significant sub-samples are presented in Table 13.

RELATIONSHIP BETWEEN CONFIDENCE IN DOE CURRENTLY AND CHANGE IN CONFIDENCE OVER THE LAST FOUR YEARS

SAMPLE	PEARSON CORRELATION
TOTAL SAMPLE	0.511
GROUP REPRESENTATIVE	
STATE GOVERNMENT	0.532
LOCAL GOVERNMENT	0.181
ENVIRONMENTAL/PUBLIC INTEREST GROUP	0.391
PRIMARY PROGRAM INVOLVEMENT	
ENVIRONMENTAL RESTORATION/ DEFENSE WASTE MANAGEMENT	0.498
CIVILIAN WASTE MANAGEMENT	0.312
BOTH PROGRAMS	0.617

Table 13

APPENDIX G:
LETTER FROM GOVERNOR SULLIVAN

APPENDIX H:
ROAD-MAP FOR RECOMMENDATIONS

ROAD-MAP FOR RECOMMENDATIONS

The Task Force wishes to connect the logic of its analyses with the recommendations it has offered. In the main body of this report, the group observed that its advice, among other things, had to affect clearly and positively at least one of the nine *conditions* (laid out on page 22) that appear to promote institutional trustworthiness. The recommendations also had to take into account the four sets of *findings* (laid out on pages 36-48).

In the tables below, the specific measures and policies proposed by the Task Force are grouped by their objective. The condition(s) that each objective might generally promote and the finding(s) that suggest each objective are detailed. When warranted, additional conditions and findings associated with particular proposals are listed as well. Those specific recommendations will also, of course, reflect both the group's understanding (based on testimony, analysis, and theory) of the institutional context and history of the Department and the OCRWM program.

KEY TO TABLES

C3 refers to the third bulleted condition;
C4 refers to the fourth bulleted condition; etc.

GEN6 = General Finding 6; etc.
ORG1 = Organizational Finding; etc.
RW4 = OCRWM Finding; etc.
EM2 = EM Finding; etc.

INTERACTION WITH EXTERNAL PARTIES: DEPARTMENT-WIDE		
OBJECTIVES	CONDITIONS	FINDINGS
RELIABILITY	*C4, C5, C6, C7*	*GEN3, GEN5, RW1, EM5*
CONSULT	C2	RW4
COLLABORATIVE MECHANISMS	C3	GEN7, RW2
INFORM	C1	GEN4
EMPOWER STAKEHOLDER	*C3, C5, C6*	*GEN4, GEN6, RW2, RW4, EM3*
PRE-DECISION INVOLVEMENT	C2	GEN5
COMPLY WITH REGULATIONS	C1	RW5, EM1
ENSURE RESOURCES	C7	---
ORGANIZE REVIEW BOARDS	C7	---
CREATE PARTNERSHIPS	*C2, C3, C5*	*GEN3, GEN6, RW2, EM3*
INFORMAL CONSULTATIONS	C1	RW3
JOINT AGENDA AND FORMAT	---	---
SPECIFIC RESPONSES	C1	RW4
ADVICE ON ALTERNATIVES	C6	RW4, EM1
FULL INVOLVEMENT	---	RW4
SPEAK CONSISTENTLY	*C1, C4, C7*	*GEN3, GEN5, GEN8*
PUBLISH POSITIONS	---	---
COMPARE ACTIONS WITH POSITION	C8	---
IDENTIFY POSITION CHANGES	---	---
QUALITY OF INTERACTION	*C1, C2, C4*	*GEN4, GEN6, ORG2*
TRAINING REQUIREMENT	---	---
CONSULT ON TRAINING	---	---
IMPORTANCE OF CANDOR	---	GEN5
OVERSIGHT OF TRAINING	---	GEN8
REWARDS FOR GOOD INTERACTION	---	---
EQUIVALENT CONTRACTOR TRAINING	---	ORG3
PROVIDE INFORMATION	*C1, C2, C4*	*GEN2, GEN3*
IDENTIFY INFORMATION CHANNELS	---	---
DISSEMINATE ALL PAST ES&H INFO	---	GEN5
DECLINE TO USE FOIA EXEMPTION	---	GEN5
RELEASE SHARED DOE INFORMATION	---	---

Table 1

INTERACTION WITH EXTERNAL PARTIES:
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

OBJECTIVES	CONDITIONS	FINDINGS
EMPOWER STAKEHOLDERS	*C1, C3, C5*	*GEN4, GEN5, GEN6, RW2, RW4, RW5*
PACE OF REPOSITORY SEALING AND RETREIVABILITY	---	---
PACE OF WASTE SHIPMENTS	---	---
BECOME STAKEHOLDER IN COMMUNITY	*C1, C4, C7*	*GEN4, GEN5, GEN6, RW2*
SERVICE	---	---
PRESENCE OF DECISION-MAKERS	---	---
LOCAL RESIDENCE OF PROGRAM PERSONNEL	---	---
FAVOR LOCAL SERVICE INDUSTRIES	---	---
FAVOR LOCAL MANUFACTURERS	---	---
TAKE INTO ACCOUNT NEVADA'S INTERESTS	*C2, C4*	*RW4, RW5*
DIALOG WITH STATE	---	---
CONFIDENCE-BUILDING MEASURES WITH STATE	---	---
NO PRECONDITIONS	---	---
CONFIDENCE-BUILDING WITH AFFECTED LOCALITIES	---	---

Table 2

INTERNAL OPERATIONS: DEPARTMENT-WIDE		
OBJECTIVES	CONDITIONS	FINDINGS
CREDIBLE SCIENTIFIC WORK	*C8*	*GEN3, GEN5, GEN8*
INDEPENDENT PEER REVIEW	---	---
STAKEHOLDER SELECT REVIEWERS	C1, C4	---
JOINT DESIGN OF EXPERIMENTS	C1, C2, C4	---
JOINT QA AUDITING	C1, C2, C4	---
PUSH TO RESOLVE DISPUTES	---	---
BROAD EXPERT JUDGMENT	C1, C2, C4	---
CANDOR WITH EXTERNAL OVERSEERS	---	---
BUILD NEW CULTURE IN DOE	*C9*	*GEN2, GEN4, GEN8, ORG1, ORG3*
RESTRUCTURE INCENTIVES	---	---
DEVELOP METRICS	---	RW3
DISSEMINATE BEST PRACTICES	---	----
TRUST AND CONFIDENCE TEAMS	---	GEN6
IDENTIFY IMPACT OF ACTIONS ON TRUSTWORHINESS	*C1, C4, C6*	*ORG2*
EXPLICIT ASSESSMENT	---	RW5, EM2
OBJECTIVE ASSESSMENT	---	RW5
EXPLAIN CHOICE TO REDUCE TRUST	---	---
MITIGATE WHEN TRUST IS REDUCED	---	---
MONITOR ACCURACY OF ASSESSMENTS	---	RW3
REMOVE ORGANIZATIONAL DYSFUNCTIONS	*C9*	*GEN3, GEN5, GEN8, ORG1*
DEVOLVE RESPONSIBILITY TO FIELD	C1	---
ENHANCE CONNECTION BETWEEN POLICY AND PROGRAMMATIC DECISIONS	C4, C6	---
CAPACITY TO OVERSEE CONTRACTORS	---	---
LEARN FROM INNOVATIONS	C4	ORG2
OVERLAPPING SELF-REGULATORY PROCESS	---	---
ERROR CORRECTION	---	---
RELIABLE TECHNICAL PERFORMANCE	*C9*	*GEN3, GEN5, GEN8*
TOTAL QUALITY MANAGEMENT	---	---
REVISE SCHEDULES WHEN APPROPRIATE	C6	RW1
WORK WITH AFFECTED PARTIES ON MEASURES OF QUALITY AND SCHEDULES	C2, C3	---
CLEAR STRATEGIES FOR MANAGING UNCERTAINTY	C6	---

Table 3

INTERNAL OPERATIONS: OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT		
OBJECTIVES	CONDITIONS	FINDINGS
FIRST-OF-KIND ACTIVITIES	*C2, C5, C6, C7, C8*	*GEN3, GEN5, GEN6, RW4*
SUBSTANTIAL PERFORMANCE MARGIN	---	GEN4
PERSUASIVE PERFORMANCE CLAIMS	---	---
INCREMENTAL REPOSITORY DEVELOPMENT	---	RW1
CHARACTERIZATION IS EXPLORATORY	---	RW1
CONSERVATIVE RESOLUTION OF UNCERTAINTY	---	GEN4
COMPENSATE FOR BREAKDOWN OF NWPA BARGAINS	*C1, C2, C3, C5, C6, C7*	*GEN3, GEN4, GEN5, GEN6, RW1, RW4*
ALTERNATIVE TECHNOLOGICAL APPROACHES	C8	---
CONTINGENCY PLANS	C8	---
MULTIPLE SITE AND REPOSITORIES	---	---
SOLUTION TO SERIOUS ENVIRONMENTAL PROBLEM	---	---
RESPOND TO INTERIM STORAGE CONCERNS	---	---
Table 4		

APPENDIX I:
RESPONSE FROM OCRWM