REDESIGNING THE U.S. HIGH LEVEL NUCLEAR WASTE DISPOSAL PROGRAM FOR EFFECTIVE MANAGEMENT

PREPARED BY THE
NUCLEAR WASTE STRATEGY COALITION

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NUCLEAR WASTE STRATEGY COALITION

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This proposal was prepared by Mike McCarthy and Ronald C. Callen on behalf of the Nuclear Waste Strategy Coalition. Its purpose is to facilitate discussion among Coalition members, potential members, and others leading to necessary corrective actions. Comments are welcome and may be directed to Judy Poferl, NWSC Administrator, Suite 200, 121 7th Place East, St. Paul, Minnesota 55101-2145.

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EXECUTIVE SUMMARY

BACKGROUND

The Nuclear Waste Strategy Coalition was established in response to the lack of progress by the U.S. Department of Energy's (DOE) Office of Civilian Radioactive Waste Management (OCRWM). Consisting of state regulators, utility executives, and Attorney General representatives, the Coalition advocates solutions to our nation's high-level radioactive waste problem. The Coalition's mission is to ensure the timely development of a cost-effective, safe, environmentally sound system for permanent disposal of high-level radioactive waste. To support this, the Coalition established a committee in October, 1993, to explore alternatives to the present nuclear waste disposal program to achieve effective project and fiscal management.

At the Coalition's January, 1994, meeting, the committee presented its assessment of the OCRWM program's problems, their causes, and solutions, as well as a preliminary draft proposal for a federal corporation as an alternative organizational structure. A work plan was affirmed leading to presentation of more fully developed proposal at the Coalition's April, 1994, meeting. The Coalition completed this proposal through its Legislative Alternatives Committee and accepted the Committee's report at the August 1994 Coalition meeting.

PROBLEMS, CAUSES, AND SOLUTIONS

The Coalition researched key references reviewing the OCRWM program and relevant case studies of other federal programs. Summaries of these key references are presented in this report's appendices. From these references, and extensive discussions with reference authors and authoritics, the Coalition defined program problems, causes, and solutions. The Coalition found five critical problems prevent timely and cost-effective progress by OCRWM. These are:

- The public and other stakeholders lack confidence in the program and distrust DOE.
- Expenses are excessively high for parts of the program and perhaps throughout.
- There are repeated and continuing schedule lapses.
- Contractor management is poor.
- The Congressional appropriations process obstructs deployment of Nuclear Waste Fund dollars while failing to ensure expenditures are prudent.

Although some factors outside of DOE-OCRWM contribute to delays and inefficiency, the primary cause is a failure of program management due to structural flaws in program organization and incentives. The present program structure fundamentally encourages complexity, growth, and process, and discourages meeting milestones on schedule and within budget. It is not surprising that capable and well intentioned personnel fail to succeed in such a situation, and will continue to do so until the organization and its incentives are changed.

The Coalition defined characteristics of an effective program and assessed several organizational structures to see how they might best introduce such characteristics.

ORGANIZATIONAL ALTERNATIVES CONSIDERED

The Coalition explored alternatives to the 12-year history of troubled operations at OCRWM from the premise that there will be no significant change in program outcome without significant change in organizational structure. On this basis, the Coalition did not include the present OCRWM structure among the alternatives offering the prospect of significant change in mission focus, incentives, or management. All alternatives to OCRWM require amending the Nuclear Waste Policy Act of 1982 (NWPA) as amended in 1987.

Two categories of alternatives were examined. The first category includes administrations and independent commissions within the Executive Branch of the federal government. An administration (e.g., Bonneville Power) or an independent commission (e.g., Federal Energy Regulatory Commission) is the most similar to the present structure. Although still part of the Executive Branch, or even located within DOE, such organizations would have some increased budgetary independence and mission focus but would remain part of the federal agency process. Advantages associated with this approach would be access to department resources and credibility associated with the government's guardianship of public health and safety.

Federally chartered corporations comprise the second category of alternatives. Federal corporations may be wholly government owned (e.g., Tennessee Valley Authority), privately owned (e.g., Consolidated Rail Corporation), or of mixed ownership (e.g., Federal Deposit Insurance Corporation). Advantages associated with this approach are freedom from the federal bureaucracy, flexibility and incentives for cost-effectiveness.

RECOMMENDED FEDERAL CORPORATION

A wholly government owned, federally chartered corporation is the alternative structure favored by the Coalition. This organization would have most of the flexibility of a private business, including financial flexibility and the same opportunity to hire and fire personnel and provide compensation as in the private sector. A Board of Directors would govern the corporation, providing policy guidance and fiscal control.

Board members would serve part time, 5 year terms, upon Presidential appointment. A Chief Executive Officer would be hired by the Board to provide full time management of day-to-day activity.

The Coalition recommends that the corporation be funded directly from the Nuclear Waste Fund (NWF), removing the program and NWF from the federal unified budget process. The corporation would prepare an annual public report to Congress, states, and Indian tribes outlining its activities, accomplishments, failures, delays, plans, and expenditures. An independent accounting firm would examine its annual financial statement and system of controls. Every 5 years, a private management assessment firm would conduct a management and operations audit with the results accompanying that year's financial report. All records would be open to the Congress, the General Accounting Office, Office of Management and Budget, U.S. Nuclear Waste Technical Review Board and the public.

This alternative structure provides mission focus by removing the disposal program from a department with larger projects competing for resources. It will focus both authority to make decisions and related responsibility. The program will have increased credibility by ending its association with the nation's nuclear weapons programs and the DOE. Credibility will be further enhanced by avoiding the perceived temptation to compromise public interests for profit, as could be the case in privately owned corporations. Private sector personnel and accounting practices introduce incentives for success (and punishments for failure) directly affecting project participants.

REDESIGNING THE U.S. NUCLEAR WASTE PROGRAM FOR EFFECTIVE MANAGEMENT

(1.0) INTRODUCTION

The U.S. program for permanent nuclear waste disposal requires effective, not simply improved, project and fiscal management. Effective management requires authority to enforce fiscal prudence through funding authority. Performance must have direct consequences on project participants. The program presently administered by the DOE Office of Civilian Radioactive Waste Management (OCRWM) is not structured to achieve effective management or fiscal control.

The primary cause of delays and inefficiency is a failure of OCRWM program management due to structural flaws in program organization and incentives. The present program structure fundamentally encourages complexity, growth, and process, and discourages meeting milestones on schedule and within budget. It is not surprising that capable and well intentioned personnel fail to succeed in such a situation and will continue to do so until the organization and its incentives are changed.

This proposal was prepared by the Nuclear Waste Strategy Coalition to facilitate discussion among its members, potential members, and others leading to necessary corrective actions by the Congress in a timely manner.

The Coalition formed a committee in October, 1993, to review alternative organizational structures and recommend an alternative to the present high level radioactive waste disposal program structure. At the Coalition's January, 1994, meeting, the committee presented: 1) a draft assessment of the federal program's problems, causes, and solutions; 2) a draft proposal for a federally chartered corporation as an alternative organizational structure; and 3) a proposed work plan. The Coalition affirmed the committee's work plan leading to presentation of a more fully developed proposal at the Coalition's April, 1994, meeting. The Coalition completed this proposal through its newly formed Legislative Alternatives Committee during the summer of 1994 and accepted this report at its August 1994 Coalition meeting.

(2.0) THE NEED FOR CHANGE

(2.1) OCRWM's History Of Failure

Highly radioactive spent nuclear fuel now waits at over 70 U.S. nuclear power plant sites for permanent storage. Failure to remove this waste and provide for its timely, safe, and cost-effective long-term storage will ultimately create an environmental problem and end the use of nuclear power, presently providing a fifth of the nation's electric energy. It will also burden electric ratepayers with additional costs.

The nation has attempted to deal with this issue for more than four decades. After discussions that involved many parties, Congress passed the Nuclear Waste Policy Act of 1982 and the Amendments Act of 1987 to provide the road map and means to safe, permanent storage of spent nuclear fuel by 1998. Unfortunately, the path to success was not as direct as the Acts' authors thought. As acknowledged in recent DOE letters, it has become clear that the present program will not be a successful effort. [1]

The OCRWM's progress toward fulfilling its legal mandate to remove nuclear waste from nuclear power plants and dispose of it has been dismal. The federal government has charged the nation's electricity consumers more than $10 billion to fund the Nuclear Waste Fund. About $4 billion has been spent from the Fund to date. Even with the large expenditure and reserve, virtually no progress has been made toward establishing either interim storage or disposal. Deadlines continue to slip into the indefinite future. As shown in Exhibit 1, the expected opening of a repository continues to grow farther away. During the past 23 years, the program schedule has slipped by up to 43 years. The situation is intolerable. Only a significant change to program structure and management responsibility can create the incentives necessary for a different outcome.[2]

It is time to reexamine the administrative, technical, and fiscal assumptions that have led us full circle to where we began over a decade ago. A new path must be chosen to ensure that we do not find ourselves back in the same place once again, years from now, and billions of dollars poorer.

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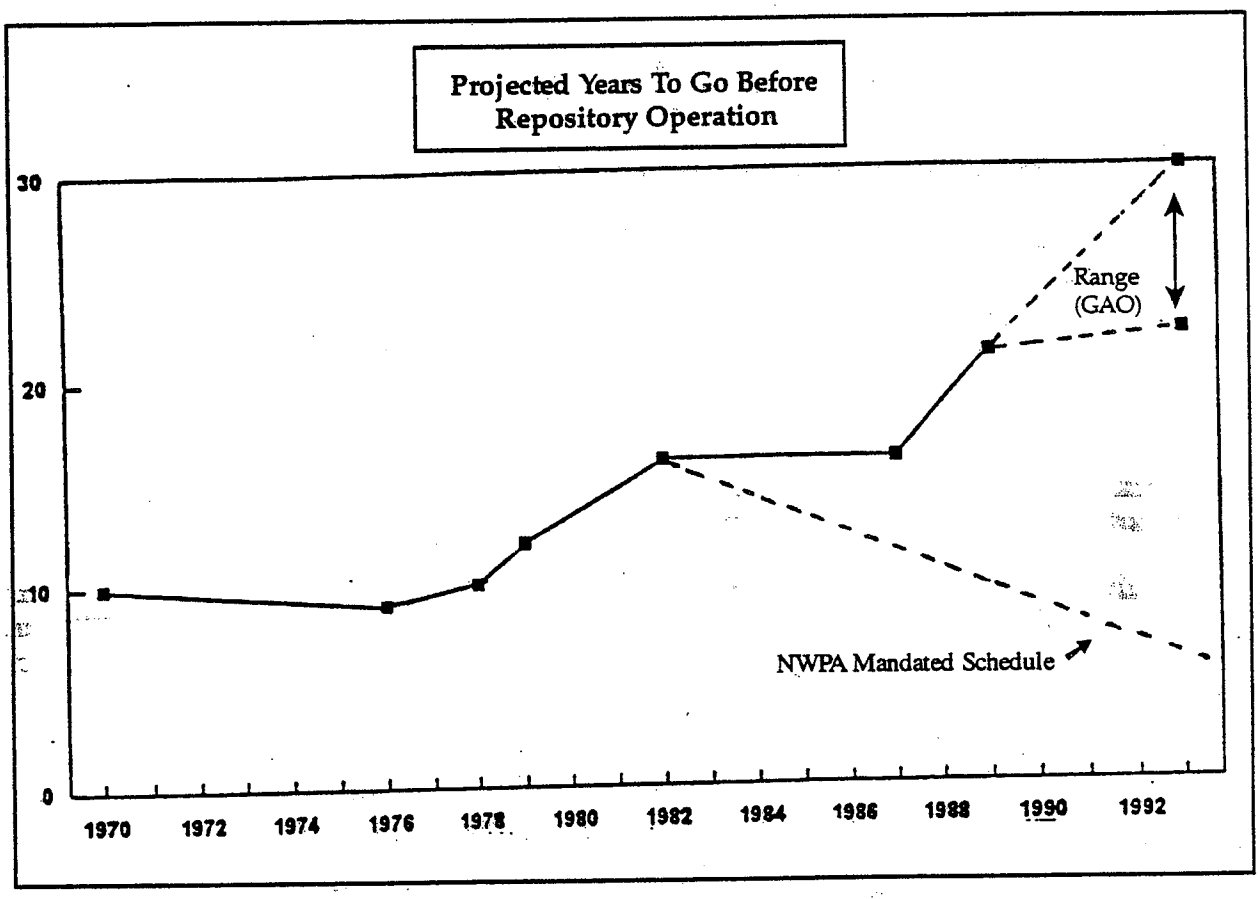
1 DOE-OCRWM Director Daniel A. Dreyfus asserted in a December 23, 1993 letter to the Coalition that the DOE does not have a "clear legal obligation" to accept spent fuel beginning in 1998 absent an operating facility. DOE has indicated that the earliest date that it will have an operational permanent repository is 2010 and has all but abandoned its interim storage program. On June 20, 1994, thirty-seven state agencies and Attorney General Offices from twenty-six states filed suit in the District of Columbia Circuit Court of Appeals seeking enforcement of the federal government's obligation under the Nuclear Waste Policy Act.

2 In 1982, the OTA recommended creation of an independent organization with a board of directors to implement the nation's nuclear waste program. Managing Commercial High-Level Waste, U.S. Office of Technology Assessment, OTA-O-172, April ,1982. (Appendix C-1) Three years later, OTA reiterated its recommendations. Managing the Nation's Commercial High Level Nuclear Waste, U.S. Office of Technology Assessment, OTA-0-171, March, 1985. (Appendix C-2) In 1993 U.S. Government Accounting Office cited the DOE for continuing and widespread management neglect, lack of accountability, and domination by contractors. Management Problems Require a Long-Term Commitment to Change, U.S. Government Accounting Office, GAO/RCED-93-72, August, 1993. (Appendix C-3) That same year, the U.S. Nuclear Waste Technical Review Board (TRB) called for a thorough review of program management and organization. Special Report to the Congress and the Secretary of Energy, U.S. Nuclear Waste Technical Review Board, March, 1993. (Appendix C-4)

Exhibit No. 1

PROGRESS IN NUCLEAR WASTE DISPOSAL



Conclusion: In 1970, U.S. was 10 years away from a repository, i.e., 1980. In 1993, we may be 33 years away, i.e., 2023. So in 23 years, the disposal program schedule has slipped by up to 43 years.

Source: Amended after Dr. Daniel Metlay's Secretary of Energy Advisory Board Report, January 1994. (See Appendix C-7)

REFERENCES FOR THE GRAPH

1970 Letter, Glen T. Seaborg, Chairman, U.S. Atomic Energy Commission to Senator Frank Church, June 9, 1970

1976 Robert Fri, Deputy Administrator, U.S. Energy Research and Development Administration, to President Gerald Ford, "Nuclear Policy Review," 9-7-76

1978 Report on Task Force for Review of Nuclear Waste Management, DOE/ER-0004 (Draft), John Deutch, 2-78

1979 Report to the President, TID-28817, Interagency Review Group on Nuclear Waste Management, p. 52

1982 Nuclear Waste Policy Act of 1982 (P.L. 97-245)

1987 Mission Plan for the Civilian Radioactive Waste Management Program, DOE/RW-0005

1989 Report to the Congress on Reassessment of the Civilian Radioactive Waste Management Program. U.S. Department of Energy, November 1989

1993 Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties, GAO/RCED-93-124, May, 1993

(2.2) Program Problems, Causes And Solutions

The OCRWM typically attributes program delays to causes outside of its control. Although some factors outside of OCRWM have contributed to delays and inefficiency, the primary cause is a failure of program management. Five critical problems prevent timely and cost effective progress by the present program.

- The public and other stakeholders lack confidence in the program and distrust DOE.
- Expenses are excessively high for parts of the program, and perhaps throughout.
- There are repeated and continuing schedule lapses.
- Contractor management is poor.
- The Congressional appropriations process obstructs deployment of Nuclear Waste Fund dollars while failing to ensure expenditures are prudent.

Recognition of these problems is not new.[3] This proposal's appendices present extensive documentation of both the program's problems and DOE's failure to correct them over long periods of time. What is new is an emerging consensus that these problems result from structural flaws in program organization and incentives.[4] The present program structure fundamentally encourages complexity, growth and process, and discourages meeting milestones on schedule and within budget. It is not surprising that capable and well intentioned personnel fail to succeed in such a situation, and will continue to do so until the organization and its incentives are changed. To make these changes, we must first recognize the causes of these five critical problems and determine their solutions.

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3 Extensive criticism over the most recent five year period of the program is reviewed in Report on Selected Published Works and Written Comments Regarding the Office of Civilian Radioactive Waste Management Program, 1989-1993, Dr. James Thurber, December 1993. (Appendix C-5)

4 In 1977, Willrich and Lester concluded that the then existing program would be unworkable. They recommended "a national Radioactive Waste Authority be established as a federally chartered public corporation." Radioactive Waste: Management and Regulation, Mason Willrich and Richard K. Lester, The Free Press, New York, 1977. Structural flaws were recognized by the Office of Technology Assessment in 1982 and 1985, and in 1984 by the DOE Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities. These fundamental problems have been ignored and continue. (See Appendices C-1, C-2, and C-6.) Managing Commercial High-level Waste, U.S. Office of Technology Assessment, OTA-0-172, April, 1982. Managing the Nation's Commercial High-level Nuclear Waste, U.S. Office of Technology Assessment, OTA-0-171, March, 1985. Managing Nuclear Waste—A Better Idea: Report to the U.S. Secretary of Energy, Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities., December 1984.

Confidence

The public and other stakeholders lack confidence in the present federal radioactive waste program.[5]

Cause: The civilian radioactive waste program is a low priority program at DOE owing to its relatively small size, long term extent, and distant payoff. DOE's annual program to clean up weapons facilities is 15 times larger than the civilian radioactive waste disposal program. The nuclear weapons facilities cleanup alone is $5 billion annually with total cost estimates by DOE rising from $300 billion in 1993 to $600 million in 1994.[6] Nuclear weapons account for over half of all DOE programs and up to two thirds of DOE expenditures. Even within the radioactive waste program, the low priority accorded preparations for a permanent repository is indicated by DOE's failure to request funds for scheduled work.[7]

Solution: Create a new organization with a single-purpose, mission-oriented focus on civilian radioactive waste disposal. This would greatly reduce the chance that organizational resources and attention would be diverted to other, competing missions.

Cause: DOE's culture of secrecy surrounding its nuclear weapons program, its abysmal record of defense weapons site contamination, and its broken promises in cleanup, breed distrust of the process and outcome among many of the stakeholders and the public.[8]

Solution: Separate the civilian high-level radioactive waste disposal program from the government entity responsible for nuclear weapons and related cleanup activities.

Cause: Some perceive DOE's mission to provide a repository for civilian radioactive waste simply as an extension of DOE's designated responsibility to promote nuclear power supply as an energy source.

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5 The Secretary of Energy Advisory Board observed in 1994 that there is a justifiable and "widespread lack of trust in DOE's radioactive waste management program ..." The Board also concluded that DOE currently "lacks the institutional capacity to ... strengthen public trust and confidence." Final Report of the Task Force on Radioactive Waste Management, Secretary of Energy Advisory Board, January, 1994. (Appendix C-7) In a striking parallel to OCRWM's program, DOE's Environmental Remediation Program also faces failure for lack of support unless it can gain credibility and stakeholder confidence. Committee to Review Risk Management in the DOE's Environmental Remediation Program, National Academy of Science, 1994. (Appendix C-8)

6 Report by the Spent Fuel Working Group, Task Force on Reactor Irradiated Nuclear Materials, November 1993. (Appendix C-9) Management of DOE Programs, Ronald C. Callen, July, 1994. (Appendix C-10.) Nuclear Waste News, Vol. 14 No. 24, June 16, 1994. "A 200 Billion Scandal", U.S. News & World Report, December 14, 1992.

7 Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties, U.S. Government Accounting Office, GAO/RCED-93-124, May, 1993. (Appendix C-11.)

8 Committee to Review Risk Management in the DOE's Environmental Remediation Program, National Academy of Science, 1994. (Appendix C-8.)

Solution: Separate the civilian high-level radioactive waste disposal program from DOE.

Cause: DOE has demonstrated little progress and little commitment to ensure timely, cost effective progress. DOE's overall organizational structure cannot provide the incentives to program participants to be cost effective and innovative.

Solution: Create a federal entity structured to provide such incentives. On-time, on-budget performance would develop confidence.

Cause: Congress has shown little willingness to commit the time and resources to ensure timely, cost effective progress.[9]

Solution: Remove the Nuclear Waste Fund from the unified budget process (i.e., take it off budget). This will relieve Congress of directly overseeing a politically unpopular activity, although ultimate congressional authority would be retained. This can be done incrementally so as to not violate the Budget Reconciliation Act constraints.

Expenses

Expenses are excessively high for parts of the program, and perhaps throughout. Excessive overhead costs have especially been criticized.[10] Expenses to date exceed $4 billion. In 1987, DOE estimated costs to characterize Yucca Mountain to be $200 million. Five years later it estimated the costs to be $6,300 million – a 31.5 fold increase. Stated differently, DOE's estimated site characterization costs doubled each and every year for five straight years.[11]

Cause: DOE and its contractors have a direct incentive to raise costs. None of the direct participants pay for the program, are financially harmed by increasing costs or are financially rewarded for cost containment. For contractors, higher costs expand the program and their ability to increase both revenues and profits. For DOE, bigger, more complicated and costly programs expand personal authority. For research scientists and engineers, the program becomes a source for studies that enhance careers.[12]

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9 For example, Congress has not protested either time DOE unilaterally changed the Congressionally required repository opening date. Letter Report to the Congress on Reassessment of the Civilian Radioactive Waste Program, U.S. DOE, Nov. 89 (Appendix C-13).

10 Underground Exploration and Testing at Yucca Mountain, U.S. Nuclear Waste Technical Review Board, October 1993. (Appendix C-12) Report on Selected Published and Written Comments Regarding the Office of Civilian Radioactive Waste Management Program, 1989-1993, Dr. James Thurber, December, 1993. (Appendix C-6.)

11 Management of DOE Programs, Ronald C. Callen, July, 1994. (Appendix C-10.)

12 For example, increased management layers, contractors, and costs occurred under the Yucca Mountain M&O contract designed to achieve the opposite results. Audits of Costs and Management of the Yucca Mountain Project, DOE Inspector General, DOE/IG-0351, June, 1994. (Appendix C-14.) DOE also ignored its Inspector

Solution: The party that plans, directs, and conducts elements of the program needs to receive quick financial rewards for success and punishment for failure.

Cause: Delayed and errant program activity. DOE failed to prepare and operate an effective mission plan as required in the NWPA. Plans that were developed did not anticipate contingencies and lapsed into irrelevance. Subsequent activity often was not timely or failed to incorporate new information. Decisions made without adequate information in turn drive further disruptions and cost escalation.[13]

Solution: Program management must have incentives to prepare adequate long range plans, continually develop contingency plans and respond to new information including feedback from relevant outside parties. Contracts must provide for contingencies. (Private industry underground mining exploration and development contracts may provide a model of incremental investments in information and development under uncertain geologic conditions.)

Repeated And Continuing Schedule Lapses

The NWPA of 1982 set forth a schedule specifying waste acceptance for disposal beginning in 1998. DOE's 1985 Mission Plan reflected this, but DOE's 1987 Draft Mission Plan Amendment unilaterally delayed the repository opening date by 5 years.[14] DOE extended it to a 12 year delay in 1989, again with tacit Congressional approval.[15] Now in its twelfth year, DOE's program is at least 12 years behind schedule.

Cause: Lack of annual appropriations from Congress to fund work at a schedule to meet milestones (Congress splits NWF collections, keeping about 60 percent to fund other debt).

Solutions: Remove the Nuclear Waste Fund from the unified budget process (i.e., take it off budget). This will relieve the Congress of the continuing burden of funding a politically unpopular activity.[16]

General's early warnings of similar problems that occurred in the cask development program. Report on Follow-up of the Cask Development Program, DOE Inspector General, DOE/IG-0345, March, 1994. (Appendix C-15.)

13 Underground Exploration and Testing at Yucca Mountain. U.S. Nuclear Waste Technical Review Board, October, 1993. (Appendix C-12)

14 Mission Plan for the Civilian Radioactive Waste Management Program, U.S.-DOE, DOE/RW-0005, 1987.

15 Report to the Congress on Reassessment of the Civilian radioactive Waste Management Program, US Department of Energy, November 1989. (Appendix C-16.)

16 Additional funding absent creation of effective management will not advance the program. Letter Report to Congress and the Secretary of Energy, U.S. Nuclear Waste Technical Review Board, February, 1994. (Appendix C-13) Task Force on an Alternative Strategy, U.S. Department of Energy, March 31, 1993. (Appendix C-17)

Cause: Repeated work and unexpected changes in work plans. Repeated work is expensive, time consuming, and creates the perception of an inability to perform competently. There is no financial consequence for either good or bad performance, i.e., payment is made for process, not for results. Some suspect imprudence regarding the approximately $4 billion already spent.[17]

Solutions: A relevant controlling Mission Plan and Work Plan must be in place and support achieving a well defined outcome. Timely, financial quality control incentives are needed. Contingency planning must anticipate changes using scenario analysis. Incentives must drive information gathering, reassessments, and innovation. Contractors must have financial exposure to losses resulting from mistakes, rather than being financially rewarded for fixing their own mistakes.

Poor Contractor Management

Eighty-five percent of the program's annual expenses go to contractors. Excessive amounts go for administrative work instead of the science and engineering of preparing for waste disposal.

Cause: DOE officials have the incentive to expand their program size and importance by adding contractors and expanding their budget.[18]

Solution: Change incentives to financially reward decision makers for program success and financially punish them for failure. Such incentives would require an organizational structure different from that at DOE.

Cause: DOE officials may lack the technical and managerial expertise to adequately oversee this complex, one-of-a-kind program.[19] Like most government administrative agencies, DOE is primarily designed and staffed to meet repetitive tasks.

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17 For example, Report on Follow-up of the Cask Development Program, DOE Inspector General, DOE/IG-0345, March, 1994. (Appendix C-15.)

18 In 1989 DOE's Waste Management Office added a ten-year, $100 million per year contract to the Yucca Mountain program for a Management and Operations coordinating contractor. DOE's Inspector General recommended against it. In 1994 the IG confirmed this billion dollar contract only added another management layer, failed to reduce the number of participants as planned, and raised costs. Audit of Costs and Management of the Yucca Mountain Project, DOE Inspector General, Report DOE/IG-0351, June, 1994. (Appendix C-14.) The DOE itself noted that the Yucca Mountain Site Characterization Plan simply provided contractors a $6.3 billion laundry list of possible studies having no prioritization. Task Force on Alternative Strategy, U.S. Department of Energy, March 31, 1993. (Appendix C-17) The GAO again expressed grave concerns over DOE's ineffective program management in a July 27, 1994 letter from Victor S. Rezendes. (Appendix C-18.)

19 Management Problems Require a Long-Term Commitment to Change, US Government Accounting Office, GAO/RCED-93-72, August, 1993. (Appendix C-3.)

Solution: Provide an organizational structure with the ability to add and subtract staff with special expertise as tasks change. Include in this organizational structure both the financial rewards to draw the required staff and encourage innovation, and the financial risks and oversight to encourage cost containment.

Congressional Appropriations

The congressional appropriations process obstructs effective deployment of Nuclear Waste Fund dollars for their intended purposes while failing to ensure expenditures are prudent. In the annual unified budget process, Congress uses unspent NWF dollars (presently near $4 billion) as a partial offset to the federal debt. Effectively, fees are collected from ratepayers to fund only utility waste disposal, but Congress diverts 50 percent for other budget purposes.

Cause: Congress has a conflict of interest in making appropriations from the NWF, given the members' desire to spend money on more popular programs and the legal limits of deficit spending imposed by the Gramm-Rudman and budget reconciliation acts. Annual budget battles pit the OCRWM against all other DOE programs. Release of the NWF to a unique location or under special consideration through the budget process would set a precedent for other similarly used special purpose accounts (e.g., the Airport Fund).

Solution: Remove the Nuclear Waste Fund from the unified budget process, i.e., take it off budget. This will relieve the Congress of the continuing burden of administering a politically unpopular activity and provide political cover for members who might otherwise be seen as ganging up on one of their own.

Cause: Ineffective oversight of funds allocated by Congress is due to the incentive for Congress to ignore its problems, its limited direct authority over agencies in the Executive branch, DOE's freedom to ignore programmatic advice from others (including from Congress itself), and perverse incentives inherent to a program run within the bureaucracy of a cabinet level, multi-mission agency (e.g., pitting OCRWM funding against other programs has resulted in too little money requested to do scheduled work.) [20]

Solution: Establish a new federal entity, separate from DOE, to implement the nation's civilian radioactive waste disposal program. Assign the new entity the single mission of providing safe, effective, and timely disposal of high-level civilian radioactive waste. Structure the new organization to provide financial incentives and disincentives to participants based on outcomes (versus the present "process" funding approach). Incentives/disincentives should encourage program participants to seek out and incorporate expert advice and to develop sufficient public confidence and support to

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20 Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties, GAO/RCED-93-124, May, 1993. (Appendix C-11.)

prevent mistrust itself from becoming an obstacle to program success. Importantly, provide management the authority to act on these incentives. Fund directly through the Nuclear Waste Fund, avoiding the need for annual congressional appropriations.

(3.0) CHARACTERISTICS OF AN EFFECTIVE PROGRAM

The Coalition next considered the organizational characteristics that would facilitate an effective radioactive waste disposal program.[21] Characteristics that should be reflected in the nation's nuclear waste management organization include:

1) A single mission of providing a cost effective, safe, environmentally sound repository for permanent disposal of high-level nuclear waste.

2) Authority to make and keep programmatic commitments (including funding).

3) Financial accountability.

4) A governing board of directors with the power to raise and allocate funds and to hire and fire the organization's president.

5) Funding directly from the Nuclear Waste Fund (separate from federal unified budget process, that is, "off budget").

6) Internal flexibility to allocate resources, including the ability to hire and fire.

7) Accessibility and responsiveness to stakeholders, including a willingness and authority to negotiate and resolve conflicts.

8) A stable and continuous process.

9) Stakeholder participation on the governing board of directors, including utility executives from companies presently under contract with the DOE for Nuclear Waste Fund payments.

10) Freedom from political micro-management.

11) Demonstrative technical excellence.

12) Part of the federal government.

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[21] Discussion among Coalition members drew heavily from related discussion in the 1984 report Managing Nuclear Waste--A Better Idea, by the Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities. (Appendix C-6)

13) Credibility with stakeholders (schedules, cost estimates, analysis and reports perceived as objective and realistic).

14) Conformance with nuclear safety, environmental and other federal regulations.

These characteristics are necessary to properly address the problems, causes, and solutions previously identified, while at the same time assuring environmental care and safe operation. The key question is how to create an organization that will incorporate most or all of these characteristics.

(4.0) ORGANIZATIONAL ALTERNATIVES CONSIDERED

The Coalition assessed several organizational structures for their ability to incorporate the characteristics of an effective program previously described.[22] Based on 12 years of DOE management history, we explored alternatives to the OCRWM structure from the premise that there will be no significant change in program outcome without significant change in program organization, management, and incentives. On this basis the Coalition did not include the present OCRWM structure among the alternatives offering the prospect of significant change in mission focus, incentives, or management. All alternatives to OCRWM structure require amending the Nuclear Waste Policy Act.

The Coalition explored two categories of alternatives. The first category includes administrations and independent commissions within the Executive Branch of the federal government. An administration or an independent commission is most similar to the present OCRWM structure. Although still part of the Executive Branch, or even located within the DOE, such organizations would have some increased budgetary independence and mission focus but remain part of the federal agency process. Advantages associated with this approach have been access to department resources and public credibility associated with the government's guardianship of public health and safety.

Federally chartered corporations comprise the second category of alternatives. Federal corporations may be wholly government owned, privately owned or of mixed ownership. Advantages associated with this approach have been freedom from the federal bureaucracy, flexibility and cost-effectiveness. The remainder of this chapter discusses each approach.

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22 Section 4.0 draws from concepts outlined in Appendices C-6, C-19 and C-20. Managing Nuclear Waste--A Better Idea: Report to the U.S. Secretary of Energy, Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste Facilities., December 1984. Report on the Program to Remove Air Traffic Control from the FAA, Robert W. Poole, Jr., 1994. A Study of Government Corporations, Susan S. Lee, Federal Aviation Administration, September 24, 1993.

(4.1) Administration Within an Agency

Description

A nuclear waste management administration within a Cabinet department could be created by Congress. Such an administration would report to an assistant secretary. Civil service employees would staff an administration under leadership of political appointees. Employees would operate under the rules of the Office of Personnel Management and be paid according to the General Schedule and other applicable federal pay scales. Department staff in other units may be relied upon to staff certain administration functions. An administration may have some additional independence, although policy decisions still would be subject to approval by the Cabinet secretary. The Bonneville Power Administration is an example of such an entity.

An administration's budget outlays and revenues could be a separate section of the department's budget within the unified federal budget. Financial planning may be independent of the department which includes the administration. An administration could have less direct oversight by the Department than other Departmental units, but be subject to direct Congressional and OMB oversight through the Congressional budget process but entirely separate from the Department that includes the administration.

Assessment

This organizational alternative faces most of the problems OCRWM does in the siting, construction, and operating phases. There would be little change in mission focus or operating incentives as compared to OCRWM. It continues to be subject to the Department's political agenda. Given the longevity of federal agencies, it does offer some long-term custodial advantage over corporate or privatized options for a post closure repository.

(4.2) Independent Commission Within an Agency

Description

An independent commission would have broad policy authority and it may or may not be located within a Cabinet department. It would assume from OCRWM full authority over management of civilian high-level radioactive waste. Created by Congress, an independent commission would be headed by a group of commissioners who set policies based on majority vote. The commission would be headed by an odd number of commissioners (typically 5 or 7) holding staggered, multi-year terms. Commissioners would be appointed by the President with Senate consent, with the President designating the chair. Commissioners are usually eligible for reappointment, sometimes represent particular constituencies and may be selected to represent a specified partisan political position. The Federal Energy Regulatory Commission (FERC) is an example of such an independent commission located within DOE.

Commission staff are generally civil servants, operating under the rules of the Office of Personnel Management and paid according to the General Schedule and other applicable federal pay scales.

Financial arrangements for an independent nuclear waste commission would be similar to OCRWM's, although it would be much preferable that the Nuclear Waste Fund not be part of the annual appropriations process. The Nuclear Waste Fund and waste management contracts with nuclear utilities would be transferred to the commission. It would have its own budget and latitude in the allocation of funds. The budget could be subject to Congressional and OMB approval much as it is for OCRWM.

Advisory groups could be used to augment an independent nuclear waste commission structure. A Cost-Effectiveness Board could be concerned solely with the commission's cost-effectiveness. As with all other organizational options, the present U.S. Nuclear Waste Technical Review Board could continue to help assure technical excellence. Boards such as these could provide periodic reports to the commission, President, and the Congress.

Assessment

An independent commission structure provides improved mission focus since it would not be subject to intra-department competition for resources. It would be better able than OCRWM to balance political accountability and independence. It would provide stability, financial accountability, and ease of transition from OCRWM.

A major disadvantage is that an independent commission does not offer the incentives for cost-effectiveness found in government owned corporations or privatized options. Operating under Civil Service personnel rules hamper the commission's ability to attract and retain critical expertise or to efficiently redeploy resources. Consequently, the independent commission alternative fails to provide sufficient incentives and flexibility necessary to improve cost-effectiveness, contractor management, and adherence to the work plan.

(4.3) Government Chartered Corporations

Government corporations are federally chartered entities that conduct revenue producing, potentially self-sustaining, business-type activities of national importance.[23] There are presently 39 federal corporations with substantial variation in their specific characteristics.

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[23] Section 4.3 relies substantially on A Study of Government Corporations, Susan S. Lee, for the Federal Aviation Administration, September 24, 1993. (Appendix C-20)

There are 3 general types of government corporations:

- Wholly-owned government corporations pursue a government mission that is defined in enabling legislation. It may be financed by appropriations. Its assets are owned by the Government and controlled by board members, by an administrator appointed by the President, or by a department. (E.g., Tennessee Valley Authority).

- Mixed-Ownership Corporations have both government and private equity. Board members may be selected by the President, by private stockholders, or by both. (E.g., Federal Deposit Insurance Corporation; National Railroad Passenger Corporation -- AMTRAK).

- Private Corporations are established by federal statute but are privately owned and financed. All board members are chosen by stockholders. (E.g., Consolidated Rail Corporation-- CONRAIL).

A government corporation is justified when:

- Users, rather than taxpayers, are expected to pay a major share of the cost of providing goods and services.

- The public's need for the goods or services are not adequately provided by private corporations. Government corporations typically do not compete with commercially available services.

- The government is dealing with the public as a businessman, insurer, or banker, and not as a sovereign entity.

- Those services or goods are judged by the Congress and the President to be of national importance.

Federal corporations may be off-budget, on-budget, or partly on and partly off. Federal funds appropriated to the Postal Service by the Congress are on-budget while postal revenue, receipts, and operating expenditures are off-budget. Many wholly-owned government corporations are subject to position ceilings, while mixed-ownership and private corporations often are not.

Government corporations can be independent of Executive Branch departments or part of one. Nearly all existing government corporations are governed by a Board of Directors to whom a Chief Executive Officer reports. Government corporations develop their own accounting system, conforming to practices of the private sector.[24]

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[24] Appendix A contrasts federal corporations for agencies and revolving funds. Placement, governance, accounting, and financial management of federal corporations is also described.

(4.3.1) Wholly Government Owned Federal Corporation Description

As more fully described in section 5 of this paper, the Coalition's preferred alternative to OCRWM is a form of wholly owned federal corporation. This corporation would be wholly owned by the Federal Government, chartered as a public corporation with no equity apportionment.

As a federal corporation, this alternative organization would be an entity legally independent of the United States Government. Characteristic of federally chartered corporations, the wholly owned federal corporation would be governed by a Board of Directors appointed by the President. The board would select the Chief Executive Officer who would be responsible for the daily operations of the corporation. The organization would have most of the flexibility of a private business, including financial flexibility and the same opportunity to hire and fire personnel and provide compensation as in the private sector. One or more advisory groups such as the Technical Review Board, a financial review board or citizen's board, would augment this option.

The charter would transfer the revenue flow, administration, and accountability of the Nuclear Waste Fund from the DOE to the corporation. The wholly owned federal corporation would be subject to external audit, and Congressional oversight through energy, environment and government oversight committee hearings and legislation. Openness would be assured through fully open records, frequent reports, and public information exchange via advisory boards and Congressional review.

Assessment

The wholly owned federal corporation introduces a strong business orientation and structure that would encourage cost-effectiveness and timely completion of tasks. It introduces internal flexibility including the use of private sector personnel practices and multi-year budgets. It would be largely free from political influence, increasing program credibility and providing policy stability. This alternative would have a strong mission focus.

The corporation would have almost complete managerial and financial authority over the program. It would be responsible for the collection and distribution of Nuclear Waste Fund revenues. It would also have the ability to raise short term capital from a variety of sources in the amounts and times required.

A corporate structure, augmented with advisory boards, would provide substantial access by stakeholders without diffusing responsibility for the corporation's actions. This enhances both accountability and credibility. Credibility is also enhanced by remaining wholly government owned since there would be no perceived conflict between program quality and profit incentives.

These characteristics make the wholly owned federal corporation well suited to all phases of the nuclear waste management program.

(4.3.2) Government Corporation With Private Ownership Description

Government corporations including private ownership can be partly, or wholly privately owned.[25] Mixed ownership federal corporations have stock, with some stock held by the government and some held by private parties. The government typically maintains majority ownership of partially private corporations. Wholly private corporations may take the form of a utility, with related oversight, or of a largely unregulated private business. Seats on the board of such federal corporations are usually apportioned to reflect stock ownership.

Assessment

The addition of private stockholders increases the incentives for cost-effectiveness and program progress. These incentives would be further reinforced if parties holding nuclear waste were among the investors. However, the strength of these incentives could undermine the corporation's credibility if the public doubts the corporation's diligence in protecting the environment, and public health and safety. Oversight by federal agencies would counterbalance this concern, perhaps substantially. Nonetheless, credibility is likely to be less than for the wholly owned federal corporation. This could jeopardize the corporation's ability to site a facility.

(5.0) RECOMMENDED FEDERAL CORPORATION

(5.1) Organizational Structure

Charter

The Coalition recommends creation of a federally chartered corporation with the single mission to remove high-level nuclear waste from civilian reactors and provide for its permanent disposal. The corporation would be wholly owned by the Federal Government, chartered as a public corporation with no equity apportionment. The charter would transfer the revenue flow, administration, and accountability of the Nuclear Waste Fund from the DOE to the corporation. The organization it would oversee would have most of the flexibility of a private business, including financial flexibility and the same opportunity to hire and fire personnel and provide compensation as in the private sector.

The corporation could sue and be sued within the ordinary framework of corporate law and would be subject to regulatory oversight by the Nuclear Regulatory Commission (NRC), Environmental Protection Agency (EPA), and other appropriate federal agencies as defined by law.

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[25] Organizational alternatives involving private ownership are developed in further detail in Appendix A.

Board Of Directors

Establish a Board of Directors to govern the corporation from stakeholder parties with parties holding civilian high-level nuclear waste having substantial representation. The President would appoint Board members, subject to Congressional confirmation. The Board would function like the Board of a private corporation. Other than the CEO, all Board positions would be part time. Seven directors would serve staggered 5 year terms with no limitation on reappointments. One director would be designated as the Chairman for a 5 year term.

The Board would have independent capability to seek and assess advice from the TRB, GAO, Congress, states, its own contractors and others of its choosing. Advice independent of the CEO would assure the Board would not be dependent on the CEO alone for information.

Chief Executive Officer

A full time Chief Executive Officer (CEO) would be appointed by the Board to serve at its pleasure and to be an ex officio member of the Board. The Board would set the CEO's compensation, providing adequate incentives tied to management performance. The CEO would manage the corporation under general policy guidance and review from the Board. The CEO, with Board approval, would have authority to select top managers, establish management structure, set personnel policies, and produce a long range Mission Plan with quarterly objectives against which performance would be measured. He/she would have responsibility and authority over the corporation's day-to-day activities, including the hiring, firing and compensation of all employees and contractors.

(5.2) Program Funding and Accountability Oversight

Fund the corporation directly from the Nuclear Waste Fund (NWF), removing the program and NWF from the federal unified budget process. The corporation Board of Directors would have authority to raise or otherwise modify the NWF fee. Such changes would not take effect for 90 continuous days of Congressional session, during which period Congress could overturn a proposed fee change by joint resolution. Responsibility for management of fee revenues would lie directly with the Board of Directors.

In the alternative, an outside Waste Fund Oversight Commission could review the Board's decision to modify the NWF fee prior to implementation of changes, or even be vested directly with decision authority (subject to congressional action). To provide the opportunity for public visibility and participation, oversight by such a commission could be modeled on the administrative process states use for utility regulation.

The corporation would prepare an annual public report to Congress, states, and Indian tribes outlining its activities, accomplishments, failures, delays, plans, and expenditures. This annual report would be a public document with wide dissemination. Congress would have the authority to hold hearings on any aspect of the program at any time, and would have full access to records of the corporation. As a creation of Congress, continuing existence of the corporation would be at the will of Congress.

In addition, the corporation would be required to retain an independent accounting firm to examine annual financial statements and the program's system of internal controls. This accounting firm would report to the Board of Directors through its Chairman, and not to the CEO, or other corporation officers. Accounting standards would be as practiced in the private sector. Similarly, a private management assessment firm would be retained to conduct a management and operations audit every 5 years with the results accompanying that year's annual report. All records would be open to the General Accounting Office (GAO), the Office of Management and Budget (OMB), and the public.

(5.3) Strategic Considerations

Work will be based on a mission plan (i.e., a strategic plan) that clearly specifies what is to be achieved and the associated schedule for major milestones. Flexibility must be provided for design specification and program planning within limits of NRC licensing requirements. The corporation will expect to make adjustments as the project proceeds. It will establish an approach of initial design specification and program planning, periodic assessment by an independent review panel, and design/program improvements. It will apply this approach at each step of scientific exploration, construction, and operation.

Similar to the approach favored by the Canadian and several European governments, the waste would be put underground as part of a long term storage research project. The facility would not be sealed without the approval of Congress (present law says not to be sealed for 50 years).

(5.4) Enabling Legislation

Proposed legislation to implement the corporation must be constructed within the guidelines established by the Government Corporation Act and its amendment by the Chief Financial Officers Act.

Authorizing legislation should be as simple, yet complete, as possible. It should establish management structure only at the level of the board and chief executive officer so that corporation executives can establish the management structure and modify it as necessary. It should exempt the corporation from federal procurement laws. In addition, it should specify if existing contracts will be transferred to the new entity or deobligated. Existing contracts between DOE and utilities for waste removal in return for Nuclear Waste Fund Fee payments would be transferred to the federal corporation.

Authority for establishing the corporation should be obtained a year ahead of the transfer of funds with its initiation at the beginning of a fiscal year.

The legislation establishing a government corporation should allow it to:

- Adopt, amend, and repeal bylaws, rules, and regulations governing the manner in which its business may be conducted and the powers vested in it may be exercised.
- Contract as necessary.
- Sue and be sued in its corporate name.
- Acquire by purchase, lease, condemnation or donation real and personal property, and sell, lease or otherwise dispose of such property.
- Determine the character of and the necessity for its obligations and expenditures, and the manner in which they shall be incurred, allowed and paid, subject to applicable law.
- Appoint and set compensation of officers and employees, define their authority and duties, and delegate powers to conduct corporation business.
- Be credited with amounts received from its activities.
- Make grants, loans, and/or loan guarantees.
- Include options to use the services of the General Services Administration and other Federal agencies.

(6.0) CONCLUSIONS

<u>Structural Problems Require a Structural Remedy</u>

The Coalition has shown the present nuclear waste disposal program to be burdened with problems that are structural in nature. Given this finding, it is no surprise that simply changing individuals involved makes insufficient change in program outcome. Similarly, changing individual components of the program fail to achieve the necessary change in incentives. No significant change in program outcome can be expected without significant change in organization structure and management.

Any significant change to the present nuclear waste program requires amending the Nuclear Waste Policy Act. Of the organizational options, the Coalition finds the wholly government owned federal corporation to provide the best combination of mission focus, public credibility and cost-effectiveness. The four justifications for a government

corporation noted in Section 4.3 fit the nuclear waste program exactly. Options such as an Administration or Independent Commission fail to provide sufficient incentives for cost-effectiveness or efficiency. Corporate options with substantial private ownership may sacrifice public credibility.

Enlisting the Administration and Congress

The civilian radioactive waste program may be one that DOE would be willing to shift elsewhere. It exposes the DOE and Administration to public criticism and political embarrassment. DOE's civilian radioactive waste program is a relatively small program among many others, involving less than 3 percent of all DOE activity. (The nuclear weapons facility cleanup alone is fifteen times larger.) Indeed, DOE may even support this proposal on its merits. As a potentially self sustaining program as a Federal Corporation, this alternative presents the Clinton Administration with the opportunity to take full political credit for "reinventing" a piece of government at little or no cost.

Furthermore, establishment of a Federally Chartered Corporation frees Congress from the annual responsibility of direct oversight of a politically unpopular program. It also provides political cover to members who might otherwise be uncomfortable making decisions regarding nuclear waste disposal. At the same time, Congress would retain all final authority over NWF fee adjustments, the structure of the program and its continued existence.

Need to Act Now

The nation's electric ratepayers are being charged billions of dollars for nuclear waste services not being provided by the DOE. These costs continue to climb while anticipated opening dates for a long-term disposal facility grow ever more distant. On-going failure of OCRWM's program jeopardizes the continued use of nuclear energy as states and utilities question the ultimate disposal of spent nuclear fuel now stored at power plants. Waiting to assess the significance of minor program adjustments will consume valuable time necessary for the transition to a new program and organizational structure to implement it.

APPENDIX A

GOVERNMENT CHARTERED CORPORATIONS:

BACKGROUND AND NOTES ON PRIVATE OWNERSHIP

GOVERNMENT CHARTERED CORPORATIONS: BACKGROUND AND NOTES ON PRIVATE OWNERSHIP

INTRODUCTION

The Coalition examined several aspects of federal corporations before accepting this as the appropriate general approach for the nations radioactive waste disposal program. The Coalition then assessed both wholly government owned, and privately owned government corporations before recommending use of a wholly government owned federal corporation.

Federal corporations were contrasted against both federal departments and other agencies as well as against revolving funds. Federal corporations differ from federal departments in that they:

- Are a separate legal entity distinct from the United States government.
- Determine the character of and need for their expenditures, and the manner in which they shall be incurred, allowed, and paid without being subject to the statutes on spending funds or their disallowance by the GAO.
- May obligate funds for capital or operations, and retain revenues, without fiscal year limitations (i.e., have business-type budgets).
- May establish financial management systems that best meet their own requirements.
- May acquire and dispose of property without invoking the laws covering government property.

Federal corporations differ from revolving funds in that they:

- Often limit administrative expenses and may have provisions for repaying capital funds.
- Apportion expenses quarterly to control those costs selected as being subject to annual limits (such as administrative costs) rather than for all expenses.
- Are not subject to GAO disallowance although they are subject to GAO audit.
- May use receipts for capital expenses without additional authorization.

- Usually pay interest on any investment made by the federal government.
- May acquire property, sue and be sued, and contract in their own name.

Federal corporations may be off-budget, on-budget, or partly on and partly off. Funds appropriated to the Postal Service are on-budget while postal revenue, receipts, and operating expenditures are off-budget. Many wholly-owned government corporations are subject to position ceilings, while mixed-ownership and private corporations often are not.

PLACEMENT OF GOVERNMENT CORPORATIONS

Government corporations can be independent of Executive Branch departments or part of one. Independent corporations, such as the Tennessee Valley Authority, enjoy the lack of bureaucratic layers usually found in a department and freedom from partisan political control. Corporations placed within a department tend to be those that benefit from program guidance and the ability to draw on the personnel and resources of that department.

Because of their business-type characteristics and operational needs, government corporations require insulation from departmental bureaucracy and exemptions from departmental financial and administrative rules whether part of a department or independent.

GOVERNANCE

Nearly all existing government corporations are governed by a Board of Directors to whom the Chief Executive Officer reports. Boards should have from 5 to 11 members. Board members are generally appointed by the President, although this can be done by a department secretary for corporations within a department. Ability to promote effective corporation policies and management should direct selection of board members, although board composition can also be designed to ensure representation of particular stakeholder groups. The board chooses its Chief Executive Officer. Board members should serve part-time, making it more likely they will address policy issues rather than dwell on operational details.

For a corporation under a department, the secretary's authority would be diluted by being a member of the governing board. Similarly, two or more board members should not be appointed from the same department or agency since they cannot easily exercise equal authority. One or more advisory boards could augment this structure.

ACCOUNTING, FINANCIAL MANAGEMENT, AND AUDITING

Government corporations develop their own accounting system, conforming to practices of the private sector. As in the private sector, the accounting system should provide management with timely information to judge program performance. However, it should also serve to facilitate oversight and auditing by the legislative branch.

The Chief Financial Officers Act amends the Government Corporation Act to require government corporations to submit an annual management report to Congress. This report includes statements of financial position, operations, cash flows, reconciliation to the budget report of the corporation, if applicable, and internal accounting and administrative control systems. Almost all wholly owned government corporations continue to submit to Treasury the standard "SF" series of financial reports.

ENABLING LEGISLATION

Federal corporations rely on enabling legislation to specify their mission and the means to fulfill it. Each federal corporation's unique authorization allows it to be tailored to meet specific needs. Authorizing legislation should be as simple, yet complete, as possible. It should:

- Establish management structure only at the level of the board and chief executive officer so that corporation executives can establish the management structure and modify it if necessary.
- State if the corporation is exempt from federal procurement laws and the extent to which competitive contracting will be relied on.
- Specify if existing contracts will be transferred to the new entity or deobligated.

Authority for establishing the corporation should be obtained a year ahead of the transfer of funds, with its initiation at the beginning of a fiscal year.

GOVERNMENT CORPORATIONS WITH BOTH GOVERNMENT & PRIVATE OWNERSHIP

Description

A mixed ownership federal corporation would have stock, with some stock held by the government some held by private parties. The government typically maintains majority ownership. Seats on the board are usually apportioned to reflect stock ownership.

Otherwise this alternative would appear like the wholly government owned corporation. This structure could also be augmented by one or more advisory boards.

Assessment

The addition of private stockholders increases the incentives for cost-effectiveness and program progress. Mixed ownership gives the corporation an additional source of funds through investments. Credibility may be reduced if the public perceives stockholders to have greater incentives to compromise program quality for profit. Given the program's primary reliance on the Nuclear Waste Fund for revenues, this alternative adds a minor financial benefit at the risk of critically needed credibility. This could jeopardize the mixed ownership corporation's ability to site a facility.

UTILITY-TYPE PRIVATELY OWNED CORPORATION

Description

This alternative is a private entity organized and regulated like a utility and owned by stockholders. It may even be a consortium of nuclear utilities or other groups. The utility-type corporation would receive full authority for the nuclear waste program from OCRWM. It would have a Board of Directors selected by stockholders or organization participants. In the alternative, a small number (e.g. 20 percent) of the board's seats could be filled by Presidential appointment. The Board in turn would choose operating officers who would have responsibility for day-to-day corporate activities. Employees would work for the private organization, not the government. The utility-type corporation would have normal corporate flexibility in personnel matters, including setting salary, hiring and firing, and development of bonuses or other incentives for cost-effectiveness. Advisory groups could be included in its structure.

To ensure that the organization met its goals and operated in a cost-effective manner, it would be subject to economic and policy regulation. Changes in major policies or fees would have to be submitted to the federal government for review and approval. Economic and financial oversight would likely involve the Federal Energy Regulatory Commission, and the Securities and Exchange Commission. Public health and safety would be subject to oversight by the Nuclear Regulatory Commission. Congressional oversight would take the form of hearings and possible legislative action.

A utility-type corporation would use money remaining in the Nuclear Waste Fund, proceeds of its initial stock offering, plus funds raised through future issuance of stock, bonds, and debentures. The organization would follow private sector accounting and auditing practices, operating as either a for-profit or non-profit business.

Assessment

Private ownership and the possibility of realizing profits provide stronger incentives for cost-effective operations. These incentives would be reinforced if parties holding nuclear waste were among the investors. However, the strength of these incentives could undermine the corporation's credibility if the public doubts the corporation's diligence in protecting the environment, and public health and safety. Oversight by federal agencies would counterbalance this concern, perhaps substantially, if the public perceives government regulators to be more willing to act against private firms than government owned entities. Nonetheless, credibility is likely to be less than for the wholly owned federal corporation.

A lack of credibility would be particularly critical during repository siting. The public would likely distrust the privately owned corporation's willingness to put public interests above financial incentives. Thus, it is likely that another entity other than a privately held corporation would have to site a repository associated with the program.

Similar to the wholly owned federal corporation, the utility-type corporation offers more flexibility than OCRWM during the construction and operation phases of the nuclear waste program. This option is especially poorly suited for the post closure phase of the program raising uncertainties over liquidation of equity/debt and long term monitoring of a repository site. The post closure mission would require transfer to a long term government entity.

STANDARD PRIVATE CORPORATION

Description

This alternative to OCRWM could be an existing firm or one created for the purpose of radioactive waste management. It would be the winner of a competition for the national program. The winning firm could have any organizational structure, and could even be a non-corporation such as a partnership, or individual. Cooperation with advisory groups could be specified in the request for proposals and bids.

Such an entity would probably be granted a monopoly, subject to little or none of the direct economic and policy regulation as would be the utility-type private corporation. The corporation could be free to set prices (possibly with some guidelines), and if prices were too high the waste producers might attempt to rely on on-site storage or pursue alternatives to a long term repository. The federal government would retain its existing regulator roles through the NRC and EPA for the protection of public health and safety.

Assessment

This option shares and exaggerates the strongest characteristics of the utility-type private corporation. Driven by strong profit incentives, it would have strong incentives for cost effectiveness and foster flexibility. However, the lack of direct oversight would further aggravate public suspicion that the firm could sacrifice the environment or public health and safety to increased profits.

It is likely that this alternative entity could only perform construction and operation phases of a repository program. Siting, post closure care and other aspects of the program would require an additional entity, probably part of the government.

APPENDIX B

ABSTRACTS OF KEY REFERENCES

KEY REFERENCE ABSTRACTS

Appendix No.	Organization	Date	Paper Title	Highlights
C-1	U.S. Office of Technology Assessment	April 1982	Managing Commercial High-Level Waste	Program requirements for public confidence, and accountability should be met using an independent entity with a corporate structure, run by board of directors. DOE cannot overcome erosion of public trust, or provide effective managerial resources as would be needed.
C-2	U.S. Office of Technology Assessment	March 1985	Managing the Nation's Commercial High-Level Nuclear Waste	Repeated need to remove the program from DOE, placing it in "a separate radioactive waste management authority" with a Board of Directors. Several mechanisms to assure continuity and public acceptance are recommended. Although many are required by the Nuclear Waste Policy Act, most are not part of DOE's 1994 program.
C-3	U.S. Government Accounting Office	Aug. 1993	Management Problems Require a Long-Term Commitment to Change	Agency-wide, DOE's troubles are management neglect, lack of accountability, work force weakness, lack of communication and domination by contractors. Previous efforts at correction have failed and present ones may be due to administrative inconsistency, insufficient in-house expertise and corrections that overburden management.
C-4	U.S. Nuclear Waste Technical Review Board	March 1993	Special Report to the Congress and the Secretary of Energy	Board summary focuses on unrealistic DOE deadlines threatening scientific program showing need for integrated disposal plan. Program must have thorough independent review of management and organization (M&O approach hasn't worked). Predicts DOE will not meet 1998 deadline.
C-5	U.S. Department of Energy (Dr. James Thurber)	Dec. 1993	Report on Selected Published Works and Written Comments Regarding the Office of Civilian Radioactive Waste Management 1989-1993	Program management is repeatedly criticized for failure of contractor control. Cost and schedule control are deeply flawed. Long-range planning, site study, interim storage is inadequate and public trust is very low. Many advise that corrections are needed immediately.

KEY REFERENCE ABSTRACTS (Continued)

Appendix No.	Organization	Date	Paper Title	Highlights
C-6	Advisory Panel on Alternative Means of Financing & Managing Radioactive Waste	Dec. 1984	Managing Nuclear Waste-A Better Idea	The panel assessed 10 organizational alternatives for the nuclear waste program against criteria it developed, finding a federal corporation most likely to succeed. The panel found funding through the Nuclear Waste fund acceptable.
C-7	Secretary of Energy Advisory Board Task Force	Jan. 1994	Final Report of the Task Force on Radioactive Waste Management	There is a justifiable widespread distrust of the DOE. The DOE "lacks" the institutional capacity to [take] measures to strengthen public trust and confidence." Further erosion of credibility is expected because the DOE has "constricted view of what is required to restore trustworthiness.".
C-8	National Academy of Science	1994	Committee to Review Risk Management in the DOE's Environmental Remediation Program	Widespread distrust of DOE over defense site contamination is an impediment to public acceptance of the clean-up effort. Recommends a national stakeholders oversight board.
C-9	Task Force on Reactor Irradiated Nuclear Materials	Nov. 1993	Report by the Spent Fuel Working Group on Reactor Irradiated Nuclear Materials	Widespread problems in radioactive material storage poses threat to worker safety; condition of much material is unknown; immediate attention is recommended; and clean-up costs will be very high. Experience typifies DOE delivery and may foretell trouble in nuclear waste program.
C-10	Ronald C. Callen	1994	Management of DOE Programs	The Civilian radioactive waste program will continue to flounder if left within DOE. DOE has demonstrated its failure to management such programs and its inability to change the causes of its failure. Failure to control contractors is department-wide. Limited planned contracting improvements do not include radioactive waste programs and will take five or more years to implement. GAO doubts proposed fix will be effective. DOE executives and its budget will be strained to cover all departmental program demands; may cause disposal program to be ignored.

KEY REFERENCE ABSTRACTS (Continued)

Appendix No.	Organization	Date	Paper Title	Highlights
C-11	U.S. Government Accounting Office	May 1993	Yucca Mountain Project Behind Schedule and Facing Major Scientific Uncertainties	Delays of five to 13 years are inevitable and DOE will not meet 1998 deadline. Main reason is DOE did not request funding consistent with its forecast needs and misapplied funds used. Congress should not increase funding until management review (as per TRB recommendation) is completed.
C-12	U.S. Nuclear Waste Technical Review Board	Oct. 1993	Underground Exploration and Testing at Yucca Mountain	Technical decisions are made with inadequate foundation. Contracting for the Yucca excavation is not cost effective. Management review must include financial control and accountability; otherwise threatens technical program.
C-13	U.S. Nuclear Waste Technical Review Board	Feb. 1994	Letter Report to Congress and the Secretary of Energy	Problems with management decisions, burgeoning staff and unwieldy organization require an independent review as soon as possible. DOE should continue site investigations and improve input of stakeholder views.
C-14	DOE Inspector General	June 1994	Audits of Costs and Management of the Yucca Mountain Project	Using an integrating Management and Operations contractor at Yucca Mountain failed to reduce the number of program participants, added another layer of management and raised program costs.
C-15	DOE Inspector General	March 1994	Report on Follow-up of the Cask Development Program	Cask development program is far behind schedule, much over cost and much below design goals. DOE ignored early Inspector General warnings that this could happen and evidence of trouble. DOE resists these conclusions.
C-16	DOE	Nov. 1989	Report to the Congress on Reassessment of the Civilian Radioactive Waste Management Program	Response to official Congressional frustration: will work to deliver an MRS, to aright program, appoint a director, conduct an independent review, reorient management and streamline use of contractors. Repository to be delayed to at least 2010.

KEY REFERENCE ABSTRACTS (Continued)

Appendix No.	Organization	Date	Paper Title	Highlights
C-17	U.S. Department of Energy, DOE (Thomas Isaacs)	March 1993	Task Force on an Alternative Strategy	Funding is not the problem, management is. May need a new agency. Site characterization plan is a laundry list; overall plan doesn't exist. Must build in milestones and interim success, avoid schedule as driver.
C-18	U.S. Government Accounting Office	July 1994	Letter to Hon. Judy Sheldrew and Alex Radin from Victor S. Rezendes	Proposed studies should not repeat assessments of DOE's program management, but institute independent review of DOE building on earlier assessments. Several recommendations typify program problems.
C-19	Reason Foundation	Aug. 1993	How to Spin Off Air Traffic Control by Robert W. Poole, Jr.	Air traffic control (ATC) suffers from same problems as nuclear waste program -- inadequate long-range planning, and failed budget and contractor control. Recommended corrections are parallel, to form new single-purpose agency with independence and added authority.
C-20	Federal Aviation Administration Susan S. Lee	Sept. 1993	A Study of Government Corporations	Provides definition of government corporations, their justification, forms, and characteristics. Key administrative and legal considerations are discussed.

APPENDIX C

KEY REFERENCES SUMMARIES

MANAGING COMMERCIAL HIGH-LEVEL WASTE

U.S. Office of Technology Assessment

OTA-O-172

April, 1982

CONTEXT

The U.S. Office of Technology (OTA) is an analytic support arm of the Congress. Its charge is to help the Congress cope with new and complex issues that confront an increasingly technologically oriented society. The OTA is to clarify the range of policy options and the likely impacts of adopting each of the options. The OTA is administrated by the OTA Board made up of Members of the House and Senate of the U.S. Congress.

Typically, the OTA organizes a study around expert staff and adds contractors, consultees and an advisory board of recognized authorities in the technology under study.

Acting as a guide to the U.S. Congress for establishing a lasting and successful disposal program, the OTA issued this report after a definitive study of the history of high level nuclear waste problems. The OTA's efforts contributed significantly to the development of the Nuclear Waste Policy Act of 1982. Much in the Act can be seen to reflect the insight and advice of the OTA. This review of the OTA report focuses primarily on the issues of interest to the Nuclear Waste Strategy Coalition's Long-Range Committee.

In its Overview of its findings, the OTA notes that "the greatest single obstacle that a successful — program must overcome is the severe erosion of public confidence in the federal government that past problems have created." Based on a public discomfort with past federal efforts, the OTA finds grounds of distrust center on three issues, whether the Government:

- will stick to its policy through Administration changes,
- has the institutional capacity to carry out the complex program, and
- whether it can be trusted to respond positively to state concerns.

The report cites a number of requisites for success. They include adequate and sustained funding, a competent, comprehensive, conservative and widely supported, binding Management Action Plan[1] that has received a thorough review

[1] In the NWPA, the Management Action Plan was renamed the Mission Plan.

and has been authorized by the Congress, a development program that is to produce several repositories, and credible means for addressing the concerns of states. The OTA also states the need to establish binding contracts with the utilities for acceptance of spent fuel beginning on a conservatively established date.

INSTITUTIONAL MECHANISMS

The OTA found that adequate management resources are as important to success as adequate financial resources, one of their most heavily emphasized points. The OTA believes that a single-purpose agency, independent of other federal agencies is necessary to avoid the competition for man-power and policy attention and to assure attention to safe and timely disposal. Based on its reading of waste management history, OTA concluded that managerial resources are likely to remain insufficient if the program is assigned to a federal department. It further stated that an independent organization may be "the best, if not the only, way to ensure" that organizational resources are not diverted, and that staff efforts are focused only on a successful achievement of its goals.

The most promising organizational structure, the OTA concluded, would be an independent corporation because it is most consistent with the need for self-financing and for much discretion in the year-to-year use of funds so that the overall schedule can be met. The OTA advised that, especially in light of the low credibility to date of the federal program, the needs of a democratic society for Congressional oversight and public accountability could best be met by balancing independence and accountability. The OTA recommended that the Congress bind into law the overall program, establish a board of directors and create an independent agency for the decision to raise the fee when necessary. To stabilize the program in the interim before the final structure is in place, the Congress should arrange for the director to be a Presidential appointee[2].

The OTA noted that, at the time of its report, little attention had been given to the institutional issue and the study of an appropriate agency could be performed while the Management Action Plan was being produced and authorized. In accord with the OTA recommendation, but not an implementation of it, the Nuclear Waste Policy Act specifically required that the DOE study the organizational issue. The DOE responded by organizing the AMFM Panel, for examining Alternative Means of Managing and Financing the program[3].

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[2] Obviously, the structure the program has lived under since 1982 represents but the temporary structure the OTA envisioned.

[3] See Appendix C-6 for a review of the AMFM Panel report that was the response to this Congressional mandate.

MANAGING THE NATION'S COMMERCIAL HIGH-LEVEL NUCLEAR WASTE

OTA-O-171

March, 1985

CONTEXT

For a review of the OTA's mandate, see Appendix C-1.

Following on the first study (Appendix C-1) of the national nuclear waste disposal program, the OTA reported on its continuing work in this summary report. It reviewed and more deeply developed the measures the OTA deemed were necessary for a successful waste handling and disposal program. This and the previous study of the OTA remains the fundamental review and analysis of the overall waste program and its organization.

The major initiatives the OTA recommended are listed in Table 1 below together with a rendering of whether or not those measures were included in the NWPA and its Amendments Act of 1987 and whether those measures are presently operational. This is not an exhaustive list and excludes otherwise important matters, e.g., the need for a continuous source of funding.

PROGRAM MANAGEMENT RECOMMENDATIONS

The OTA Report summarizes its recommendations on institutional control and the management of the program in Chapter 7, Federal Institutional Issues. To protect the long time-frame disposal task from inattention or diversion by DOE or outside policy makers and resource allocators, the OTA recommends the program be removed to a "separate radioactive waste management authority"[1]. OTA sees the new organization as also signaling a "fresh start".

Models for the new organization include the Bonneville Power Administration, an independent authority with loose ties to the DOE; and TVA, a federally chartered public corporation. The OTA advised that also an independent organization would be much in keeping with the independent funding arrangement of the waste program. Greater independence from political influence would be advisable and could be controlled to protect against excessive internal control by a board of directors for this "public utility" chosen by the Congress or the President. The OTA opined that a public advisory council might also be advisable.

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[1] This is a repeat of its earlier conclusions, see Appendix C-1.

Appropriate fiscal control could be achieved by control of the fee by joint Congressional resolution or an independent fee commission. Control of annual expenditures, an issue the OTA labeled as very important, could be arranged by multi-year appropriations based on the detailed planning embodied in the Mission Plan. The OTA advised that it should be approved by the Congress. Thus there would be established a balance between independence and control. Mission Plan approval processes must also allow for revisions from time to time, either on a regular basis or as needed or both. Extensive public review leading to a national consensus would add much to the credibility of the program[2].

[2] A mandate in the NWPA, there is now no operative Mission Plan and the Congress never approved one at the time there was a relevant DOE draft.

TABLE 1

OTA RECOMMENDATIONS FOR WASTE PROGRAM CONDUCT

PROBLEM	OTA SOLUTION	STATUS
Optimize organizational structure, e.g. as to independence, long-term commitment and oversight and conflicts of interest within the agency	Research alternate structures, i.e., to DOE and recommend changes	4
Assure rational, defensible program	Develop a Mission Plan; amend as necessary and consider obtaining Congressional approval	3 1
Assure public confidence in the development and conduct of a sound federal program	Develop a Mission Plan, amend as necessary and consider obtaining Congressional approval	3 1
Assure Federal Govt. won't force a repository into any site it gets access to	Develop and justify two repository sites from an elaborate multi-site selection process	2
Establish overall coordination throughout federal government	Research structure and recommend changes	1
Assure equity in site location selection	Develop two repositories	2
Assure adequate size of the Nuclear Waste Fee	Develop recommendations including possible rate commission	3 1
Assure budget is appropriate over the long term	Triennial budget approval process, also possible new organization	1
Assure public confidence in program and its direction	Extensive, especially formal public coordination	3
Assure coordination among all involved federal agencies	Task assigned to DOE, requires vehicle: Project Decision Schedule	3
Open a repository and start taking the spent fuel beginning in 1998	Long delayed, has no confident schedule	3
Assure states have adequate involvement in the process	Consider a mechanism for formal state involvement	1/3

STATUS key:
1- Never enacted.
2- Enacted in the NWPA but removed by the NWPAA.
3- Still legally required but presently ignored.
4- Promised but not delivered by Congress.

MANAGEMENT PROBLEMS REQUIRE A LONG-TERM COMMITMENT TO CHANGE

U.S. General Accounting Office (GAO)

GAO/RCED-93-72

August, 1993

CONTEXT

The U.S. General Account Office is an investigative arm of the U.S. Congress for the purpose of assessing all the operations of the federal goverment. Headed by the Comptroller General of the U.S., it is to determine the best use of the public resources. With full access to agency records, investigations are conducted by professional staff at the request of members or committees of the Congress or at the initiation of the GAO itself.

As part of its energy responsibilities, the GAO has conducted an ongoing review of the DOE's waste disposal program since its inception in 1983. The GAO is required to submit an annual audit; in addition, from time to time, it issues audit reports on special subjects.

In this study, the GAO reviewed the management of the entire Department of Energy. This report covers the initial of several of the GAO's investigations into the Department. The process is a part of a series of GAO in-depth reivew of major federal departmetns, its General Management Reviews. Completion of the DOE portion of the review will take several years.

In this report, both the 1993 reorganization initiative of the current Secretary and one attempted in 1989 by then Secretary James D. Watkins are mentioned. Section titles given here are taken from the GAO report.

The opening comments in the transmittal letter to the Secretary read as follows. "The Department of Energy (DOE) that you have inherited faces an extraordinary array of policy and management challenges unprecedented in its 16-year history. DOE's original missions -- to develop, build, and maintain the nation's nuclear arsenal -- are changing rapidly with the decline of the U.S.-Soviet nuclear arms race, while basic and applied science and environmental cleanup are emerging as the Department's principal concerns. At the same time, DOE's top and mid-level management is under severe stress because of widespread criticism that it has neglected environmental, safety, and health (ES&H) issues throughout the Department's vast network of production and research facilities. -- "An underlying

problem for DOE is its reliance on 149,000 contract employees to conduct its work. DOE's reliance on contractors, and the difficulties that reliance creates, raise key questions about the future direction of the Department's management."

DOE Has Significant Management Problems

Widespread criticism of DOE and its contractors began to surface in the mid-1980s, through reviews and press accounts of serious environmental contamination and neglected maintenance throughout the weapons complex. GAO, the Congress and other outside groups, as well as internal DOE reviewers, have reported extensively on DOE's management weaknesses. As the underlying causes of DOE's problems became apparent, the Department acknowledged shortcomings and undertook several reforms. The previous Secretary's summation of the Department's condition cited:

- management neglect, unsafe procedures, and noncompliance with environmental laws throughout DOE's facilities and field offices;
- no control, accountability or effective oversight in line management; and
- unsatisfactory contract and financial management.

The GAO observes that these conditions have raised questions about the ability of DOE to properly manage its contractors and its continuing use of a decentralized management philosophy dating from the DOE's predecessor, the Manhattan Project and the U.S. Atomic Energy Commission. DOE's past near-total reliance on contractors working with minimal government oversight and accountability has led to the conditions that past and current leadership seeks to correct. Past weapons production priorities created a climate in which environmental safety and health issues were given little funding or attention by DOE until problems become extremely serious.

Significant Obstacles Prevented Past Management Changes From Working

Serious communication and coordination problems prevented the 1989 reorganization from working properly, causing prolonged confusion over roles and responsibilities in various units. Work force weaknesses including a shortage of technical and administrative skills and inadequate management support systems still impede DOE's ability to properly administer contract management changes.

As part of its investigations, the GAO conducted an interview process with DOE managers. According to over 90 percent of the 114 senior DOE managers interviewed, organizational lines of authority and responsibilities need to be

clarified. Over half of those interviewed told the GAO that organizational clarifications are "greatly needed."

The previous Secretary had required the designated assistant secretaries to develop internal agreements that would explain their responsibilities in every field office. After nearly 3 years, only two of the four assistant secretaries with lead responsibilities had completed their agreements. No agreements were in place to help ease the transition to reorganization.

Many of DOE's senior managers told GAO that "fiefdoms" throughout the field structure hampered their operations, a condition that the 1989 reorganization was designed to alleviate. The GAO found the impact of the 1993 reorganization on this condition difficult to assess at this point, although the GAO stated it has some concerns about restoring additional power to field offices without ensuring that line accountability is maintained.

The GAO believes DOE's organizational and reporting problems could be overcome with more effective coordination and communication systems. However, the systems now in place pose great difficulty for DOE managers and prompted frequent complaints by staff during the GAO interviews.

DOE's communication problems also result from headquarters executives' inexperience in managing field offices and facilities and slowness in allocating staff to accomplish the 1989 reorganization. The 1993 reorganization provides a new opportunity to address this condition by making a single headquarters official responsible for allocating resources and making tradeoffs more effectively across agency lines. However, the GAO finds the DOE's basic communication problems are largely independent of the structure.

CONTRACT MANAGEMENT IMPROVEMENTS ARE PLAGUED BY MANAGEMENT SYSTEM WEAKNESSES

The success of the DOE's second major management change -- reforming contract management -- also depends on overcoming many obstacles. Two important DOE efforts to improve contract management are writing more detailed contracts (task-order contracting) and shifting more financial liability onto contractors (the accountability rule). The GAO finds both these efforts are constrained, however, by management systems that do not provide sufficient, detailed information needed by DOE officials to monitor contractors' performance -- as is required by the new contract management practices.

Financial and project management systems have historically failed to provide detailed data on contractors' activities, a reflection of DOE's long-standing reliance on contractors for basic information on performance and the Department's "least interference" oversight policy. Managers have expressed serious concerns about

their ability to make contractors more responsible for their actions under the new contract management practices.

WORK FORCE WEAKNESSES MAY BE DOE'S MOST DIFFICULT PROBLEM

The GAO finds that a second barrier to successful contract management change, and perhaps DOE's most fundamental problem, is the lack of skilled staff in program and contracting oversight positions. The majority of field managers interviewed voiced strong concern about their staffing situation and some expressed alarm over the work load required to implement various Secretarial initiatives, particularly those for contract management. Staffing deficiencies extend well beyond contract management, however. The GAO found over 60 percent of the senior managers interviewed cited work force problems as barriers to fulfilling their missions.

CONCLUSIONS

The DOE has significant management problems, as reported by many oversight groups and acknowledged by agency leadership. DOE has failed to properly manage and maintain its vast nuclear weapons production complex and has allowed contractors to dominate the Department's activities while they elude management and financial oversight. DOE's efforts to instill more organizational accountability and strengthen control over contractors are promising and welcome steps toward addressing substantial weaknesses. Incoming leadership has also begun implementing new initiatives to address issues raised in this report, although it is too early to draw conclusions about their effectiveness.

For these important changes to be successful, however, problems with communication and coordination, management systems, and with the work force must be addressed more effectively. Staff capacity is a particularly difficult challenge, affecting not only the DOE's ability to administer new contract management changes but also to manage imperative missions in environmental cleanup.

The GAO concludes that the new structure, effective in June 1993, has the potential for solving problems identified in this report. However, the GAO believes the new structure raises other concerns, including, for example, how accountability will be achieved under the new reporting relationships now that headquarters program managers no longer have direct authority over field offices. Furthermore, the DOE's basic communication problems are not easily overcome by new reporting arrangements. The DOE has significant and long-standing internal communication problems that exist quite apart from structural considerations.

U.S. NUCLEAR WASTE TECHNICAL REVIEW BOARD

CONTEXT

The U.S. Nuclear Waste Technical Review Board (TRB) is a creation of the Congress via the Nuclear Waste Policy Amendments Act of 1987. The TRB is an independent federal agency which is to assist the Congress by evaluating the technical and scientific validity of the DOE's commercial waste disposal program. It is composed of 11 eminent scientists who are expert in a variety of scientific disciplines relevant to the waste program. They are recommended for (part-time) appointment to the Board by the National Academy of Science and selected by the President.

The TRB maintains a full-time professional and administrative staff. It issues to the Congress and the public semi-annual and, from time to time, other reports all disclosing their evaluations of the waste disposal program.

The Special Report to the Congress and the Secretary of Energy, March 1993 was designed to accumulate the major recommendations of the TRB that had appeared in its six major reports. It appears that timing of the Report was to make and summarize these recommendations for the use of the new Administration. The recommendations fall into three areas; titles given here are those in the report.

SPECIAL REPORT TO THE CONGRESS AND THE SECRETARY OF ENERGY,

U.S. Nuclear Waste Technical Review Board

March, 1993

UNREALISTIC DEADLINES ARE DRIVING THE PROGRAM

The Board's concern is that DOE's focus on unrealistic deadlines, 1998 and 2010, may force the DOE to "make important decisions without performing the appropriate scientific and technical analyses". There is not but should be clearly identified and scheduled interim (their emphasis) program goals. The Board predicts that the DOE will not be able to accept spent fuel in 1998 because no facility would be open by then. The Board also worries that the time the DOE allots in the schedule for testing will not allow sufficient time for analysis of the data and its integration into the site evaluation determination.

Despite the repeated warnings from the Board as to the importance of the waste package, DOE has reduced the funding for this task over several budgets. Uncertainty in funding level, changes in licensing requirements and unforeseen problems for which there is no current allowance in the schedule could all pose problems. Noted especially, time pressures might force premature technical decisions. The Board believes that decisions on tunnel size and thermal loading already may have been inappropriately influenced by the focus on schedule.

The Board observes that inappropriate decisions to hurry the schedule could produce higher costs and, ironically, longer schedules. Hence the Board recommends interim milestones as used by much of the rest of the world's nuclear waste disposal programs.

THE PROGRAM NEEDS AN INTEGRATED WASTE MANAGEMENTS PLAN

In line with its recurring findings, the Board opined that the program lacks an integrated management plan and that the existing plans have significant gaps. It reiterates its view that the entire program must be looked at as a system of handling, storage and disposal. Otherwise, decisions may be made that are erroneous or erroneously may preclude other decisions. The Board emphasizes that, even were there a storage facility in 1998, there will be very large amounts of spent fuel that must be accommodated and, contrary to the situation in other countries, there are no plans in place to respond to this problem.

Other issues found not to have been addressed include transportation aspects, the co-mingling of defense and commercial wastes, the length of time to hold the repository open once fully loaded and the issue of thermal loading. The need is to perform "top-level, system-wide" trade-off studies and performance analyses. It is clear, the Board states, that the lack of system-wide studies have already foreclosed some options.

PROGRAM MANAGEMENT NEEDS IMPROVEMENT

The large number of organizations involved and the diffuse nature of the organizational structure create substantial problems for the DOE and those management problems have adversely affected some decisions. The project's multi-layers, geographical dispersion and diffused decision-making have caused problems. The avowed solution, the M&O contractor, has not worked because it has been used erroneously. Funding allocation decisions are error.

Other countries use different organizational structures and the report notes the value to the U.S. of their review. Specifically the Board notes that "(A)lternatives to the current U.S. organizational and management approach were evaluated in two congressionally mandated studies in the mid-1980s[1]. Since then, no detailed comparison of the U.S. approach has been undertaken."

In summary, the Board believes the "effectiveness of program management and integration needs to be improved" and recommends "a thorough independent review of its (the waste program's) organizational structure".

[1] The TRB referenced the 1985 OTA study (Appendix C-2) and the AMFM study (Appendix C-6).

REPORT ON SELECTED PUBLISHED WORKS AND WRITTEN COMMENTS REGARDING THE OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT PROGRAM, 1989-1993

by Dr. James Thurber

December, 1993

CONTEXT

Under contract to the DOE, Dr. James Thurber, Professor of Political Science, American University, reviewed and summarized much of the written criticism of the waste program that had been received since 1989. Dr. Thurber had been assigned to the task by the Secretary of Energy who recorded her interest in the project directly to him. The criticism had been received from many people and/or institutions.

The Secretary promised to respond to the matters that appear in the review, but there has been no response to date.

This summary includes only the most general findings and, in some cases, accumulates several findings where they are identical or similar. Topical headings are the same as used by the author, but list only those conclusions most relevant to this report.

In summary, the author concludes, in an overall finding from the hundreds of documents reviewed is that"--- a wide variety of organizations and individuals believe that major improvements are needed immediately ---."

1. PROGRAM MANAGEMENT

Program management has received continuing criticism since 1989 (the beginning of the period of this review).

The relation between the Waste Office and its contractors is ambiguous and unclear in implementation of overall authority.

The DOE is too interested in maintaining contractor relations rather than assuring progress and cost control.

Overall cost control and reporting documents are not issued.

Funds are not used wisely.

The organization is large and unwieldy and direction is fragmented are common criticisms.

The DOE committed to studying an alternative management structure but has ignored the task.

2. PROGRAM PROGRESS AND COSTS

The DOE has not requested adequate funding, has not deployed it well using too much in overhead, has had difficulty with the quality assurance and Exploratory Studies Facility programs and in coordinating site suitability studies.

The DOE's cost and scheduling estimation is flawed. It has not met those schedule or cost plans and, specifically, underestimates Yucca Mountain site study and total life cycle costs, does not allow enough time for data evaluation and ignores important issues in the planning process. Overall, it uses the funding from the fees unwisely which erodes public confidence.

The DOE has no contingency plans for the event that in 1998 it does not have an MRS ready. Many believe ratepayers will pay twice for interim storage.

Defense waste disposal financial support has been unfairly inadequate.

3. REPOSITORY DEVELOPMENT STRATEGY

The draft Mission Plan is flawed[1].

Repository performance assessment is deficient and hindered by a lack of planning for possible delays.

The Yucca Mountain site cannot hold all the commercial waste let alone accommodate defense wastes as well.

The DOE erroneously assumes that financial payments to affected localities will solve the socioeconomic problems.

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[1] The Mission Plan that was once the operative plan is no longer relevant to the program (see Appendix C-2).

4. SITE SELECTION AND SUITABILITY

Hydrology, thermal loading, engineered barriers and the Ghost Dance fault are ignored.

Site study management is haphazard and there is a need to reprioritize site suitability studies and to implement a systems approach to the overall program.

The tunnel size chosen is too big.

5. PUBLIC TRUST AND CONFIDENCE

Public trust and confidence is very low and in large part is engendered by the DOE's way of doing business.

6. INTERIM STORAGE

The MRS development is behind schedule and is not supported politically.

There is inadequate contingency planning for the event that the DOE does not produce the MRS.

MANAGING NUCLEAR WASTE-- A BETTER IDEA: A REPORT TO THE U.S. SECRETARY OF ENERGY

Advisory Panel on Alternative Means of Financing
and Managing Radioactive Waste
Diarmuid F. O'Scannlain, Chairman
December, 1984

CONTEXT

When Congress passed the Nuclear Waste Policy Act of 1982, it created the Office of Radioactive Waste Management within the Department of Energy to begin implementing of the Act. In Section 303 of the Act, Congress required the DOE to study alternative approaches to managing the waste program, including "establishing a private corporation for such purposes." To conduct this study, the Secretary of Energy impaneled 13 citizens comprising the Advisory Panel on Alternative Means of Financing and Managing Radioactive Waste. The panel reported several organizational problems with the DOE's organizational structure, and found a wholly government owned, federally chartered corporation to be the organizational model most likely to result in success. DOE essentially ignored the panel's findings, and the originally reported problems continue.

The Panel reviewed both the managerial and financial aspects of the Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM) program.

PROGRAM MANAGEMENT

Waste management was assessed considering five phases; siting, construction, operation, transportation, and monitoring after closure. All are guided by the overall goal of safe, long-term disposal. The key objective of the siting phase is to meet technical standards and gain public confidence. For construction, key objectives are technical excellence, stable financing, and cost efficiency. Key operating phase objectives are efficient systems management and quality assurance. Transportation phase objectives emphasize safety, public concerns, and operation efficiency. Key objectives of the monitoring phase are to provide continuity and to address public concerns.

The panel characterized waste management programs and identified the following elements necessary for a successful waste management organization.

- Mission-orientation.
- Credibility with all stakeholders.
- Stable and continuous processes.
- Programmatic authority (including funding).
- Accessibility and responsiveness.
- Internal flexibility to allocate and reallocate resources, including the ability to hire and fire.
- Political accountability, but immunity from political interference.
- Financially accountability.
- Incentives for cost-effectiveness.
- Demonstrated technical excellence.
- The capability for smooth transition to the new organization.

The panel examined 10 organizational structures, then narrowed their focus to 4 with the following conclusions.

- DOE-OCRWM – The panel found this approach to lack stakeholder confidence, be prone to schedule failure, to be unresponsive and superficial. Its primary positive feature was that it already existed and did not have to be created.
- Independent Federal Commission – This approach improves mission focus, accountability, independence, and stability, and provides ease of transition. However, it is much less cost-effective and self controled than corporate options.
- Private Corporation – Strong incentives for cost effectiveness are provided by this approach. It is also focused and independent. Primary drawback is its lack of credibility due to perceived incentives to sacrifice public health and safety for profit. It would also have to transfer post-closure activity to a government entity.
- Government-chartered corporation – A wholly government owned , federally chartered corporation offers the best organizational structure for cost-effectiveness, stakeholder confidence, and financial and managerial accountability.

PROGRAM FINANCING

Assessing program financing, the panel was guided by the principle that those creating the waste should pay for it. It recognized the need for financial flexibility. The panel began by assessing the utility fee funding of the Nuclear Waste Fund as established by the Nuclear Waste Policy Act. Among the alternatives assessed were

- Basing fees on waste tonnage instead of electricity kilowatt hours,
- Present system plus a transportation fee,
- No fee until the title to the waste shifts, and
- Financing from the federal government general revenues.

Criteria for evaluating the financing alternatives included:

- Ease of administration
- Flexibility in the face of changing project economics
- Regulatory acceptance
- Incentives for cost-effective management
- Ease of transition and
- Suitability for alternative organizations.

The panel concluded that existing funding mechanisms for funding the Nuclear Waste Fund were both effective and fair, and "the best possible fee structure under existing conditions."

FINAL REPORT OF THE TASK FORCE ON RADIOACTIVE WASTE MANAGEMENT

The Secretary of
Energy Advisory Board
January, 1994

CONTEXT

The Secretary of Energy Advisory Board is a board of more that 20 distinguished persons with various expert knowledge of energy. It was asked by former Secretary of Energy James D. Watkins to investigate the problem that the DOE had not engendered much, if any public confidence in its waste disposal program, and render insight into means to turn the program around this significant detriment.

The Task Force, its members selected from the Secretary of Energy Advisory Board (none were employees of the DOE), was commissioned by then Secretary of Energy Admiral James D. Watkins.

The Task Force was formed from members of the Advisory Board. The Task Force met over the next 27 months and heard from over 100 individuals. It also carried out two workshops directed by the National Academy of Public Administration, conducted two surveys and commissioned a number of studies by relevant experts.

Final Report of the Secretary of Energy Advisory Board Task Force on Radioactive Waste Management is the overall finding of the Task Force. The study contains a great deal of information on organizations and how their operations influence their credibility. This summary hereafter includes the general findings and recommendations, but not the many specific recommendations for DOE pursuit of trust.

The overall findings of the Task Force include the following:

> "--- there is widespread lack of trust in DOE's radioactive waste management activities --- [t]hat it is not irrational, nor can it be discounted as a manifestation of the 'not-in-my-back-yard' syndrome".
>
> public trust and confidence is "not a luxury -- and the DOE has a compelling need to earn it".

The Task Force opined that the distrust will continue for a long time requiring "sustained commitment from successive Secretaries" to overcome (it) and that the DOE must act in ways unnecessary for organizations that have sustained the public trust." Simply doing more of the same only better is "unwarranted."

Corrective measures cannot be appended to present practices; agency behavior will be much more important than its organizational structure. However, focussing on the DOE, the Task Force observes that it has a "relatively constricted view of what is required to restore trustworthiness."

Early and continuous involvement, carrying out agreements, informing, consulting collaborating, assuring its leaders are visible, and "unmistakable agency presence in the locality" are primary means to which the agency should commit. The agency should also commit to a high level of professional competence, performance measures and schedule milestones, honest self assessment and stakeholder review.

The Task Force concluded that the DOE currently "lacks the institutional capacity to design, implement and evaluate measures to strengthen public trust and confidence", yet " --- unless they (DOE executives) commit to changing fundamentally how DOE conducts its business, they will increasingly encounter situations that further erode public trust and confidence."

The Task Force believes that, through legislation, safety and environmental regulations and contracts, the DOE has lost a large portion of its autonomy.

COMMITTEE TO REVIEW RISK MANAGEMENT IN THE DOE'S ENVIRONMENTAL REMEDIATION PROGRAM

National Academy of Science, 1993

CONTEXT

The Committee to Review Risk Management in the DOE's Environmental Remediation Program is an arm of the National Academy of Science. Their work is useful to the review of the nuclear waste disposal program because a major reason for their investigation was to advise on overcoming DOE's very low public credibility.

Risk assessment is a widely used analytic tool in the technical analysis field for determining the level of danger that the public and workers face from a given facility or in another specific or broad technologic area. However, it is controversial since there is a feeling that it can be manipulated easily to give whatever results are desired. Apparently, this NAS Committee was employed to lend the NAS credence to the use of the analytical tool.

The fundamental question for the Committee was the use of risk assessment in establishing the order and scope of the cleanup of U.S. nuclear weapons sites. The task is the world's largest environmental remediation effort. It will cover facilities in 36 states occupying more than 3300 square miles and cost hundreds (two or three or maybe five, NAS states) of billions of dollars. Some of the remediation processes have not yet been invented[1].

Opening remarks by Assistant Secretary Thomas Grumbly at the public meeting when the Committee was first convened included the following: "Back in 1989 --- the first revelations about the scope and cost of four decades of really sorry neglect [by the DOE of its defense sites] were just beginning to take shape. This Department faced, as it does now, a great deal of skepticism from the public. ---[now] We face undiminished skepticism."

As stated by Joe King, City Manager for the City of Richland, Washington, "I think one of the main reasons why we are having such a hard time is that we will not, as the public, forgive your [the DOE's] predecessors for their actions over the past forty years. The credibility is so low, the antagonism level is so high that you do not have a clean slate to work from."

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[1] See Appendix C-10 for a summary of estimated costs.

REPORT BY THE SPENT FUEL WORKING GROUP ON REACTOR IRRADIATED NUCLEAR MATERIALS[1]

Task Force on Reactor Irradiated Nuclear Materials

November, 1993

CONTEXT

The Spent Fuel Working Group on Reactor Irradiated Nuclear Materials (RINM) was a special unit of the DOE assigned the task of evaluating the condition of storage of radioactive materials, including spent fuel, generated in the nuclear weapons program. The Working Group reviewed essentially all the extensive facilities that the DOE operates for the defense program. Some of the materials and facilities were part of the World War II Manhattan Project.

Working Group members were drawn from the DOE, its national laboratories and DOE contractors.

The Working Group concluded, after a review of the materials in the DOE storage facilities that there is need of extensive attention and that some it must be done immediately. This is information is relevant to the commercial nuclear waste disposal program because:

- the storage condition typifies the DOE's agency approach to care and the people who, even now, run the department
- the sorry condition of so many of the facilities leads to further loss of confidence in the DOE
- the problem is also the result of the Congress' funding decisions over decades
- a commercial disposal program could end up in something like this shape, so the program must be a design to prevent such an outcome
- the massive cleanup will cost massive amounts, and that represents a great pressure on the DOE budget

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[1] The formal title to the report is Inventory and Storage of the Department's Spent Nuclear Fuel and Other Reactor Irradiated Nuclear Materials and their Environmental, Safety and Health Vulnerabilities.

- this problem represents a big distraction for the Secretary and other senior management away from the waste disposal program.

The obvious solution for much of the DOE's problems with temporary storage of defense material is to get a facility for disposal. While there is no such recommendation exhibited in the report, the commercial program could be swamped by a nation emphasis for doing so[2]. This could put pressure on the commercial disposal program in the future to accept these materials in preference to commercial spent fuel.

REPORT BY THE REACTOR IRRADIATED NUCLEAR MATERIAL WORKING GROUP

Several storage pools are leaking and monitoring techniques for leakage are inaccurate. Some pools suspected of leaking have tritium identified in nearby monitoring wells. Hanford monitoring wells show sharp increases in tritium that are coincident with pool leak increases. Continuing degradation in these pools will likely result in increased leakage and environmental releases.

The release of radionuclides and fissile material to the pools occurs from corrosion. Corrosion also creates handling, packaging, inventory control, waste generation and cleanup problems. Wet storage facilities are overwhelmingly characterized by adverse conditions associated with fission product release. Most vulnerabilities identified have impact on workers and have less impact on the environment, and significantly less on the public.

The unplanned relocation of fissile material may have some, albeit low, probability of causing criticality events. The fission and activation product release presents a direct environmental vulnerability.

Structural and handling equipment weakened by corrosion can increase the probability of accidents with the potential for radionuclide releases and geometry changes, which can lead to criticality concerns. Heavy load drops could challenge the structural integrity of a pool.

The potential for release of radionuclides to the environment, exposure to workers, or criticality concerns results from natural phenomena (e.g., earthquakes, tornadoes). Department pool facilities were designed to standards of engineering and construction that are generally lower than those accepted today. Many of the facilities currently used for storage were designed for other purposes. Structural degradation of fuel pools, handling equipment and storage equipment increases the

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[2] It should be noted that the public and its local political entities are now involved with the DOE in the cleanup of some of these facilities. This has resulted in public pressures that have held the DOE to commit to difficult schedules and has contributed to the first fine of a DOE facility for violating EPA standards.

potential for damage in a seismic event.

Residence time in the pools of some RINM is about 30 years. The cladding of significant amounts of stored RINM has been breached due to corrosion or physical damage. Radiation levels in some pools are elevated as a result of fuel or target material corrosion. Aluminum-clad RINM is subject to rapid corrosion in pools without careful chemistry control. It is also incompatible with other metals and experiences galvanic corrosion. Significant quantities of sludge and debris exist at several facilities. Accumulation in locations such as sand filters and back wash pits has created nuclear criticality limit concerns at some facilities.

Corrosion of RINM and storage equipment increases the vulnerability to natural phenomena. Some Department storage facilities have no confinement systems.

Materials buried in the last two decades were never designed or intended to remain in place for prolonged periods; they were to be removed to permanent repositories. In many instances specific burial records were not kept. These materials were often uncharacterized and details relative to their quantities and condition remain unknown. Conditions associated with the release of radionuclides, inadequate institutional controls and the potential for worker exposure also remain. The concern is for impact is on the environment and on the health and safety of the workers who will remediate the burial sites.

Because of uncertainties in the location, quantity, and nature of buried material, there may be potential for uncontrolled and undetected release of radioactive materials to the environment. The release of radioactive materials to the soil has resulted from burial without containment, or the breach of containment caused by corrosion of the container. The use of unapproved containers for interim storage creates uncertainties about the potential for degradation and release to the environment.

SUMMARY

The safety analyses of many DOE facilities containing RINM neither accurately reflect the current condition of stored RINM nor reflects the hazards associated with their long-term storage. Many of the storage facilities and their RINM are vulnerable to earthquake damage. Some facilities contain RINM for which no DOE Program Office appears to have clear programmatic responsibility. Condition of muchRINM is unknown because of its degraded state or inaccessibility.

The absence of a clear path forward to disposition RINM has complicated DOE's efforts to maintain safe interim storage. In the judgment of the Working Group Assessment Teams, about 50% of the vulnerabilities are sufficiently important to warrant inclusion in the most urgent category, namely warranting attention within the next 12 months.

Several research and reprocessing facilities that are now shut down continue to store spent fuel, even though they have reduced operator staffs with limited inspection and maintenance. Degraded conditions due to aging and contamination continue to build.

The older authorization bases used for many facilities emphasized limiting risk to the public. Less emphasis was placed on analyzing risks to the workers and the environment. Potential accidents were not always analyzed rigorously because Department storage facilities are located in remote areas.

At a large number of the assessed storage facilities, earthquake design issues were identified. In some cases, the vulnerabilities arose from the fact that the older seismic designs do not meet today's more rigorous standards. In some cases, however, vulnerabilities such as unreinforced masonry walls, unqualified overhead cranes, and uphill boulders would not satisfy even the older standards. For example, seismic failures of unreinforced masonry walls pose threats to spent fuel storage. Moreover, the reduction in structural integrity of corroded spent fuel and racks was not anticipated or evaluated in the original seismic analyses.

Many Department spent fuel storage facilities contain some fuel that is uncharacterized. Most of these containers have not been opened in many years to analyze the condition of the material. Some fuel (both canned and uncanned) stored in pools is also not characterized to the degree necessary to determine future handling and disposition. Lastly, sludge in the bottom of some DOE wet storage facilities contains irradiated nuclear material of unknown concentration and composition.

At several facilities where existing storage conditions present significant environmental safety and health vulnerabilities, the sites are planning actions to reduce or mitigate adverse conditions. However, the Working Group found that these plans were not mature or well coordinated.

MANAGEMENT OF DOE'S PROGRAMS

Ronald C. Callen

July 1994

CONTEXT

The DOE has repeatedly been chastised for ineffective management of its programs. Failure to control its contractors, hence its schedule and costs, are DOE problems not unique to the radioactive waste disposal program. Instead, such problems are widespread and long-standing, perhaps even typical. Inadequate contractor control was identified as an important problem in DOE's predecessor agencies as early as the 1940's. Several corrective attempts under many administrations have been made to aright this.

In its program to clean up radioactive contamination at its weapons facilities, DOE is again attempting to achieve effective management through reform of its agency contracting procedures. Reforms will take five years to implement. GAO has already expressed doubts that the proposed reforms will succeed.

Although new contracting procedures are not yet directed at the civilian radioactive waste disposal program, several lessons can be learned. Among the most important is that DOE cannot provide the oversight, incentives and flexibility that a long-term, late payout and controversial program requires within the context of a cabinet-level bureaucracy. Reliance on good will and good intentions in the face of extensive and pervasive managerial failure is a mistake.

LESSONS LEARNED FROM REVIEW OF DOE'S MANAGEMENT EXPERIENCE

- The DOE has an endemic and historic problem with contractor control. Cost and schedule problems in the waste disposal program are not at all unique in the DOE experience; rather they are much closer to typical experience.

- The DOE has yet to demonstrate it has a way to solve its contractor problem despite recognition of the flaw as early as the 1940s and attempted corrections under several Administrations.

- DOE programs, the waste disposal program included, suffer from poor managerial control, a lack of competency, no incentives for cost control, distraction from other DOE responsibilities and conflicting political agendas.

- Recognizing the DOE's decades long trouble with control, it is unreasonable to merely accept DOE assurances, either by the OCRWM director or by DOE executives, that it has fixed/will fix the waste program problems.

- Based on examination of the DOE cleanup program and the DOE at large, the waste program will continue to suffer, just as it has, as long as it is left in the DOE.

THE DOE'S DEFENSE FACILITIES CLEANUP PROBLEM

The DOE contracting program in its entirety ($16 billion per year) has been cited by the GAO as one of the federal government's 16 highest risks for "waste, fraud, abuse and mismanagement" because of the DOE's "persistent" habit of indemnifying contractors for nearly all costs and for inadequate contractor oversight[1]. The agency-wide problem with its contracting approach, referred to as a management and operations contract (M&O), is surveyed and summarized in a 1993 GAO review.[2] The GAO states in part that the DOE "allows contractors to dominate the Department's activities while eluding management and financial oversight". The review is an update of the GAO's 1990 review.[3]

DOE mismanagement is a known failure in the public press.[4] To show the magnitude of the problem, it has been pointed out that the:

- cleanup at the Savannah River plant alone is several times the cost of the Alaskan pipeline.

- cost of the Hanford and Savannah River Plant cleanups (there are 2000 sites to deal with) exceeds the cost of the interstate highway system.[5]

- total cleanup cost for all the DOE facilities will exceed the cost of the savings and loan bailout[6].

Yet the DOE has and remains more dependent on contractors to run its agency than any other in the federal government (GAO). It has 140,000 contract employees.

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1 GAO/RCED-92-101, U.S. General Accounting Office (GAO), 4-92. Contractor control is a problem that has been publicly known for decades. In 1949, the Congress cited the problem caused by the modus operandus for management control selected by the DOE's predecessor agency; GAO op. cit., p. 10.

2 GAO/RCED-93-72, August, 1993.

3 GAO/RCED 90-52, March 1990.

4 E.g. U.S. News & World Report, "A $200 Billion Scandal", 12-14-92.

5 State Newspaper, Columbia SC, 6-28-92.

6 U.S. News & World Report, op. cit.

In 1993, the Congress worried over cleanup costs of DOE's facilities, noting that over $20 billion had been authorized to the DOE since 1988, and that it "may have only scratched the surface" of the problem.[7] The Congress was on the right track; the table shows the recent history of DOE cleanup cost estimates[8]:

DOE Estimates for Defense Facility Cleanup[9]	
Estimate Date	**$ (Billions)**
1989	100-150
early 1994	200-300
6-6-94	300-600
1994, (Some Congressional Staff)*	500-1000

* As reported by the GAO.

IDENTIFYING THE PROBLEM

An independent study defined the problem with the EM DOE's handling of its contracts. The DOE's contracts were on average 32% more costly than private cleanup contracts for similar work and 15% more than other government contracts. Their DOE project management costs (DOE internal management costs) are almost double those of other government agencies and nearly four times as expensive as private ones. The DOE took 50% more time than scheduled and slipped 52 per cent in time (v. 16% for industry) during the course of the contract. They had greater uncertainty in project definition at the time of signing, which was the reason stated for the poor results.[10]

The current DOE administration has implemented some new contracting methods. The recommended approach for the waste program is to abandon the long-standing M&O arrangement[11] in favor of a new approach called a performance based management contract (PBMC). This type relies heavily on written task descriptions that must be generated by DOE staff.

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[7] Inside Energy, 8-2-93, p. 4.

[8] It has been recognized that cleanup costs would likely rise because processes that must be used have not been chosen, schedules have not been arrived at and, in some cases, the cleanup processes have not been invented.

[9] GAO/RCED-87-200FS, 9-87.

[10] Nuclear Waste News, 12-2-93, p. 467.

[11] The contract for the high level nuclear waste program is of the M&O type. The contractor is TRW, Inc. It is not to be so altered.

At the same time, these corrective efforts will be "an enormous challenge," as stated in the DOE's advisory panel report.[12] [13] To handle the added work, the DOE intends to hire 1200 cleanup managers within the next two years.[14] The central problems that GAO cited and that the DOE focuses on for correction are contract administration and contractor oversight.

The new approach was applauded but the effort was criticized because DOE did not supply enough people to carry out the new functions including writing tight new standards (GAO).[15] DOE staff also did not receive adequate training and was delayed in deployment, especially by a counterproductive department-wide hiring freeze. In addition, plans and revisions (e.g., for added employees and training) were incomplete at the time the contracts were signed. The GAO also found the new planned procedures seem barely adequate to correct the problems.

The DOE will test some of the new contracting control to make sure it works. It will operate two tests[16] before making it standard for the department. Thus, it will be some time at best before the revised process is usable as a standard, e.g., on nuclear waste disposal program.

The GAO is very pessimistic over DOE overall reform capability. First, the DOE has attempted reform before. Reports are that they are not doing well on the new management oversight. In a survey of former officers of DOE and agencies that worked with the DOE, many recommend getting certain programs out of the DOE. Two suggested were defense and cleanup, the later of which could include the high level waste program. Cleanup in a separated agency is appealing on the basis of its organizational sensibility as well.[17]

The probable inefficiency of even the new cleanup administrative processes is also a problem. The former DOE director has estimated that the DOE will be only about 60 percent effective in this process.[18]

The Chair of the House Government Oversight Subcommittee is also pessimistic about DOE's reform success. He concluded revised contractor control plans are insufficient.[19]

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[12] "Making Contracts Work Better", DOE/S-0107, 1994.

[13] Inside Energy, 2-7-94, p. 5.

[14] Inside Energy, 4-18-94, p. 7.

[15] GAO/T-RCED-94-86, 12-93; Inside Energy, 4-11-94, p. 7.

[16] GAO/T-RCED-94-86, 12-93.

[17] GAO, personal communication; Inside Energy 3-21-94, p.9.

[18] U.S. News & World Report, op. cit.

[19] Inside Energy, 4-4-94, p. 1.

INITIAL RESULTS AND TEST CASES

Fernald, Ohio cleanup is the first test case. Although it is only a 1.6 square mile site, cleanup could cost $10 billion.[20] The GAO has found the picture disappointing. The prime cleanup contractor, Fluor-Daniel, has a five year-$2.2 billion new style contract. Both DOE and the contractor are not handling financial review well which is wasting dollars. The DOE is changing its contractor control procedures there.[21]

In another case of cleanup, the DOE issued a severe criticism to EG&G for its failure to measure up to the quality of the cleanup contract for Rocky Flats, CO. Schedule and health and safety were at issue.[22] EG&G responded by, in part, a major reorganization of its executives.[23]

In another case, the DOE did not challenge GAO and DOE Inspector General criticism of Westinghouse misuse of contracting procedures by using contractor personnel to assess Congressional activity.[24] The GAO found the contractor's use of federal funds for assessment of its own contract status to be improper.

THE PROBLEMS ARE NOT ALL SOLVED IN THE NEW CONTRACTS

Energy Secretary O'Leary, as have others, admitted that the DOE "has insufficient control" over contractors.[25] Yet some of the contractors are balking at further controls[26]; their concern is over being forced to take greater financial risks. What they are resisting is taking responsibility for:

- penalty payments, e.g., for environmental standards violations
- third-party claims
- simple loss of material by the contractor.

While important, these issues cannot be construed as penetrating to the matter of cost efficiency. As for timing, the DOE's decision to renegotiate contracts to introduce greater competition is not resolved, as of June 1994.[27] This means that the

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[20] GAO/RCED-92-244, 9-1992.
[21] Nuclear Fuel 12-6-93, p. 6.
[22] Inside Energy 4-11-94, p.6.
[23] Inside Energy 6-6-94, p.10.
[24] Inside Energy 3-21-94, p.3.
[25] Inside Energy, 1-31-94, p. 1.
[26] Inside Energy, 4-4-94, p. 8; Inside Energy, 4-11-94, p. 7.
[27] Inside Energy, 6-6-94, p. 7.

revised DOE contract process is anything but standardized. It appears that the DOE would sign up contractors to five-year agreements and to five-year extensions before the revisions would become a standard approach.

The GAO is conducting a review of present and former DOE insiders and outsiders to determine whether the Department's overall role should be changed, now that the cold war is over.[28] This suggests that changing the role (i.e., location within the DOE) for high level nuclear waste disposal is now acceptable for open consideration as well. The GAO said some have found the idea of a separate cleanup agency a better idea.[29]

WIPP AS A COMPARISON

GAO points out that the Waste Isolation Pilot Plant (WIPP) is a very good model comparison for the waste program.[30] The WIPP project is also to be a DOE-run deep geological disposal repository. It is also an EM task. However, it enjoys not only the freedom from obtaining a license from the U.S. Nuclear Regulatory Commission but also it does not have state resistance as the waste repository program has from Nevada. Yet it is far behind schedule (over 10 years), has exceeded budget estimates and has great uncertainties in its planning (GAO), including ignoring some difficult issues (e.g., storing wastes that must be handled remotely and meeting EPA environmental limits).

The DOE's Inspector General (IG) has found employment levels at WIPP too high[31], saying they were based on the facility 's operation being "imminent" and that wasn't a realistic estimate. The GAO sees political influence, e.g., with the now famous "acceptance tests" demanded by the previous Administration. The DOE's IG decried the oversupply of personnel and DOE agreed to review the numbers.[32]

The DOE, for political reasons, has kept employment up to handle the tests that were seemingly always ready to occur. However, from 1988 to 1993, the DOE decreased the number of disposal units to be used in the test by 99%, but the personnel at WIPP increased from 449 to 787 and the payroll almost tripled.[33] The IG and the GAO both believe the tests cannot start before the late 1990's.[34]

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[28] Inside Energy, 3-21-94, p.1.

[29] It has been suggested that the waste program might best be located in the postulated new cleanup agency.

[30] GAO, private communication.

[31] Inside Energy, 4-4-94, p. 3.

[32] Inside Energy, op. cit.

[33] Inside Energy, op. cit.

[34] GAO, personal communication.

As a result of the IG report, the U.S. House Committee on Armed Services cut the FY 1995 budget for personnel for the WIPP project.[35]

COST OF DOE MANAGED ACTIVITIES

There is a parallel between DOE managed programs because they are the result of the same management scheme (contractor does all the work under DOE management), the same hierarchical scheme is used inside DOE and the same executives are involved. I have compared the DOE's changing estimates over time for the cost of cleanup of the U.S. nuclear weapons facilities, and for the characterization for licensing of a repository site for the disposal of civilian and defense high level nuclear waste. Results are shown compared in the table.

DOE Program Cost Estimates

Defense Facility Cleanup		Repository Site Characterization	
Estimate Date	**$ (Billions)**	**Estimate Date**	**$ (Billions)**
		1981	0.06-0.08
		1982	0.14
		1984	2.2
1989	100-150	1987	4.4
early 1994	200-300	1992	6.3
6-6-94	300-600	1994	>6.3**
1994, (Some Congressional Staff)*	500-1000		

* Reported by GAO

** Estimate is for less work (of unspecified amount) at the same cost.

To be sure, there are substantial differences in the two projects. The cleanup has been acknowledged as a process in which some techniques have yet to be invented. The process for repository site characterization is known (if not in correct detail) but there are presently unknown results that will undoubtedly interrupt planned activities.

There is something to be learned from considering both programs.

- Both are run or to be run by the DOE and suffer similar cost control problems.

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[35] Report of the Committee on Armed Services on H.R. 4301, House of Representatives Report 103-499, May 1994.

- Both have come under criticism by review agencies for their inadequate contractor management practices and repeated failures to correct problems.

- There will be a crisis in programs and a competition between them for appropriated dollars (if not for actual dollars) because of the Congressional cap on total DOE spending.

- There is a challenge for the time and attention of DOE senior executives and expert managers as both programs grow and compete for expert attention. It will become more acute.

- Despite good intentions to control costs, the DOE Administration's goal of a new management scheme involving better control over the cleanup program has met with a lot of trouble; that signals that any similar overhaul for the waste disposal program is at best a long way off.

- Contamination of the defense facilities is a legacy of what DOE career managers (and their Congressional authorizers) consider an acceptable way of doing business. It is still relevant because some of those managers and/or their students are presently in authority in the DOE. Perhaps, as reported, that contributes to the slow turnaround in the cleanup program.

Lest the thought be advanced that all that is behind us and represents only ancient history, the House Armed Services Committee just sent a biting criticism to the DOE on its budget and management practices. They noted "sloppy management practices," violations in moving financial authorization from one program to another, overstaffing some programs etc. There are also studies of the waste disposal program by the IG and GAO due out that criticize management.

There is much reason to conclude that the location of the waste disposal program inside the DOE is a liability. A comparison with the Administration's priority program of defense site cleanup is one way to exhibit that fact.

YUCCA MOUNTAIN PROJECT BEHIND SCHEDULE AND FACING MAJOR SCIENTIFIC UNCERTAINTIES

U.S. Government Accounting Office

GAO/RCED-93-124

May 1993

CONTEXT

For a summary of the GAO's mandate see Appendix C-3.

The GAO review of the Yucca Mountain Project was the focus of much attention, including Congressional review and a summary at the Michigan Public Service Commission's Nuclear Waste Forum, June 1993. In this report the GAO centered its attention on two issues; the level of funding for the Yucca Mountain project and the DOE's initiatives to streamline the investigation schedule. An abbreviated but comprehensive summary of the report follows.

As for operational schedule, the GAO estimates that the Yucca Mountain site investigation program will take much longer than the DOE has planned for. The main reason is that the DOE has been requesting much less in its budget than its forecasted needs. For FY '91 through '93, it asked for 53 percent of its forecasted need of $1.159 billion. In addition, the DOE applied the available funds inordinately heavily to waste acceptance, i.e. to the MRS. Of the remainder, the DOE applied too much to what it refers to as "infrastructure" or overhead. Of the $275 million annual appropriation after overhead was paid, only $60 million was left for site investigation.

The GAO estimates that the misapplication of resources could delay the repository investigation by 5 to 13 years and increase project management costs alone by $230 to $600 million. The GAO notes the similar concern of the TRB over the project's "large and unwieldy" organizational structure and the high proportion of funds used by management. The GAO states its concurrence in the TRB's recommendation for an independent evaluation of the project's management and organization.

The GAO concludes that "— it is imperative that the DOE — address questions pertaining to the interrelationships between program funding and objectives and how the Yucca Mountain Project should be organized and managed before asking the Congress to change the method by which the program is funded" (emphasis added).

The second major issue the GAO investigated was the schedule compression the DOE instituted for the project. The GAO concluded that the DOE's action could increase the risk that the site investigation will be inadequate in that it would come at a time when technical issues have emerged that could substantially lengthen the investigation. The GAO refers to the irresolution of the question of thermal loading and to the problem that the recent findings on the Ghost Dance Fault stand to complicate the geological investigation and threaten to reduce the useable portion of the geologic formation. The GAO interviewed DOE senior management who said they were responding to the Congressional pressure to reduce the cost of the overall program.

GAO concludes that "it is almost certain that the agency will not have a [storage] facility ready by then [1998] or soon thereafter". It also concludes that this and the other conditions "raise significant questions about the pace and direction of the program that must be answered if it is to proceed in an orderly fashion."

Finally, the GAO recommends the Secretary review the program's goals and objectives, especially funding versus the efficiency of the program's conduct and the effort to improve schedule efficiency without sacrificing scientific efficiency. The GAO also recommends the Congress defer funding revisions until after the Secretary's review, the independent review recommended by the TRB and until after any appropriate changes in legislation have been made (the GAO had noted the Secretary's initiative to take the program "off budget").

UNDERGROUND EXPLORATION AND TESTING AT YUCCA MOUNTAIN

U.S. Nuclear Waste Technical Review Board

October 1993

CONTEXT

For a summary of the TRB's mandate, see Appendix C-4. This summary focuses on most of the TRB recommendations relevant to overall program conduct but not on specific science or technology concerns.

DESIGNING THE EXPLORATORY FACILITY

The Board believes that the DOE is making important technical decisions without sufficient information and that will cause cost increases and will threaten the schedule. Since there is no evidence of one, the Board recommends the DOE develop a comprehensive strategy for engineering and investigation. The Board believes the Exploratory Studies Facility is overdesigned and could be simplified resulting in large cost savings. Thermal testing was interrupted four years ago for cost reasons and must be resumed asap.

The Board takes issue with the manner of the Yucca site excavation contract believing it is not a cost-effective way to do business. It observes also that it is not typical of the U.S. industry which it opines is a world leader. It refutes the DOE decision to purchase the tunnel boring machine noting that universally, American industry purchases the excavation services, not the equipment. It supports parts of the program's underground exploration plan.

ORGANIZATIONAL STRUCTURE AND MANAGEMENT

The recommendations included in the Special Report To the Congress and the Secretary of Energy (see Appendix C-4) are repeated, clearly for emphasis. It notes that 24 organizations are working on the Yucca excavation. It also reiterates its concern that so little of the fiscal resource is going into the excavation and opines that the Calico Hills study pullback, done for financial reasons, is not advisable.

In summary, the Board recommends that the review of the management should include means to develop a more efficient exploration management scheme. Cost-efficiency and accountability incentives are to be part of the program's changes, making the connection again that cost inefficiencies translate into decisions that restrict the quality of the investigations.

LETTER REPORT TO CONGRESS AND THE SECRETARY OF ENERGY

U.S. Nuclear Waste Technical Review Board

February 1994

CONTEXT

For a summary of the TRB's mandate, see Appendix C-4. This report was designed to address three key recommendations that the Board wanted the Congress, the current waste program director and the Secretary of Energy to receive promptly.

PROGRAM MANAGEMENT NEEDS IMPROVEMENT

The Board repeated its earlier published concern that "problems created by the large and unwieldy organizational structure, as well as by previous management decisions should be addressed sooner than later." The organizational difficulties cited include the large number of employees (2790), the many involved entities, the geographical dispersion, multi-layered programming, diffused responsibility for decision-making and others which "affect every aspect of the technical and scientific program —."

Noting the decision of the Secretary to alter the DOE's access to funds in the Nuclear Waste Fund, the Board stated "simply increasing OCRWM's budget will not ensure that adequate funds will be allocated to the most important site-characterization activities or to other critical research and testing; nor will it ensure the current program schedule is met" (emphasis in the original), nor will increasing the budget solve the management problems. It recommended that "an independent review of the entire OCRWM's management and organizational structure be undertaken as soon as possible" (emphasis in the original).

The Board laments that no broad review has been planned or initiated, despite its potential for providing for better integration, more informed judgments and maintaining program activity. It is clear that this letter was designed primarily to reinforce the Board's earlier and identical recommendation.

MAINTAIN THE MOMENTUM OF SITE-CHARACTERIZATION

The Board recommends that site characterization must be kept in motion in order to provide evidence on a timely basis whether the Yucca Mountain site is acceptable. It also observes the confounding problems from substantially increased numbers of

employees and the overly large overhead for program administration. It sees these trends as counterproductive to the technical and scientific studies.

EXPAND EFFORTS TO INTEGRATE STAKEHOLDER VIEWS

The Board notes stakeholder input as "critical to the progress" in the program because, without it, the goal of a site "could be more difficult to achieve, no matter what the sophistication and depth of the technical and scientific program. The Board stated its support for the Secretary's intent to involve stakeholders more into the conduct of the program noting that the involvement must be "<u>while key decisions are being made - not afterwards</u>" (emphasis in the original).

AUDITS OF COSTS AND MANAGEMENT OF THE YUCCA MOUNTAIN PROJECT

Report DOE IG/-0351

DOE Inspector General

June 1994

CONTEXT

Each federal agency is required by the Inspector General Act of 1978 to maintain an Inspector General office. The Office is required to keep the Secretary and the Congress fully informed "concerning fraud and other serious problems . . . , to recommend corrective actions . . . , and to report on progress made . . . " in implementing those actions in the DOE.

The Office of the Inspector General (IG) reviewed with the OCRWM several years earlier its concerns that the then pending addition of a project Management and Operations contractor might only add a layer of bureaucracy.

In this report, the IG reported on its current review of the conduct of the Yucca Mountain Management and Operations contractor (M&O) and on the DOE's control of the contractor.

The Office of DOE Inspector General (IG) reported on its audit of the conduct of the Yucca Mountain Management and Operations contractor (M&O) and the DOE's control over it. The audit showed that there are substantial problems. In essence, the decision to hire the M&O for reducing the number of major contractors and personnel was not realized. The reductions achieved fell far short of the goals and the saving that would help offset the added costs of M&O were not realized.

At the time of the Inspector General's audit, the contractor, referred to as an integration contractor had been functioning for two and one-half years. However, "-- the anticipated reduction in the number of participants had not materialized, nor had management and integration of the project been effectively implemented." The IG found that the Waste Management Office did not have " -- a clear plan to consolidate and streamline contractor support functions --"

Prior to the original awarding of the M&O contract in 1989, the IG opined that the contractor "would add another layer of management." At the time, the IG questioned the need for the contractor since, during the contract bidding process, the number of sites under study had been reduced from three (NV, TX and WA) to one. The DOE OCRWM disagreed saying the need remained for strong central

management. The IG responded by recommending revising the bid to reflect the changed conditions in the program. OCRWM disagreed.

Despite the cost, $100 million per year for up to ten years, the Waste Office insisted that the contract could be reevaluated after three years (there is such a provision, and the first three years ended in February 1994) at essentially no cost. It continued to argue that consolidation and streamlining was essential.

CONTRACTOR PERFORMANCE

The IG found that, as of October 1993,--" the number of contractors had not been reduced as planned. Further, there was not a consensus that this reduction was desirable (emphasis added)."

The M&O's transition plan identified the consolidation that was to take place and the IG report listed actual results. It was opposed in the field. The plans and results were as follows:

For the overall program:

For contractors:	Planned to reduce from 26 to 8 Actually reduced to: 17
For National Labs:	Planned to reduce from 8 to 3 Actually reduced to: 7.

For Yucca Mountain the number of contractors was reduced from 9 to 7 and the number of national labs remained at 5. The IG commented that the number on board exceeds the number planned for the entire program and "it is uncertain whether any future reductions would occur.'

As for personnel, the number was to be reduced from 1057 to 925, but actually increased to 1578[1].

PROGRAM INTEGRATION

A parallel and central task assigned the M&O contractor was program integration. This includes budgeting, planning and monitoring. A DOE assessment in 1993 rated the M&O effort as a "significant deficiency." Communication was rated a "notable deficiency" and the M&O was told it needed to improve its performance. The DOE registered an improvement in December 1993.

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[1] The number of employees is now over 2000.

Overall, the IG concluded that "the anticipated benefits of the management and operating contract were not realized." Responsibility for the failure was found with both the M&O and the Waste Office. Friction caused by the contractor's efforts to assume some of the work was lessened by orders from the Waste Office to reduce the extent of its takeover (thus negating some of the anticipated cost benefits).

The Director of the waste program gave testimony to the Senate Energy Committee in March 1993 that program revisions were under way.

Other Issues Under Review

The IG audited two other issues of concern and gave results. The first was that too much of the funding was going into overhead, a matter that has been repeatedly raised in other reviews. Among those who have raised it are the TRB, the GAO, and DOE headquarters. The IG found the same problem and criticized the DOE efforts to correct it as long delayed in planned implementation.

The other issue the IG raised was the cost raising action of individual contractors to add on their overhead costs to portions of their work that they subcontract. The IG found a significant loss of funds from this double billing for overhead.

REPORT ON FOLLOWUP OF THE CASK DEVELOPMENT PROGRAM

by the Inspector General, DOE

(DOE/IG-0345)

March 1994

CONTEXT

In 1993, the DOE Office of Inspector General reviewed the spent fuel transportation cask development program. This followed a review in 1986 by the IG at a time when the cask development program had just begun. The program was to develop 10 casks of five different designs for transportation of spent nuclear fuel beginning in 1998, when the MRS was to be ready to accept waste.

The DOE Inspector General (IG) finds that the program is now behind schedule and far beyond original cost despite independent mid-course reviews and IG recommendations for correction. The original goal of 10 casks was successively revised and curtailed until now there are only two to be produced. The original cost for the two casks that remain under development was to be $26 million. The IG finds the casks will not have the design transport capacity, may not pass the NRC's licensing requirements (i.e. would not be usable), probably will not meet the 1998 deadline and will cost $143 million (not including DOE or M&O overheads or NRC licensing costs). As of the time of the audit in 1993, the two casks planned to be completed by 1990, are only 42 and 48 percent completed.

In 1986, the IG performed an initial review of the cask development program and warned then that its overall objectives might not be reached. The IG recommended then that, rather than go through with this development program, which the IG found then to be risky, the OCRWM should plan to use existing transportation casks. However, if the OCRWM chose to continue the program, the IG recommended that several designs be abandoned and strict managerial controls be applied to the rest to prevent just the problems in managerial control that later occurred. For example, the IG referenced "significant slippage, large cost overruns and failure to get NRC acceptance." In the current audit, the IG has found that its recommendations were not implemented and that failure resulted in the program failures noted above.

The IG found that the major reasons for the poor quality of the program are an inadequate prior assessment of the difficulty that the designers might face, that initial cost and schedule estimates were not used for management control and that program funding continued in the face of mounting problems.

The OCRWM responded to the IG findings by stating that they are now developing contingency plans, that it will now see if it is useful to continue the program, that adequate controls are now in place (the IG disagrees[1]), that original cost and schedule estimates should not be used in the current evaluation of the program (the IG disagrees), that the cost increases are not overruns (the IG disagrees), and that three changes in program management that the DOE plans to implement will not obscure the traceability of the program (the IG disagrees). Those changes include placing the contracts under a sub-contractor (it is now a prime contract) and merging this program into the MRS program, now canceled.

The IG report also references the conclusions of another review group, the DOE Independent Management Review Group, which found that technical problems in cask development seriously compromised the design capability of the remaining two casks. This has resulted in reducing the carrying capacity of the remaining casks and in problems with the licensing.

[1] The report included IG responses to the DOE responses to the audit.

REPORT TO THE CONGRESS ON REASSESSMENT OF THE CIVILIAN RADIOACTIVE WASTE MANAGEMENT PROGRAM

U.S. Department of Energy
November 1989

CONTEXT

On 1989. the Congress had become frustrated by the lack of progress in the DOE's high level nuclear waste program. The Congress' concern was over " — endemic schedule slips, problems in management structure and lack of integrated contractor efforts." Via Act PL101-101, the Congress required then Secretary James D. Watkins to deliver an answer to their concern within sixty days.

The Secretary did answer, in what was colloquially referred to as the "Sixty-Day Report." He made several promises that, at the time, seemed to offer corrections that might restore the program's progress.

In the Report to the Congress, the Secretary announced that, because of delays and a prior misperception of the waste disposal program as being essentially a construction project, it could not be conducted in the manner previously thought. He, therefore, promised "an iterative program of scientific investigations, engineered-barrier designs and performance assessments — " including a revised Mission Plan in draft form by June 1990. He released a new schedule that called for an application to the NRC for a repository license by October 2001, and opening of the repository by 2010. This would represent a delay of seven years more from the opening date of 2003 that the DOE had forecasted in 1987.[1]

Other actions promised by the Secretary were grouped in three areas; they are summarized below together with information on the actions he took in response to his promises.

[1] The Nuclear Waste Policy Act required that the repository open for receipt of spent fuel by 1998. The 1987 decision of the DOE was that the opening date would slip to 2003. This was a violation of the NWPA, but it was not challenged.

MANAGEMENT STRUCTURE

The Secretary promised to:

- appoint a new waste program director,
- reorient the Nevada Office so that it reports directly to the waste program director,
- see that an independent review of the program management is conducted,
- streamline the use of contractors,
- institute more formal management controls, and
- assist in initiating the Negotiator's office.

FOR YUCCA MOUNTAIN

The Secretary promised to :

- force Nevada to issue environmental permits,
- emphasize scientific surface-based investigations to discover the suitability of the site, and
- defer major site-specific design activities.

FOR THE MRS

The Secretary promised to :

- so as to deliver an MRS by 1998, work with the Congress to break the linkages it had established between progress on the repository and on the MRS,
- develop other options for delivering an MRS.

RESULTS

A new director was put in place and approved by the Congress. He was fired by the Secretary in late 1993. Lawsuits against the State of Nevada for not issuing environmental permits were resolved in favor of the DOE; the matter is no longer at issue. The Draft Mission Plan was issued and received much comment, much of it negative (some comments, are reviewed in the report by Dr. James Thurber, See Appendix C-5), but a final and operative Mission Plan was never issued. As of 1994, there is no operative Mission Plan.

The task for management review was given to the Booze-Allen Co.; apparently, an abbreviated study was done. The central recommendation was that the Secretary shift the Nevada office to under the control of the Program Director[2]. The contractor made other suggestions that may have been put into action, but there is no public knowledge of them and the DOE never published a final report.

With reference to the streamlining of contractors, there was a significant reduction in the number of contractors and, it appeared, a reliance on the new M&O contractor to further resolve the problems with contractor management. However, that did not come to fruition as planned and later experience showed that the M&O was forced to accommodate a continuing large presence of the secondary contractors, especially the Nevada site manager[3].

Also, as evidenced by the recent growth in contractor personnel and the recommendations of at least 14 persons or institutions, contractor management continues to frustrate the efficient management of the program.

The DOE effort to remove the linkage between the MRS and the repository failed. Pursuing alternate options for the MRS, i.e., including federal facilities, drew resistance from governors of the states to be studied.

Very late in the Secretary's term, he changed his position by asserting that the DOE did not need to provide storage beginning in 1998.

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[2] The Office had, in accordance with standard DOE management procedures, reported through another chain of command to another DOE director.

[3] For review of this issue, see Appendix C-14.

TASK FORCE ON AN ALTERNATIVE STRATEGY

U.S. Department of Energy

March 31, 1993

CONTEXT

In a letter to the Chairman of the U.S. Senate Energy Committee, J. Bennett Johnston, then Secretary James D. Watkins promised to develop a conceptual revised program strategy. The report by the DOE's Task Force on an Alternative Strategy, is the response to this promise.

The report is also referred to as the Isaacs Report, after Thomas Isaacs, DOE, the Task Force Chair. This summary is based mostly on the report and on personal communications from the Task Force Chairman.

It is clear that some believe the waste program will fail unless significant changes like those recommended in the report are made to the conduct of the program. The major problems with the generic and specific DOE approach to doing business are as follows:

- To solve the funding problem alone, e.g. by a revolving fund, is to miss the point: money has not been the delaying item, the lack of a coordinated program has been and DOE would be no further along if it had received all it asked for.
- The present Nevada excavation is not comforting because the plan to get information out of the effort, the Site Characterization Program (SCP) is so fractured; it is a laundry list of too many possible studies, not a prioritized and focused program that seeks the critical information that the site is to yield.
- The disposal program can be successful but it may be necessary to move the authority to some organization other than the DOE.

The report proposes a new approach to the disposal program; it is to include:

- a conservatively designed program and milestones to engender and build confidence in the DOE by meeting those goals,
- a new focus so that crucial tests are carried out early and schedule is not the overriding driver, and
- a series of demonstrated milestones, i.e., phased development, that is approved by the NRC including, importantly, a licensed handling and storage demo.

In addition, the Task Force advises adopting many recommendations, including an engineered barriers study, prioritization of the Site Characterization Plan, phased development of the repository, use of multi-purpose containers, wide public review, use of outside advice including stakeholder forums and an advisory panel and, not least, the institution of an extensive management review.

The Task Force views the current program, as designed, to suffer from the following problems.

- No results will be available until the NRC decides on the acceptability of the Yucca Mountain site, no earlier than 2004.
- There are only two major milestones, the licensing of the site and the opening of the facility.
- Schedule drives the program (the Congress required that but, of course, the mandated one is long gone) and that leads to trouble.
- The program is so heavy with focus on doing so much that the large expenditures without results only add to the extensive current lack of confidence in the management.
- The schedule is very unrealistic, there is no Mission Plan or central planning document and the Site Characterization Program (SCP) is a laundry list, i.e., it has no prioritized tasks.
- The funding levels, already the world's most expensive waste program, are doubly demanding because no results will be available until after the expenditure of over $6 billion.

The Task Force observed that the current program suffers from the double problem that it has a "huge investment risk" up front and, at the same time, creates a dangerous momentum.

LETTER TO HON. JUDY SHELDREW AND ALEX RADIN
FROM VICTOR S. REZENDES, GAO
GAO/RCED-94-258R
July 27, 1994

CONTEXT

This recent GAO letter is addressed to the DOE's management review committee of Commissioner Sheldrew and Mr. Radin. The GAO review contained in the letter is of the agenda that the recipients propose for the independent financial and management evaluation of the Yucca Mountain project. Points made in the letter are very relevant to an understanding of the progress the DOE has made and failed to make at the Yucca Mountain site.

The GAO finds the study proposed by the committee would be especially useful if it is organized to respond to the GAO's earlier call for an independent review of the program management. The GAO notes the study could help determine whether the DOE has estimated the site characterization work necessary for licensing and the corresponding time and financial commitment required to carry out that work.

The GAO recommends that the proposed study not spend its energies redoing earlier work, but use the reviews that are available specifically mentioning those of the OTA, the AMFM panel, the review of criticism made by Dr. James Thurber for the DOE and the many reviews by the GAO itself.[1] The GAO labels their review as "indispensable" in making judgments on the managerial integrity of the program.

Specific areas the GAO recommends for committee review include Yucca Mountain site characterization, program management, and program decisions.

With respect to Yucca Mountain site characterization:

- effort the DOE made to identify essential site studies and the DOE's effort to organize and manage them in a timely and cost-effective manner;
- how and for what reasons the DOE determined that it would defer certain site studies while, the GAO notes, the DOE has not determined which ones are to be eliminated;[2] and

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[1] All these recommended reports, with the exception of some of the earlier GAO studies, are ones incorporated in this Nuclear Waste Strategy Coalition long range study.

[2] The GAO observes that time, program extent and funding needed are all interrelated.

- why, in order to shorten the time to license application, the DOE has decided to constrain the scientific investigations rather than define a defensible smaller work scope.

With respect to program management:

- what the DOE management arrangement should be to achieve a cost-effective program[3]; for example, one construction contractor manages all construction without its being three-bid;

- effect of responsibility for project contracts and financial accountability being dispersed among headquarters and field offices;

- whether the program can efficiently absorb increased funding, and the ability of the waste program to maintain a stable and efficient course from one Administration to the next;[4] and

- what the DOE has done to implement the recommendations of the Secretary of Energy Advisory Board on Public Trust and Confidence.

With respect to program decisions:

- the management decision to purchase a 25-foot diameter Tunnel Boring Machine when the TRB advised a contract for drilling (the contractor would own the equipment) of a safer and more cost-effective 18-foot diameter tunnel; the GAO notes especially this decision was made during a time of constrained budget;

- how the DOE made a decision to develop and manage dry borehold drilling capability at the Yucca site, and to acquire the drilling equipment; now the DOE finds it has a 29-year long program on its hands, apparently because of limited funding; and

- why the DOE has no contingency planning, despite several GAO recommendations to do so.

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[3] For example, the GAO notes that seven contractors, among them two architect-engineering firms and at least some cleared for secret defense work, have been brought from the Nevada Test Site for nuclear weapons testing to the Yucca site. There are two integrating and managing contractors are on board at the Yucca Mountain site, their control is from the headquarters office in Washington, not from the Nevada office, and the Management contractor does not have authority for control of site characterization.

[4] The GAO observes that the OTA was very concerned about this and notes, as an example of the problem, that the waste program recently spent 64 percent of its total budget on overhead.

With respect to funding decisions:

- why the DOE requested less than half the funds that it believed it must have to conduct site studies noting funds requested for FY 91-94 fell $900 million short of its need for carrying out an approved work plan;

- whether the DOE has determined (the GAO believes it hasn't) how long site characterization would take under a constrained budget; and

- whether the size of the Nuclear Waste Fee can be adequately assessed and what happened to the recommendation of the GAO to include contingencies in the evaluation of the Fee, one example of a contingency being that the Nevada site is found not suitable.

The GAO closes with a reiteration of its concern that "it is imperative to ensure that the available funds are being spent efficiently and effectively before addressing whether 'sufficient' funds are being provided ...."

HOW TO SPIN OFF AIR TRAFFIC CONTROL

by Robert W. Poole, Jr.
Reason Foundation
August 1993

The Federal Administration has proposed to spin off the function of air traffic control (ATC) from the Federal Aviation Agency. Review and discussion with agents of the proposal, in the U.S. Department of Transportation where the FAA is housed, showed that management problems with ATC are comparable with those of nuclear waste disposal. In fact, the parallels between the programs, their problems and solutions are very similar.

Pursuit by staff of the ATC issue led to contact with the FAA, the Brookings Institute and the Reason Foundation and its President, Robert W. Poole, Jr. and a representative of the U.S. Department of Transportation. Discussion with Mr. Poole and a review of his report on the ATC problem confirms the parallel between the issues in the two programs is sound and the solutions proposed are very much the same. He also provided an insight that there is one case of management correction where there are results to compare with the planned-for objectives.

The following statements are from the ATC report that are parallel to the nuclear waste program situation. FAA operation of ATC is an impediment to a healthy aviation industry. Problems include:

- insufficient funds to deploy competent personnel;
- uncertainty due to the unpredictability of the federal budget process;
- micro-management by the Congress, the FAA, the U.S. Department of Transportation, and the Office of Management and Budget all who substitute their judgments for those of the professional managers and subject the ATC to the priorities of those agencies;
- inadequate pay of the highly trained professionals due to the "one-size-fits-all" federal employee salary system;

Mary Riveland, Director of the Washington Department of Ecology, advised that "Unless confidence in the cleanup program is established and credibility of the DOE is enhanced, it is going to fail for lack of support."

Among the Committee's findings were that:

- "The lack of trust in DOE and its site operators is a major impediment to reaching consensus not only on the type and degree of remediation needed, but also on the process to reach their decisions.

- Furthermore, these stakeholders [general public, workers and Native Americans] were fundamentally distrustful of DOE's and its contractors' ability to understand stakeholders' values and concerns and to incorporate them in decision-making."

One of the recommendations was to :

- "To ensure the institution's [the DOE's] credibility, serious consideration should be given to establishing a national stakeholder oversight board that includes representatives of the various stakeholder groups —".

- a three- to five-year modernization system that is far behind schedule and very much over budget; and

- the FAA's poor planning and management, as identified by the GAO.

In August 1993, a national air commission recommended creation of an independent federal corporation to operate ATC. Four other countries have switched their ATC organization to ones similar to that recommended for the U.S. One has a long enough track record to provide evidence on whether the designed correction actually produce the planned-for results.

New Zealand changed its system to a government-owned corporation in 1987 and is now considered highly successful. It is controlled by its own board of directors, charges a fee for its services and publicly values its assets and liabilities (a business standard but an innovation for the ATC). Under its new management scheme, New Zealand completed a major modernization program and instituted a cost-cutting program with the result that its reduced its operating expenses by 20 per cent and posted a profit. One can conclude a carefully reasoned replacement organization may succeed where one saddled with bureaucratic hampers will produce its own problems.

A STUDY OF GOVERNMENT CORPORATIONS

Prepared for the
Federal Aviation Administration Assistant
Administrator for Budget and Accounting
By
Susan S. K. Lee
September 24, 1993

CONTEXT

The definition of government corporations, their justification, forms, and characteristics are provided in this paper. Prepared for the Federal Aviation Administration (FAA), this paper's purpose is to inform FAA decision makers of the nature of existing federal corporations and factors to be considered as the FAA explores restructuring as a federal corporation. This information was requested in response to recommendations by the National Airline Commission and Vice President Gore's National Performance Review on establishing the FAA as a government corporation. The author succinctly provides key administrative considerations and related legal background.

Government corporations are federally chartered entities that conduct revenue producing, potentially self-sustaining, business-type activities that are of national importance. There are three types of corporations: wholly-owned government corporations; mixed-ownership corporations; and private corporations.

Establishment of a government corporation is justified when:

- the government is dealing with the public as a businessman, insurer, or banker, and not as a sovereign institute;
- users are expected to pay a major share of the costs of providing goods and services instead of the taxpayer;
- the public's need for the goods or services are not adequately provided by private corporations. Government corporations typically do not compete with commercial services; and
- those services or goods are judged by the Congress and the President to be of national importance.

Federal corporations differ from federal agencies in that they:

- are a separate legal entity distinct from the Federal Government;
- determine the character of and need for their expenditures, and the manner in which they shall be incurred, allowed, and paid without being subject to the statutes on spending government funds or their disallowance by the GAO;
- obligate funds for capital or operations, and retain revenues, without fiscal year limitations (i.e., have business-type budgets);
- can establish financial management systems that meet their own requirements; and
- can acquire and dispose of property without invoking the laws covering government property.

Federal corporations differ from revolving funds in that they:

- often limit administrative expenses and may have provisions for repaying capital funds;
- apportion quarterly only for expenses that are subject to annual limits (such as administrative expenses) rather than for all expenses;
- are not subject to GAO disallowance although they are subject to GAO audit;
- can use receipts for capital expenses without additional authorization;
- usually pay interest on any investment made by the federal government; and
- can acquire property, sue and be sued, and contract in their own name.

Twelve of 35 surveyed federal corporations were off-budget, although most wholly-owned federal corporations tended to be on-budget. Some were partly on and partly off. Funds appropriated to the Postal Service were on budget while postal revenue, receipts and operating expenditures were off budget. Many wholly-owned government corporations were subject to position ceilings, while mixed-ownership and private corporations were not.

Government corporations can be independent of Executive Branch departments or part of one. Independent corporations such as the Tennessee Valley Authority enjoyed the lack of bureaucratic layers usually found in a department and freedom from partisan political control. Corporations placed within a department tended to be those that benefit from program guidance and the ability to draw on the personnel and resources of the department.

Nearly all existing government corporations are governed by a board of directors to whom the chief executive officer reports. Boards should have from 5 to 11 members, appointed by the President or department secretary. The board should choose its chief executive officer. Board members should serve part-time making it more likely they will address broad issues rather than dwell on operational details. Boards should not represent special interest groups although special interests may appropriately participate on an advisory board.

If a corporation is located under a department, the secretary should not be a member of the governing board. It dilutes the secretary's authority. Similarly, two or more board members should not be appointed from the same department or agency since they cannot easily exercise equal authority.

The Chief Financial Officers Act amends the Government Corporation Act to require government corporations to submit an annual management report to Congress, including statements of financial position, operations, cash flows, reconciliation to the budget report of the corporation, if applicable, and internal accounting and administrative control systems.

Almost all wholly owned government corporations continue to submit to Treasury the standard financial reports (SF-224, SF-133, SF-2108, and SF-220), although those that have their own disbursing authority use the SF 1210/1220 in lieu of the SF-224.

Government corporation accounting systems should:

- develop their own accounting system, conforming to practices of the private sector. However, they should also serve to facilitate oversight and auditing by the legislative branch;
- do more than properly account for funds. They must provide information necessary to set rates, determine income and expenses, identify profit and loss, and evaluate results. They must depreciate capital assets and maintain accounts on an accrual basis;
- ensure data classification emphasizes program, output, or performance, and financial data coordinates with statistics of output and results. Budgets should be reviewed on a program basis instead of on a line-item basis; and
- pay charges between other corporations and government instrumentality's on a full-cost basis.

Authorizing legislation should be as simple, yet complete, as possible. Authority for establishing the corporation should be obtained a year ahead of the transfer of funds with its initiation at the beginning of a fiscal year. The legislation should:

- establish management structure only at the level of the board and chief executive officer so that corporation executives can establish the management structure and modify it if necessary;
- state if the corporation is exempt from federal procurement laws. Most wholly owned government corporations are not, but the Tennessee Valley Authority and the U.S. Postal Service are exempt. It is usually wise to rely on some form of competitive contracting; and
- specify if existing contracts will be transferred to the new entity or deobligated.

The government corporation should be able to:

- adopt, amend, and repeal bylaws, rules, and regulations governing the manner in which its business may be conducted and the powers vested in it may be exercised;
- contract as necessary;
- sue and be sued in its corporate name;
- acquire by purchase, lease, condemnation, or donation such real and personal property, and may sell, lease, or otherwise dispose of such property as the administrator deems necessary for the conduct of its business;
- determine the character of and the necessity for its obligations and expenditures, and the manner in which they shall be incurred, allowed and paid, subject to provisions of law specifically applicable to government corporations;
- appoint and set compensation of officers and employees, to define their authority and duties, and delegate to them powers of the corporation as the Administrator deems necessary for the conduct of corporation business;
- be credited with amounts received from activities;
- make grants, loans, and/or loan guarantees, if appropriate; and
- include options to use the General Services Administration, and other Federal agencies deemed helpful to the corporation.

Substantial appendixes list existing government corporations, provide profiles, and shows an example, the legislation authorizing the St. Lawrence Seaway Development Corporation.