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**Building the Institutional Capacity for Managing  
Commercial High-Level Radioactive Waste**

**May 1982**

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National Academy of Public Administration**

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## FOREWORD

In July, 1981, the Office of Nuclear Waste Management of the Department of Energy contracted with the National Academy of Public Administration for a study of institutional issues associated with the commercial radioactive waste management program. The two major sets of issues which the Academy was asked to investigate were: 1) intergovernmental relationships, how federal, state, local and Indian tribal council governments relate to each other in the planning and implementation of a waste management program, and 2) interagency relationships, how the federal agencies with major responsibilities in this public policy arena interact with each other. The objective of the study was to apply the perspectives of public administration to a difficult and controversial question -- how to devise and execute an effective waste management program workable within the constraints of the federal system.

The challenge posed by this assignment was formidable in many ways. Few other issues place such a severe strain upon the fabric of our intergovernmental system as the siting of a facility for the long term storage or disposal of high-level radioactive waste. Even though technical studies indicate that the technological capability to contain such waste is at hand, some elements of the public in potential host jurisdictions will resist any measures leading to siting a facility in their midst. The Federal Government possesses the preemptive power to enforce a siting decision, but, as the report points out, using such power would undermine the basis for mutual trust considered essential to the success of the waste management program.

Another challenge posed by this study was the fact that the panel was trying to focus on a moving target. During the rather brief course of this study there have been numerous significant changes in the organization, management, and policy direction of the program under review. Perhaps the most visible change occurring while the study was under way was the movement in the Congress towards agreement on a high-level waste management bill. The panel attached great importance to legislation as a signal of a national commitment to developing the capability for waste disposal. Therefore the panel kept a steady watch of the progress of proposed legislation. On the other hand, the panel sought to produce a report which would be relevant to those concerned regardless of the outcome of the legislative efforts of this Congress. As the panel report emphasizes, most of the issues it has addressed will remain very much alive even after any legislation is passed.

Various aspects of the subjects reviewed by the panel have been and are being investigated by a number of other governmental and academic groups. None of the other studies, however, have been approached from the particular perspective of public administration. Yet, it is precisely the institutional considerations of concern to public administration which are likely to be decisive in determining how successfully the radioactive waste management program achieves its goals.

To carry out this task, the Academy appointed a panel composed of individuals whose background and experience would provide the several types of knowledge essential to the effort. Appendix I lists the panel membership. The

panel met on four occasions to review the issues before it, to hold discussions with knowledgeable individuals from both the public and private sectors, and to discuss the several drafts of their report. Comment drafts of the report were also circulated in the Department of Energy, other federal agencies, and in several other organizations engaged in study of relevant issues. While the report reflects many of the comments received through this outside review process, the views expressed represent the collective position of the panel.

I would like to take this occasion to thank all those who have been involved in the study, the Office of Nuclear Waste Management in the Department of Energy which supported the study, the Academy panel and project staff director, and the many individuals who provided information and advice to the panel.

George H. Esser  
President

## Building the Institutional Capacity for Managing Commercial High-Level Radioactive Waste

### EXECUTIVE SUMMARY

#### 1. A Statutory Approach for the Common Good

The experience of other major nuclear powers that have been searching for ways to resolve the radioactive waste management problem, as well as experience to date in the United States, demonstrates that the critical aspect of the problem is the siting of facilities. Potential host jurisdictions, primarily state and local communities, consistently resist measures which may lead to their selection as a site for a waste repository.

The governmental institution having the greatest capability to reconcile all opposing views on such a divisive question is the Congress. The President, acting on advice of the Secretary of Energy, will recommend a site or sites to Congress. Congressional involvement will be necessary, however, to assure the public that a national decision is being taken for the common good. The main contributions of Congress in this consensus - building process will consist of the enactment of legislation and the monitoring and oversight of federal programs conducted pursuant to that legislation.

Strong bipartisan support for the enactment of legislation should be regarded as an essential means of demonstrating the national determination to carry out a high-level radioactive waste containment program in the common good. The effective execution of the Federal Government's responsibilities will depend both on the skills of responsible executive agencies and on Congressional oversight. Congress should be prepared to serve in a "final arbiter" role in the sensitive site determination process.

2. Cooperative Federalism

The Federal Government possesses the preemptive power necessary to site a facility in a location it deems acceptable. However, the use of such power would place an unacceptable strain upon intergovernmental relationships. On the other hand, states could resort to various measures which would have the effect of blocking or stalling the implementation of the waste management program.

The best course under such circumstances can be characterized as cooperative federalism. It entails full participation of all levels of government in decision-making, full disclosure of all pertinent information, and full commitment among all parties to the idea of movement towards a common goal.

The radioactive waste management program should be based on the concept of cooperative federalism assuring all levels of government opportunity to participate fully in the decision-making process. However, out of this process a program for action must be developed and necessary steps taken to reach national objectives. Participating parties must recognize a commitment implicit in this cooperative process to move towards a national decision for the common good.

3. Socioeconomic Impact Assistance

Any legislation establishing a radioactive waste management program should include clear and explicit provision for socioeconomic impact assistance to affected states and communities. The federal government should pay affected communities for up-front infrastructure costs while also reimbursing those communities and host states by an amount at least equal to the taxes that would be paid if the completed facility were privately owned.

4. A Multiple-site Approach

The case for multiple sites rests on both technical and institutional grounds. Sufficient uncertainty remains about the relative merits of various

geologic formations and facility design characteristics to justify development of several sites. Moreover, there is the risk that a single site may not make it through the licensing process, and back-up may be necessary. Finally, transportation problems would be greatly eased by multiple siting.

The regional disposal plan involving development of more than one site, as embodied in current DOE programs and pending legislation, represents the most promising approach to the long term disposal of high-level radioactive waste.

5. A Realistic Schedule

Unless the schedule for the waste management program is realistic and conservative, there is a risk of missing milestones and further undermining public confidence in the credibility of the program. Even with such a schedule, there is no assurance that targets will be met. A statutory process for final site determinations would be a prerequisite to any meaningful schedule. But specified time frames for completion of the several phases of the program are essential both as goals for achievement and as a basis for public confidence in governmental commitment.

The schedule for the waste management program should identify key milestones on a realistic time scale, taking into account the continuing need to demonstrate progress.

6. Interagency Coordination

Because the decision process governing radioactive waste management is so highly political, it is difficult to maintain stability and continuity in the program as political power shifts in both the executive and legislative branches of the federal government. Public confidence in the national government's ability to carry through a successful waste management program has been adversely affected by the many past changes in policy. One way to put the program on a

track leading to mission accomplishment is to designate an "honest broker" to represent the interests of the program in the top echelons of government. His basic role would be to monitor the interagency coordination process, to serve as liaison between the program management and top administration offices, and to represent the interests of the program whenever they may be challenged. The qualifications for such a broker role are not easily found in a single individual or office because they combine political skills and access to power, on the one hand, with the ability to protect the program from being politicized, on the other.

The existing interagency coordinating mechanism which ties together the several executive departments and agencies having a role in the program has not been active, but informal working relationships are generally considered satisfactory on a day to day basis.

A top echelon position in the Executive Office of the President should be designated to serve in the role of honest broker for the radioactive waste management program. The individual chosen for such a position should have the group dynamics skills to operate in a political environment and the capacity to comprehend the scientific and technical issues involved.

7. A Mission-Oriented Agency

The waste management function should be assigned to an organization or agency dedicated solely to the waste management program. A careful study should be made over the course of the coming year of the pros and cons of the several organizational alternatives including a government corporation as the vehicle for managing the waste management program. Until such a new entity is in place the waste management function should be carried out by a special office reporting directly to the Secretary of Energy.

8. Funding

Whatever funding mechanism is used, it should provide a revenue flow that is constant, predictable and sufficient to cover total costs. A user fee offers the prospect of sufficient revenues on a fixed schedule. Such a fee should be adjustable to meet changes in cost projections.

9. Redundant Reliability Systems

The concept of redundant reliability systems is common in engineering disciplines where two or more independent control systems are installed as insurance against failure in any one system. Applying this concept to the administration of the program for radioactive waste management suggests a potential for enhancing both the reality and the public perception of reliability in the design and execution of that program. Redundant reliability systems in the administration of the radioactive waste management program represent a means of providing a "defense in depth" system that assures the safe isolation of the high-level waste. The independence of the licensing process under the aegis of the Nuclear Regulatory Commission is, in effect, an application of this principle in the structure of federal machinery.

To assure the maximum degree of confidence in the institutional processes for the disposal of high-level radioactive waste, the concept of redundant reliability systems as utilized in engineering applications should be fully incorporated in the administrative systems of the waste management program.

## Introduction

In August 1981, the National Academy of Public Administration established a panel on radioactive waste management at the request of the Department of Energy. The panel was formed in order to tap a range of expertise in fields of public administration, intergovernmental relations and institution building, meshing these capabilities with the technical knowledge and experience of several panel members in radioactive waste management. (Panel membership is listed in Appendix 1.) With a focus on institutional issues, a major goal of the panel has been to examine the institutional options available to facilitate the development of a radioactive waste management system. The panel has been concerned both with intergovernmental relationships, the relations between federal, state, local and Indian tribal governments and with the relationships among the several federal agencies having responsibility for aspects of radioactive waste management.

Until the past few years efforts to initiate a program for the management of commercial high-level radioactive waste were characterized by the tendency to concentrate on the technical aspects of the problems while giving less attention to institutional questions - - issues growing out of the dynamics of legal, political, organizational, socioeconomic and psychological forces. Technical problems and uncertainties inherent in dealing with long periods in the future have increased the difficulty of dealing with these forces.

On the positive side, however, the interdependence of the technical and institutional aspects of radioactive waste management has come to be widely recognized. That in itself represents progress in the direction of initiating a workable and acceptable waste management program. But further progress will be assured only if this interdependence is reflected in a two-track approach to decision-making. In this two-part process technical and institutional issues must

be accorded parity with each other to assure that the step-by-step goals of the waste management program are met.

The panel has reviewed the results of the several other study efforts concerned with the types of institutional issues which it was asked to address. One such study, conducted by the State Planning Council on Radioactive Waste Management, was issued in August, 1981, when this panel was just being formed. Another study, by the Office of Technology Assessment of the U. S. Congress, was issued in April, 1982 while the final report of this panel was in preparation. Yet another report by the National Research Council of the National Academy of Sciences was nearing completion as this report was being issued. Furthermore, a great deal of research effort has gone into the development of the many drafts of nuclear waste legislation considered by the Congress over the last several years. Finally, there are a number of research programs under way in university research institutes such as the Institute for Governmental Studies at the University of California in Berkeley.

Since many of these other research efforts have been spread out over longer time periods entailing considerably more substantial resources than those involved in this study, the panel has felt that it should take full cognizance of these efforts, using whatever insights they may provide where appropriate. The panel has viewed its mission as one of bringing the special perspective of the public administration community to the issues before it. The panel conducted its own survey of a number of government institutions and private organizations having an interest in these issues. The analysis of responses to the panel inquiry is presented in Appendix 2.

Much of the ground covered in the body of this report and many of the findings and recommendations are presented more as support for evolving policy

than as new inventions. In those instances where this panel seeks to stake out new ground for exploration, the present study seeks to provoke interest in further investigation. The programs, policies and issues addressed herein are in flux. They call for careful monitoring and further study as events unfold.

The present transition of the Federal Government's radioactive waste management program from the phase which concentrated on technical research and development into a mission-oriented program based on a series of actions to site containment facilities represents a pivotal juncture in the evolution of radioactive waste management. The former emphasis on technical design and abstract studies of siting characteristics is giving way to actual field investigations and the negotiation of agreements with potential host jurisdictions. There is a growing public awareness of the national need to carry out a program for the safe long-range containment of high-level nuclear waste.

Public recognition of the necessity for a waste containment program is accompanied by a growing concern about the potential risks and the disbenefits associated with radioactive waste containment facilities. In a number of the states and localities identified as potential host jurisdictions, popular opposition is intensifying. Anti-nuclear groups across the country play upon the perception of risks involved in waste storage and disposal as a means of fortifying their case. Community opposition to the actual siting of a nuclear waste facility in a specific locality gains support from national anti-nuclear groups. Both types of opposition feed upon the perception that the Federal Government has a record of false starts in its past efforts to store or dispose of waste, that federal bureaucrats are "incompetent", and that the assurances of the safety of waste disposal technologies are not to be trusted.

Thus, as the waste management program passes through this pivotal juncture, a premium is placed on the need to recognize and deal with those problems contributing to the lack of public trust in the institutions at the national level of government responsible for the radioactive waste management program. The success of the program will depend on restoring public trust and building a broad consensus for a national decision for the common good.

A powerful stimulus for such a consensus would be provided by strong bipartisan support for passage of a high-level waste management bill in the U.S. Congress. The passage of a bill by the Senate represents a major legislative achievement, but the prospects for agreement by both houses on a bill remain uncertain as of this writing. Meanwhile, Congressional fragmentation and the engagement of so many different committees and sub-committees with diverse and sometimes conflicting interests complicates the task of reaching agreement. A list of those committees is presented in Appendix 3. Although the waste management program can and will go forward in the absence of new legislation, the failure of Congress to act would result in the loss of an important opportunity to build public confidence in the Federal Government's commitment to the waste management program.

Another major development at this juncture is the incorporation in pending legislation of various proposals to establish a steady and predictable source of funding through either a user fee or a tax. These funding mechanisms, which are discussed in detail below, would provide a secure source of financing the costs of long-term storage and disposal of wastes. Assurance of a predictable flow of funds for this purpose would greatly enhance public confidence in the commitment to carry the waste management program through to completion. Once a system for collecting funds is in place, the program will evolve into a more business-like

mode with contracts specifying the timing and conditions for delivery of waste shipments. Securing this source of funding will depend, of course, on the enactment of legislation.

The release of the study of nuclear waste management by the Office of Technology Assessment helps further to focus attention on the need for a national program and the adverse consequences of ad hoc decision-making. When the study by the National Academy of Sciences is released, these issues again will be exposed to public view. The convergence of these forces cited above makes this a critical turning point in the effort to develop a waste management program.

In addition to the executive summary of the panel's main findings and conclusions, the report consists of a discussion of the search for a radioactive waste management strategy, and an analysis of the two major groups of institutional issues: 1) intergovernmental, the relationships between the three major levels of government, and 2) interagency, the relationships between the major federal agencies having responsibility for the waste management program.

I. The Search for a Waste Management Strategy

Agreement on a strategy for managing the long-range disposition of radioactive wastes is essential to the national interest since those wastes exist and will continue to increase in volume regardless of the future of nuclear power in the United States. Experience in waste containment in the United States and other nuclear power nations demonstrates that there are effective and satisfactory processes for processing, storing and disposing of high-level wastes. The national policy developed by the United States for permanent disposal of high-level waste has not yet won sufficient Congressional support to be enacted in legislation and to gain acceptance by the American people. President Reagan has issued a policy statement calling for the reprocessing of spent nuclear fuel at commercial facilities and the terminal disposal of high-level waste in regional, geologic repositories. (1)

The current inventory of commercial spent fuel is about 8,000 metric tons, most of which is stored at operating reactors. The total quantity discharged from reactors is expected to rise to 70,000 metric tons by the year 2000. The volume of defense high-level wastes is much greater than the existing inventory of commercial spent fuel. This waste is now stored at Department of Energy installations. In this study, the panel has focused its attention on commercial waste.

The technical problems associated with the storage and disposal of high level radioactive wastes are unlike those posed by other types of hazardous wastes in respect to the special needs for long-term isolation from the environment. While the real risks associated with nuclear waste may, in some respects, be less of a

threat to public health and safety than some other hazardous wastes, they nevertheless call for extraordinary measures to protect both present and future generations of life on this planet.

Although the challenge posed by the technical aspect of radioactive waste management is one of grave significance for ours and future generations, there is a growing consensus among the technically knowledgeable that a number of entirely acceptable technical solutions exist. But despite the apparently high levels of confidence that experts accord to various technical solutions, it remains a formidable task to reach agreement on an overall waste management plan and to put such a plan into effect.

The selection of a technical approach involves many difficult judgments. For example, there is the basic question whether to adopt a "workable and satisfactory" solution or to seek a "perfect" solution, if indeed such a phenomenon exists. To find the perfect or best solution will take time; and it can be argued that future generations, having greater technological sophistication, will develop solutions even better than today's best. Such reasoning argues, in turn, for postponing any irreversible commitment to a "permanent" disposal technology. The French and British governments' approach to waste management has been based on this philosophy.

It is instructive in this connection to compare the policy of the United States in radioactive waste management with policies of the four other Free World nations with major commitments to nuclear power, namely England, France, Germany and Japan. During the past year the British government has made a significant shift in policy following essentially the course which the French government has advocated. The French program has been based on vitrification and encapsulation of high-level waste in containers which are stored above

ground. The French have preferred this policy to a commitment to a burial technology in the near future for two reasons. The wastes are cooling during this above ground storage period and thus becoming more readily manageable for the long term. The second argument, as noted above, holds that it is only realistic to expect that the exponential growth curve of technological knowledge is bound to give future generations a much better basis for resolving these issues.

The French government, now joined by the British, has thus been following a policy of purposely deferring decisions on how, where, and even whether to build permanent disposal facilities. The Japanese government, while it has been engaged in the difficult task of trying to identify acceptable sites, has recently adopted a policy which in effect defers the announcement of a final storage policy. In the meanwhile, they are pursuing a course similar to the French and British. However, all three countries are following the progress of U.S. geological studies, and technical data is exchanged via bilateral cooperative agreements.

Germany is the only one of the four powers which has actually embarked on development of a deep burial facility. The ability of the German government to gain consent of a local community, in this instance Gorleben in Lower Saxony, to serve as host for this facility is based largely on a fortuitous circumstance. Gorleben had previously been selected as the site for the national nuclear waste management center encompassing all components of the back end of the nuclear fuel cycle including away-from-reactor storage, reprocessing, high-level waste treatment, fuel fabrication and a geological waste burial repository. Because of strong local opposition to the fuel cycle center, the German government agreed to drop plans for most of the energy center's facilities, with the result that the Gorleben residents did agree to accept the waste repository, a far less massive complex than originally contemplated.

Thus, aside from Germany, the United States is presently the only major nuclear power whose waste management program depends on a near term process for determining high-level waste disposal sites. Current U.S. planning is based on the development of three sites with resulting costs that will obviously be higher than those of a single site. The United States is alone in having the financial resources and the diversity of geologic formations to proceed with the comprehensive and relatively more costly plan for site selection which it seeks to execute.

Experience in the other nuclear power nations as well as that of the United States suggests that, in the search for radioactive waste management strategies, the "best" becomes the enemy of the "good." This effect is most observable in the United States where the greatest level of effort is being expended but where, ironically, the challenge of achieving intergovernmental consensus remains formidable. The United States is embarked on a course the success of which depends on the near-term resolution of the most difficult piece of the total problem, obtaining the consent of host state and local jurisdictions to serve as sites for repositories. As long as residents of a host community perceive that the search for "the best" site or "the best" technology is still in progress, there will be a basis for resisting selection of what may be a "good" site as judged by the criteria of technical acceptability.<sup>(2)</sup> In fact, a "perfect" or "best" technology will always be a goal of the future as long as alternatives are being examined. What seems more feasible is agreement on an "adequate" or "satisfactory" system.

Another aspect of the search for a nuclear waste management strategy centers on the question of whether the future use of nuclear power should depend on having a program for terminal waste disposal under way. In the United States, the proponents of a present commitment to a strategy leading to a deep burial site

argue that a public perception of a "permanent" disposal capability is an essential precondition to further development of nuclear power. These voices argue that deferring a commitment to a permanent solution reinforces doubts about whether such a solution can indeed be found and thus further undermines the case for the nuclear option.

Debate about "permanent" vs "temporary" systems for containing radioactive wastes can be a semantic trap in the way of progress towards an acceptable national waste management program. Considering the long time frames required for the isolation of high-level wastes, it is doubtful that any technical approach adopted in the present would possess the rare attributes of irreversibility and infinite duration connoted by the term "permanent".

Most designs for high-level waste disposal facilities provide some capability for monitoring the buried wastes and for retrievability over certain periods of time. Although long-term retrievability (greater than 100 years) may not be acknowledged as a design feature, even wastes in a hardened deep burial repository could be recovered by excavation, albeit at a certain cost. The designation of "permanent" is therefore not apt.

The decision actually to place wastes in a repository still lies in the future. However, a substantial body of opinion accepts the view that the option of disposal is essential to support continued reliance on nuclear energy as a source of power.

Some of the difficulty in developing a rational waste management policy stems from the shifts in U.S. policy on reprocessing. The reprocessing of spent fuel separates residual uranium and plutonium from the fission products (waste) in the spent fuel so that the fissile material can be used. Because one of the by-products of reprocessing is plutonium which could be used in weapons production,

President Ford imposed a moratorium on commercial reprocessing. President Carter carried this action further by decreeing an indefinite deferral of the commercial reprocessing capability. President Reagan has lifted this ban. The Department of Energy has adjusted its programs in accordance with Administration policy. It is currently providing R&D support on alternate storage techniques for spent fuel for use by utilities and industry.

As the April, 1982, report of OTA points out, recent studies of reprocessing have concluded that this step is not essential to assure safe waste isolation. Reprocessing does not offer advantages that are sufficient to justify its use for waste management reasons alone. Rather the decision to reprocess would depend on whether the recovery of fissionable material from the spent fuel is more economical and efficient than the use of freshly mined uranium. (3)

Shifts in policy on reprocessing are not the only changes in the federal policy guiding technical efforts in waste management. Over a 20 year period, the Federal Government's preferred policy has shifted four times from disposal in salt, to long term storage in a Retrievable Surface Storage Facility, back to disposal in salt, to interim storage at an away-from-reactor facility with permanent disposal in repositories in a variety of geologic media. During the 1950s and 1960s, waste disposal received very little attention from policy makers who felt that the problem was one that could be easily solved when the need for disposal arose and did not deserve a high priority in advance of proven need. Commitment of budget and resources to the problem were therefore, small. More recently, as the gravity of the problem has become all too apparent, the issue has received increasingly high level attention and more resources for research. But with increasing top level attention has come a zig-zag effect as political administrations come and go.

The OTA report details the chronology of changes. In 1975, for example, President Ford announced a 1985 target date for the first repository, a policy that led to an almost exclusive focus on salt as a disposal medium and on sites that had already been studied or were easy to secure. The Carter administration adopted a new policy postponing the repository target date to the 1997 - 2006 period and calling for the review of four or five sites in two to three media. The Reagan administration plan calls for examining three sites in two media, the minimum requirements of the NRC, while retaining essentially the same target dates as those of the previous administration. (4)

The present DOE plan calls for developing an early demonstration of commercial HLW disposal capability. By 1985, DOE plans to select one of three candidate sites for construction of a Test and Evaluation Facility. Drilling of exploratory shafts for in situ testing will begin in 1983 at these three sites. Two of the three sites have already been selected, one being the basalt formations on DOE's Hanford Reservation in Washington state while the other is a volcanic ash (tuff) formation at DOE's Nevada Test site. The third candidate site will be selected from among salt formations in Mississippi, Louisiana, Texas or Utah.

A site for the Test and Evaluation Facility will be selected by 1985, construction will begin in 1987, and several hundred canisters of high-level waste are scheduled to be emplaced there by 1989. After the selection of the Test and Evaluation Facility in 1985, testing would proceed in parallel with NRC review of a license application for the first geologic repository, with the aim of having the first repository in operation in the mid to late 1990s. Possible ways to accelerate this schedule are now under study.

The past shifting of policy direction has undermined confidence among state and local governments, the public, and the power industry concerning the Federal

Government's capability and commitment to give the kind of steady and clear direction called for by such a vitally important set of issues.

In February of 1982 the Department of Energy issued a draft document entitled "National Plan for Siting High-Level Radioactive Waste Repositories and Environmental Assessment." The plan is one element of the National Waste Terminal Storage Program to develop the necessary technology and to qualify sites to establish mined geologic repositories. It describes the procedures for screening successively smaller portions of land to identify suitable candidate sites. The Environmental Assessment published with the plan is to serve as a basis for a finding of whether or not implementation of the plan or a modified version of it will result in significant environmental impacts. Site specific environmental impacts of constructing exploratory shafts, test facilities and repositories will be assessed in later documents. The plan has been given wide distribution and should increase public understanding of the progress of the program to date, the specific steps contemplated in the future and the basic principles being followed in the siting process.<sup>(5)</sup>

The experience of other major nuclear powers that have been searching for ways to resolve the radioactive waste management problem, as well as experience to date in the United States, demonstrates that the critical aspect of the problem is the siting of facilities. Potential host jurisdictions, primarily state and local communities, consistently resist measures which may lead to their selection as a site for a waste repository.

The governmental institution having the greatest capability to reconcile all opposing views on such a divisive question is the Congress. The President, acting on advice of the Secretary of Energy, will recommend a site or sites to Congress. Congressional involvement will be necessary, however, to assure the public that a

national decision is being taken for the common good. The main contributions of Congress in this consensus - building process will consist of the enactment of legislation and the monitoring and oversight of federal programs conducted pursuant to that legislation.

Strong bipartisan support for the enactment of legislation should be regarded as an essential means of demonstrating the national determination to carry out a high-level radioactive waste containment program in the common good. The effective execution of the Federal Government's responsibilities will depend both on the skills of responsible executive agencies and on Congressional oversight. Congress should be prepared to serve in a "final arbiter" role in the sensitive site determination process.

## II. Intergovernmental Relationships

The first major task of the panel was to examine the intergovernmental aspects of the radioactive waste management program and to suggest ways to improve the interactions among the several levels of government, federal, state, local and Indian tribes where they involved. This part of the report is divided into major sections dealing with state and local perspectives and the perspective of the Federal Government.

### A. State and Local Community Perspectives

The roots of the institutional problem are in public fear, whether it be based on some degree of informed opinion or on a vague fear of the unknown. Three Mile Island, other technological disasters or near disasters and a growing environmental consciousness have eroded the predisposition in American society to accept technological approaches to technological problems. The effects of this attitudinal and psychological change have spread quickly into the legal, political and other institutional spheres. Thus there are the numerous state initiatives and referenda, the anti-nuclear protest movements and the strong popular resistance to becoming a host for a nuclear waste repository. The issue of siting a waste repository has posed an almost unprecedented challenge to the federal system by seeming to place the fundamental interests of governments at the national, state and local levels in opposition to each other.

#### 1. State Planning Council

In recognition of the significance of this challenge the Carter administration established the State Planning Council to provide advice and recommendations on ways of resolving specific institutional issues related to radioactive waste management. The Council membership was composed of representatives of federal agencies and elected officials from state and local

government and Indian tribes. The Council reviewed the range of options for an intergovernmental approach to this problem. These options range from the extreme of arbitrary imposition of Federal government decisions based on preemption to arbitrary actions by state, local or tribal governments using a veto power against federal siting proposals. The Council rejected the extremes in favor of a workable and effective partnership to include "first, the full sharing of information and plans regarding waste disposal activities among all levels of government and, second, the opportunity for state, local and tribal governments to participate effectively in waste management decisions which affect their jurisdictions." (6)

The Council focused mainly on low-level waste issues, making a significant contribution in moving them towards resolution. The low level waste problems, are in some respects, more susceptible of resolution than those posed by high-level wastes. While the Council expired at the end of its 18 month charter tenure, it did help to build support for a partnership approach to the solution of waste disposal problems. The Council served as a useful experiment in bringing the several levels of government together in an environment of cooperative federalism.

## 2. Current Legislative Provisions for State Participation

The concept of cooperative federalism sometimes referred to as "shared powers," "shared decision-making," or a working partnership incorporates a broad array of institutional approaches or organizational alternatives for resolving conflicts among the several jurisdictions and publics having an interest in radioactive waste management. Various terms have been used to express the meaning of the concept including "consultation and concurrence," "consultation and cooperation," and "consultation and coordination." All the major bills

introduced in the 97th Congress incorporate some version of this approach. S. 1662 contains a consultation and concurrence methodology which has been the subject of intense Congressional negotiation. It combines features of the process now being followed in New Mexico Waste with the DOE Isolation Pilot Plant project and the state-congressional mechanism adopted in the Senate-passed bill of the last Congress. The methodology is defined as one by which "the Secretary (of Energy) (A) keeps the State or affected Indian tribe fully and currently informed about the aspects of the project related to any potential impact on the public health and safety, (B) solicits, receives, and evaluates concerns and objections of the State or affected Indian tribe with regard to such aspects of the project on an ongoing basis, and (C) works diligently and cooperatively to resolve, through arbitration or other appropriate mechanisms, such concerns and objections." (7)

The competing legislative proposals differ in their approaches to the problem of federal/state relationships with respect to three main categories of issues: (1) the type, timing and degree of state participation, including consultation rights; (2) the grounds for and timing of formal state nonconcurrence; and (3) mechanisms to resolve disputes in the event of nonconcurrence.

Extensive machinery for state participation is provided in all bills before the Congress of which S. 1662, can serve as an example. A review of its provisions illuminates some of the key institutional issues. Under this bill, the Secretary of Energy shall identify the states with one or more potentially acceptable sites for a repository or a monitored retrievable storage facility. Within 90 days of such identification the Secretary shall notify the Governor of the affected state or the affected Indian tribe. The States and affected tribes

then have the right to engage in the consultation and concurrence process described above.

Upon approval of a site for site characterization for a repository or the designation of a monitored retrievable storage facility the Secretary shall enter into negotiations with an affected state or Indian tribe to establish a "cooperative agreement" assuring the right to participate in the process of consultation and concurrence. Public participation in the negotiation of such an agreement shall be provided. The cooperative agreement may include but need not be limited to the sharing of technical information, utilization of available expertise, facilitating of permitting procedures, joint project review, and the formulation of joint surveillance and monitoring arrangements. The Secretary and the state or affected Indian tribe shall seek to conclude the agreement within one year after the notice that a state has been identified as a potential site.

Ninety days before submitting a construction application to the Nuclear Regulatory Commission, the Secretary of Energy must notify the Governor and state legislature of an affected state or the Tribal Council of an affected Indian tribe of his intent to file an application. If, within 90 days of the receipt of such notice, the Governor or the Indian tribe notifies the Secretary in writing of objections to the proposed facility, the Secretary shall promptly transmit such objections together with his comments and recommendations to the Congress. The Secretary shall not submit the proposed application to NRC and shall suspend further site-specific activities if during the sixty-day period of continuous session following submittal to Congress of the objections either house passes a resolution stating that the proposal for a facility does not sufficiently address state and local concerns. If the Congress fails to disapprove the proposed repository through

passing a resolution, the states would still have the opportunity to participate through the NRC licensing process.

The several other bills before the Congress feature alternative approaches to the machinery for state participation and non-concurrence. All are designed to allow the states to play a role in the decision-making process. Most call for creation of internal state review panels, some with federal funding, to allow the panels to develop their own information and conduct independent analysis.

However elaborate the machinery for state participation may be and however genuine the effort on the part of Congress to assure a meaningful role for the states, pockets of strong resistance are likely to remain among some elements affected by the proposed siting of a facility. Among these elements there is a conviction that the participation process is only window dressing to disguise the work of the Federal Government using its preemptive powers. This view is summarized in a report of the Institute for Governmental Studies, University of California, Berkeley, as follows:

"If consultation and concurrence is to help reduce conflict and build agreement on these matters, it must be more than simply a mechanism for sharing information or allowing states to comment on proposed DOE plans. It must also be a forum for (1) effectively verifying technical findings to the satisfaction of the state and (2) negotiating agreements on value questions and then changing waste management plans accordingly. That is, the best strategy for implementing consultation and concurrence is one of 'verification and negotiation'" (8)

The passage of legislation will not assure that the resolution of intergovernmental conflicts will occur or that public resistance will be overcome. It must be recognized at the federal level that public participation is an integral part of the intergovernmental conflict resolution process, that public participation is not a guaranteed way to gain public acceptance, and that increased involvement and information may enlarge rather than reduce the public

perception of risk. Public confidence in the federal program for waste management is highly dependent on the assessment of the Federal Government's capability to achieve a satisfactory technical solution and to provide sustained leadership and continuity.

### 3. Cooperative Federalism

The concept of cooperative federalism is best represented as a course midway between reliance on the supremacy clause of the Constitution granting preemptive power to the Federal Government and resort by states to use of a veto under the rubric of the Tenth amendment. The supremacy clause stipulates that state laws that conflict with or stand as an obstacle to the accomplishment of the legitimate and constitutionally permissible purposes of Congress must yield. The knowledge that the preemptive power exists is a potent force for forward movement on the intergovernmental front. However, if the middle course recommended above is designed so that it can accomplish its purpose, there would be no need to rely on preemption and thus less risk of undermining trust between the three levels of government.

The state veto concept rests on a claim, the constitutionality of which is disputed, that a state can refuse to accept a decision on the part of the Federal Government which it considers contrary to its interests. While some states had insisted on the state veto as the means of protecting their interests, that position has given way to a stance in which most states are calling for full participation in the decision process with no recourse to a veto.

The cooperative approach advocated by the State Planning Council exemplifies the type of working relationship offering the greatest hope of achieving the desired results. It recognizes that states, local governments and Indian tribal councils must be fully involved in the decision-making process which

leads to final site selection. Unless this process provides genuine opportunity to influence the outcome of the decision-making, antipathy will be created in a host state or host community which will adversely affect the future acceptability of a waste repository. The ability of states and local governments to participate in the consultation process is often limited by budgetary constraints, yet OMB has opposed the inclusion of support to assist state and local governments. However Federal assistance in support of such participation is essential to assure effective and meaningful participation.

The experience of DOE in seeking agreements with individual states to investigate the suitability of geologic formations as repository sites illustrates the difficulty of putting the principle of cooperative federalism to work in practice. While the Department of Energy has concluded an agreement with Louisiana, agreements with other states are still pending. Moreover, states are reluctant to enter into agreements and tend to insist on the "right" of non-concurrence at every step of the investigation process. If the states manipulate the concurrence process as a means of stalling progress, it works against the basic purpose of reaching a national decision for the common good on a definite time-table.

In summary, the Federal Government possesses the preemptive power necessary to site a facility in a location it deems acceptable. However, the use of such power would place an unacceptable strain upon intergovernmental relationships. On the other hand, states could resort to various measures which would have the effect of blocking or stalling the implementation of the waste management program.

Such a course can best be characterized as cooperative federalism. It entails full participation of all levels of government in decision-making, full

disclosure of all pertinent information, and full commitment among all parties to the idea of movement towards a common goal.

The radioactive waste management program should be based on the concept of cooperative federalism assuring all levels of government opportunity to participate fully in the decision-making process. However, out of this process a program for action must be developed and necessary steps taken to reach national objectives. Participating parties must recognize a commitment implicit in this cooperative process to move towards a national decision for the common good.

#### 4. Socioeconomic Impact Assistance

Congress has set many legislative precedents for mitigation assistance to state and local governments affected by rapid energy development. Most of the pending bills on waste management contain provisions for assistance to affected communities. The language concerning the form and level of such assistance is very general. Section 506 of S.1662 provides that "The Secretary (of Energy) may consult with appropriate units of local government in advance of commencement of construction of any facility authorized under this title in an effort to determine the level of the payments such government would be eligible to receive under this section." (underscoring added)

The Department of Energy has commissioned a substantial amount of research in the area of impact analysis. The Department regards socioeconomic issues as an integral part of the waste management program and a major concern of the institutional dimension of the planning process. It has supported work in this area by the National Academy of Science, the Human Affairs Research Center and by the Office of Nuclear Waste Isolation (ONWI) at Battelle Memorial Institute in Columbus, Ohio. In October, 1981, DOE distributed a draft document, "Framework for Community Planning," designed to assist state and local

governmentals in discussing with the Department the management of potential impacts related to the construction and operation of a waste repository. This document is intended to be the first in a series of reports to help communities in developing the capability to deal with impacts.<sup>(9)</sup>

The report discusses the many ways in which a major construction project can impact a community and how it can result in both benefits in the form of employment as well as disruption and loss of revenue because of federal exemption from taxation. The potential impacts of a waste facility could be quite large and might not become apparent until the siting process actually begins. Indeed, the special effects associated with a waste repository may exceed those associated with a more conventional project and prove more resistant to mitigation.

Any legislation establishing a radioactive waste management program should include clear and explicit provision for socioeconomic impact assistance to affected states and communities. The federal government should pay affected communities for up-front infrastructure costs while also reimbursing those communities and host states by an amount at least equal to the taxes that would be paid if the completed facility were privately owned.

##### 5. A Multiple-site Approach

Although cost considerations may argue for the construction of only one repository for disposal of commercial wastes, a stronger argument can be made for developing more than one site. Indeed, cost effectiveness studies based on analysis of transportation costs have indicated that regional facilities are desirable. Multiple sites offer the obvious advantage of cutting down on the mileage per individual shipment and reducing the level of risk associated with

each shipment. The logic for multiple siting is now generally reflected in both present policy and pending legislation.

If only one site is chosen, the residents of the community and the host state will resent the fact that they have been designated as the nation's "dumping ground". Dividing the burden among two or more sites reduces the validity of this argument. The fact that the cooperation of residents in host localities and states is important not only in the initial siting of a facility but also in its operation and maintenance is an additional argument for a multiple site strategy.

The case for multiple sites rests on both technical and institutional grounds. Sufficient uncertainty remains about the relative merits of various geologic formations and facility design characteristics to justify development of several sites. Moreover, there is the risk that a single site may not make it through the licensing process, and back-up may be necessary. Finally, transportation problems would be greatly eased by multiple siting.

The regional disposal plan involving development of more than one site, as embodied in current DOE programs and pending legislation, represents the most promising approach to the long term disposal of high-level radioactive waste.

## **B. The Federal Government's Perspective**

### **1. Organization in the Executive Branch**

The Department of Energy is the lead agency for radioactive waste management and the four other agencies with major responsibilities are the Nuclear Regulatory Commission (NRC), Environmental Protection Agency (EPA), Department of Transportation (DOT) and Department of the Interior (DOI). Several components of the Executive Office of the President also have significant roles in advising the President on the waste management program including the Office of Management and Budget (OMB), the Office of Policy Development, the

Office of Intergovernmental Relations, the Office of Science and Technology Policy (OSTP), and the Council on Environmental Quality (CEQ). The OMB role in the allocation of budgets for this function is particularly significant.

The mid-level technical direction of the Federal Government's waste management program has been provided by a corps of individuals many of whom began their careers in the Atomic Energy Commission. With subsequent reorganizations they have continued their activity without interruption, moving first into the Energy Research and Development Administration and then into the Department of Energy. The most recent major reorganization was the split of the commercial and defense waste programs within the DOE in late 1981 reversing an earlier reorganization which had joined them together.

Top leadership of the technical corps has changed sometimes as a result of reorganization and sometimes as a result of changes in political administration. The changes in organization have often had the positive effect of elevating the waste management function in the bureaucratic hierarchy. Nevertheless the changes in organization and top leadership detract from the public perception of program stability.

President Reagan's proposal to dismantle the Department of Energy would call for yet another shift in organization placing the present DOE Office of Nuclear Waste Management in the Department of Commerce. The prospect that the President's proposal will be adopted by Congress seems remote. If it were adopted, however, it seems possible that the movement of the technical staff from DOE to Commerce as a block could be effected with no more disruption than that attending on past reorganizations. Another reorganization, however, would certainly not contribute to a sense of stability or continuity.

In the Executive Office of the President and in the top ranks of the energy administration, the positions of those responsible for policy direction of the waste management program are subject to change every four years with changing political administrations. Because of the exceptional importance of continuity in directing the waste management effort, a strong case can be made for placing the function in a structural setting which has the greatest possible insulation from the forces associated with political change or bureaucratic reorganization.

Within the interagency system, the NRC role is perceived in some quarters as one of the principal sources of ambiguity. A DOE-NRC memorandum of understanding was signed in April 1981, with the purpose of promoting a full exchange of information between the two agencies and preventing unnecessary duplication of R&D activities. There remains, however, a perception of an anomaly in the relationship between DOE as lead agency and NRC as the regulator with ultimate responsibility for licensing DOE repositories. Among some quarters there is concern that DOE, as a promoter of nuclear power, will use its lead agency role to deflect regulatory developments considered contrary to nuclear power interests.

NRC is now conducting a generic proceeding "to reassess its degree of confidence that radioactive waste produced by nuclear facilities will be safely disposed of, determine when any such disposal will be available, and whether such wastes can be safely stored until they are safely disposed." This proceeding, involving some 40 parties, may be concluded by late Spring of 1982, though it could extend beyond that point. Even after the conclusion of this proceeding, NRC determinations about the degree of protection to public health and safety in DOE proposals can only be framed in terms of degrees of confidence, not

certainty. The existing state of geologic and materials sciences does not permit precise predictions about the behavior of high-level wastes in deep geologic media over periods of many centuries. NRC's authorizations to construct a repository at some site to be proposed by DOE will be based on a "reasonable assurance" on the part of the Commission that the radioactive materials can be stored without "unreasonable risk to the health and safety of the public."

2. The Substantial Role of Congress

The U.S. Congress, with its major functions of law-making, appropriating, and overseeing the administration of its legislation, plays a critical role in establishing the policy and programs for radioactive waste management. Moreover, the sensitivity of the political issues raised by the siting of waste management facilities suggests that members of Congress, as representatives of the national electorate, must also be fully involved in the final site determinations. It is interesting to note that, in most of the democratic nations with nuclear power programs the national legislative body plays a major role in siting decisions.

The question of how the U.S. Congress can and should be involved in these siting decisions is one of the more complex and controversial institutional issues in this policy arena. The legislative-executive relationship is a critical part of this question. To what extent should final site selection depend on decisions taken in either branch and/or agreement between the two branches? That question, in turn, leads into the matter of the so-called "legislative veto" without opportunity for Presidential review which has been a point of contention between the two branches for several decades.

Most of the bills under consideration have provisions for a legislative veto as a mechanism for engaging the Congress as the final arbiter of the siting

process. Unfortunately, the legality of the legislative veto has become even more uncertain since a January 29, 1982, decision of the U.S. Court of Appeals for the District of Columbia declared the one-house veto unconstitutional. That case, *Consumer Energy Council of America et. al. v. Federal Energy Regulatory Commission*, unless overturned or limited on an appeal, will have major consequences for a great deal of pending and existing legislation including that on radioactive waste management. The decision also implies that two-house vetoes, without Presidential review, are also unconstitutional. A constitutionally valid exception is any veto provision achieved by a Joint Resolution, which is the functional equivalent of a bill since it must be sent to the President for his review before it can become effective.

Further unsettling the legality of the legislative veto, the Supreme Court is expected to rule on a similar case within a few months. Moreover, it is not certain that the Supreme Court will resolve the issue on the basis of the facts before it with sufficient clarity to insure that any Congressional role as final arbiter of siting decisions can be relied upon. Meanwhile, Congress is debating the concept of the veto as part of a wide-ranging regulatory reform bill on which both houses are expected to act this year. Thus, the legality of a legislative veto as the mechanism for Congressional involvement is clouded.

As noted in the preceding section, if a state disapproves a federal siting proposal, S. 1662 provides opportunity for a one-house veto based on a resolution which would support a state, local government or Indian tribal assertion that its concerns were not sufficiently addressed. On the other hand, the leading House bill, H.R. 3809, as presently drafted provides that a state's disapproval will block use of the site unless the Congress passes "a joint resolution of either House" approving the site and the resolution thereafter becomes law. The House language

follows a recent amendment designed to overcome obstacles presented in the Consumer Energy Council case. Thus the present Senate version allows a one-house veto to support state disapproval, while the present House version allows state disapproval, which can be overcome only if both houses override the disapproval.

The requirement of a two-house override provides the easiest way to block an executive agency action. Thus it is favored by those who want to make the siting of a facility as difficult as possible, and disfavored by repository proponents. Requirement of two-house support of state disapproval, on the other hand would be similarly difficult to obtain. It would make siting of a repository easier to obtain, but states might believe their disapproval would be ineffective, so this approach might be unacceptable to repository opponents. A provision for one-house support or override of state disapproval would allow a role for Congress in the decision process but is likely to encounter the legal objection to one-house vetoes discussed above.

One-house support or override of a state's disapproval has problems. Nevertheless, it may be the most practical solution for present legislation. It is probably unwise to wait until the Supreme Court addresses the issue, and a two-house support or override would probably be unacceptable to repository opponents and proponents, respectively. For a nuclear waste repository, the one-house veto issue would not actually be faced until the mid or late 1980's. By that time, the issue may have been resolved by the courts. If a legislative amendment should become necessary, then it is time to enact it before the first state's disapproval.

The role of the Congress is further complicated by that body's internal organization. The many committees of the U.S. Congress having interests in the diverse aspects of waste management have become increasingly active in

considering numerous bills. As Appendix 3 indicates, there are six Senate committees and five House committees and a total of ten subcommittees all having oversight on radioactive wastes matters. The fragmentation of the Congressional committee structure has greatly complicated the legislative process. Although a more rational committee structure might have facilitated earlier passage of legislation, it must be acknowledged that there is little prospect for such change in time to affect the legislation now under review.

On an issue of such great national significance and of keen personal interest to affected publics, active involvement of Congress is obviously essential apart from the enactment of legislation. Members from affected jurisdictions will be heavily involved in constituency representation. The many committees of Congress having an interest in radioactive waste management will certainly maintain oversight.

The Department of Energy and the executive branch are moving and will continue to move ahead with the present program. Legislation is considered necessary, however, to provide the assurance that the entire Federal Government is committed to resolving the high-level waste management problem. Nevertheless, it would be wrong to assume that the passage of legislation will in itself assure implementation of an effective waste management program. Much, of course, will depend on the nature of that legislation. Moreover, the way in which Congress carries out its oversight function will be critical to the success of the program.

### 3. A Realistic Schedule

While the process for reaching decisions on siting and other aspects of waste management must be open to allow full and frank exchange among affected parties, there should be no license for the use of debate as a delaying tactic. Each

stage of the process must be tied to specific time limits so that a credible schedule can be followed. While there are disadvantages in fixing a schedule so firmly that no adapting to contingencies is permitted, one of the basic goals of a waste management program is to achieve a staged movement towards a national waste management system on a definite schedule. To restore public confidence in such a program it will be essential to avoid undue program delays on the one hand and inadequate participation on the other. The timetable for the program should itself be the product of intergovernmental consideration, providing leeway for unanticipated interruptions.

The timetable currently envisaged by the Department of Energy as presented in the chart in Appendix 4, provides for a series of milestones leading to an operational repository by 1998. The OTA report proposes a target date of the year 2000. Nearly all of the proposed legislation includes schedules or timetables for the accomplishment of the several steps of a process leading to a disposal facility. However, the fact that Congress passes a law mandating that certain steps will be accomplished by certain target dates does not assure that those steps will in fact be accomplished.

A timetable needs to be more than a symbolic demonstration of seriousness. Yet, if it is too rigid or brittle, it will not allow for adjustment to what is learned at each step of the process. Furthermore, the availability of funding has a direct impact on timetables and their credibility. If several geologic options are to be carried through the site characterization and licensing process, the cost of the total program may increase beyond that currently contemplated. But this approach would help to ensure that backups are available if the first site to be considered cannot be licensed.

Unless the schedule for the waste management program is realistic and conservative, there is a risk of missing milestones and further undermining public confidence in the credibility of the program. Even with such a schedule, there is no assurance that targets will be met. A statutory process for final site determinations would be a prerequisite to any meaningful schedule. But specified time frames for completion of the several phases of the program are essential both as goals for achievement and as a basis for public confidence in governmental commitment.

The schedule for the waste management program should identify key milestones on a realistic time scale, taking into account the continuing need to demonstrate progress.

### III. Interagency Relationships

The second major task undertaken by the panel was an examination of the relationships among federal agencies with responsibilities for radioactive waste management. The goal of this effort was to find ways to strengthen the management of the program at the federal level, to identify some of the organizational alternatives for management of the program and to analyze the impact of the proposals for funding by means of a user fee.

#### A. Interagency Coordination

Although an interagency coordinating committee chaired by DOE has been in existence for several years, it has not been active and has not brought about what some observers consider the essential interagency cohesion to accomplish the task at hand. Generally speaking, interagency coordinating committees have a very mixed record and much of the working level exchange takes place outside of the formal machinery. Such is the case in the area of radioactive waste policy. The highly political nature of waste policy issues requires that a close and continuing relationship be maintained between top echelons of political leadership and the working level structure responsible for waste management programs. Such coordination is necessary as a kind of glue holding together the several parts of the federal system and to overcome problems of synchronization that have arisen in the past. Past examples of timing discrepancies include the drafting by NRC of site suitability criteria in the absence of standards from EPA. Although EPA had assured both Congress and NRC that its standards would be promulgated in time for issuance of the NRC criteria, there were so many drafts of the EPA standards that NRC was forced to rely on a series of proposed draft standards. Another problem of synchronization

is the DOE search for prospective repository sites far in advance of determination by NRC of suitability criteria.

The high degree of political sensitivity and the potential for intergovernmental conflict associated with radioactive waste management make the task of coordinating this governmental function especially complex. Moreover the relationships among the principal actors changes as the program progresses. For example, at the point when NRC becomes involved in the actual licensing of a facility, it will have the decisive role at the federal level, whereas DOE has the key role during the development phase.

Among the federal agencies presently involved in radioactive waste management matters interagency coordination is not considered to be one of the more serious problems. Although the interagency coordinating committee chaired by DOE has not been active, the network of bilateral relationship between agencies working on a particular aspect of the overall problem seems to fill the needs at the working level.

A more important problem in interagency coordination appears to be in the relationships between the working level, composed mainly of technicians, and the higher echelons of the Executive Office of the President in which radioactive waste policies are formulated. While some staff members in the Office of Science and Technology Policy and the Office of Management and Budget follow the progress of waste management programs, the leadership or coordinating roles of those agencies are not clearly defined. Yet both OSTP and OMB play key roles in shaping government waste management policy and programs.

Because the decision process governing radioactive waste management is so highly political, it is difficult to maintain stability and continuity in the program as political power shifts in both the executive and legislative branches of

the federal government. Public confidence in the national government's ability to carry through a successful waste management program has been adversely affected by the many past changes in policy. One way to put the program on a track leading to mission accomplishment is to designate an "honest broker" to represent the interests of the program in the top echelons of government. His basic role would be to monitor the interagency coordination process, to serve as liaison between the program management and top administration offices, and to represent the interests of the program whenever they may be challenged. The qualifications for such a broker role are not easily found in a single individual or office because they combine political skills and access to power, on the one hand, with the ability to protect the program from being politicized, on the other.

The existing interagency coordinating mechanism which ties together the several executive departments and agencies having a role in the program has not been active, but informal working relationships are generally considered satisfactory on a day to day basis.

A top echelon position in the Executive Office of the President should be designated to serve in the role of honest broker for the radioactive waste management program. The individual chosen for such a position should have the group dynamics skills to operate in a political environment and the capacity to comprehend the scientific and technical issues involved.

B. A Mission-oriented Agency

Another means of strengthening the Federal Government's capability to carry out the radioactive waste management program is to elevate the function within the executive establishment and divorce it from any conflicting responsibilities. The institutional experience with respect to radioactive waste management to date demonstrates clearly the need for a strong base or focal

point for the function at the national level. Within the utility industry and in both executive and legislative branches of the Federal Government interest is growing in the possibility of an eventual transfer of the radioactive waste management function to a project or mission-oriented entity solely concerned with this function. Several organizational models are included among the alternatives. The government corporation format consists of several variations differentiated in large part by the way in which their funding is secured. Other alternatives include an independent authority with loose ties to DOE or its successor, such as the Bonneville Power Administration, a foundation such as the National Science Foundation, or an independent agency such as the National Aeronautics and Space Administration.

Proponents of the government corporation model argue that it would come closest to meeting the needs of a new framework for radioactive waste management. It would offer a greater degree of independence than a regular government agency and also would assure greater continuity in policy and program direction. However, the recent study of government corporations by an Academy panel raises a series of warnings about misuse of the corporate form and the difficulty of maintaining accountability in such instrumentalities. Indeed, one of the main revelations of the Academy study is the demonstration of how little is known or understood about this phenomenon. In the case of radioactive waste management, there is no compelling urgency to make a quick decision. Both the Senate-passed bill and H. R. 3809 call for a study of the feasibility of a new independent mechanism to manage waste management facilities. The government corporation mechanism is appropriate only under a special set of criteria, and the extent to which these criteria apply to the radioactive waste management function requires careful analysis. (10)

The waste management function should be assigned to an organization or agency dedicated solely to the waste management program. A careful study should be made over the course of the coming year of the pros and cons of the several organizational alternatives including a government corporation as the vehicle for managing the waste management program. Until such a new entity is in place the waste management function should be carried out by a special office reporting directly to the Secretary of Energy.

C. Funding

Funding of the federal Terminal Waste Isolation program has reached more substantial levels in recent years than in the pre-DOE era. The FY 1982 budget is at the level of \$226 million. The total of funds available affects the number of alternative sites and technologies that can be studied. While there has been some criticism of the past reductions in the range of options being explored, other questions have been raised about alleged waste or misguided allocation of resources.

Up until now the waste management program has consisted essentially of research and development. As it moves into the demonstration phase, the expenditures will increase significantly. The full costs of completion of the construction, operation and final closure of two repositories are estimated in the range of \$26 to \$40 billion. Unless the funding of these costs is guaranteed in advance of construction, the economic incentive to leave the waste in interim storage will be overwhelming.

A major redirection in the approach to funding came in the OMB response to the DOE request for \$235 million to support the waste program in FY 1982. OMB directed DOE to develop options for funding the program through utility fees including a proposed legislative approach to implement this funding

mechanism in the coming fiscal year. OMB approved \$50 million of on-budget funding for generic R&D.

The three major bills before the current Congress each contain a fee arrangement, but only S. 1662 provides for a specific fee based on nuclear power generation. Support for the fee concept has been developing in Congress and especially in industry in recent years. The main appeal of this funding approach is the promise of a constant, predictable and substantial source of funds over a long period. Together with a proposed one-time charge for spent-fuel storage, the fees would go into a separate account in the Treasury Department.

A host of financial questions must be resolved in working out this new funding mechanism. They involve both the mix of funding sources -- fees, direct appropriations and borrowing authority -- as the source of funds and the alternative ways to handle receipt and disbursement of funds through either the general fund, a special fund, a public enterprise fund, or a trust fund mechanism. Just one of the many subsets of issues concerns the time of collection, whether it be at time of power generation, at time of contract signing for disposal services, or at time of disposal. Many utilities have already begun to charge customers for anticipated storage and disposal costs. A recent ruling by an administrative law judge of the Federal Energy Regulatory Commission has directed that customers of a New England utility must pay now for future permanent disposal of spent nuclear fuel.

Because of the significant technical and institutional uncertainties about the future of waste management, some proposed legislation calls for contracts between utilities and the Federal Government establishing a schedule of payments and conditions of performance of both parties. Such contracts would contain the standard provision allowing for renegotiation when conditions

change. To assure universal participation of all utilities in such a funding arrangement, it has been proposed that DOE offer a model contract and that all owners be required to enter into such a contract within 18 months of passage of the Act.

All of these issues are now being debated in both the Congress and the Executive branch under the pressures created by the need to incorporate this funding concept in whatever legislation may emerge during this session. If Congress should choose the public enterprise fund approach, it would remove a major part of the financing of the Terminal Waste Isolation Program from the vagaries of the annual appropriations process.<sup>(11)</sup>

Whatever funding mechanism is used, it should provide a revenue flow that is constant, predictable and sufficient to cover total costs. A user fee offers the prospect of sufficient revenues on a fixed schedule. Such a fee should be adjustable to meet changes in cost projections.

D. Redundant Reliability Systems

The long time frames involved in high-level radioactive waste containment point to the need for the closest possible approximation to a fail-safe reliability system. Public skepticism can be overcome only by the knowledge that safeguards are in place to ensure that a breakdown in one part of the program will bring a back-up into operation thus providing for overall system reliability. In a sense, some redundancy of this kind is already built into the system, since two independent decision processes must be concluded before a waste repository becomes operational. First, there is the political or intergovernmental process for site selection with all the checks and balances built into that process. Secondly, the licensing of the facility by the Nuclear Regulatory Commission represents another independent means of assuring reliability.

The Nuclear Regulatory Commission was established to serve as an objective and disinterested third party to license and regulate the nuclear power industry. Yet the NRC now suffers from a poor public image exacerbated by the Three Mile Island accident. Moreover, its claim to objectivity is challenged by some observers who state that NRC personnel, policies and procedures are still predominantly carryovers from the former Atomic Energy Commission, its predecessor.<sup>(12)</sup>

Many other critics of the NRC feel that it has become overly restrictive and so preoccupied with the process of regulation that it has lost sight of the goals of regulation. Nevertheless, the NRC serves, and presumably will continue to serve for the foreseeable future, as the independent regulatory body responsible for safeguarding public health and safety in all aspects of nuclear power. As the regulator of nuclear power, the NRC must command public trust not only in its technical competence but also in its objectivity.

The NRC's Advisory Committee on Reactor Safeguards (ACRS) is a totally independent and highly respected committee composed of individuals owing no allegiance to the Commission. The Committee has already assumed a monitoring role over waste disposal facility development. It is performing such a role in the development of NRC licensing rolls and can be expected to continue in this role through facility development and operation. The ACRS provides a supplementary layer of reliability backing up the Commission itself.

The ultimate siting of high-level waste repositories will require the confidence of potential host jurisdictions that all the elements or sub-systems of the radioactive waste management program will function properly to assure protection of public health and safety. To move from the present to the point towards the end of this century when a waste containment facility becomes

operational will require successful implementation of a program composed of both technical and institutional elements.

The concept of redundant safeguards in the engineering design of technological enterprises such as space vehicles, weapon systems, automobiles or computer hardware is commonly accepted. It recognizes the value of duplication or overlapping as an essential means of assuring high standards of performance. In the field of public administration, however, the concept of redundancy runs counter to the conventional wisdom which regards duplication or overlapping as wasteful and potentially disruptive of clear lines of authority.

Of course, the federal system and the three branch division of governmental powers are based on a concept of redundancy and the belief that the waste and inefficiency associated with the checks and balances are worth the benefits achieved. Over time, in other words, the costs of redundancy are often exceeded by the benefits in terms of societal goods. As a means of reassuring the public that the Federal Government recognizes the need for special precautions in implementing the waste management program, a strong case can be made for incorporating redundancy not only in the technical components of the program but also in the institutional or administrative systems. Such redundancy might be achieved either through existing organizations or through formation of a new entity. Whatever mechanism is used, its composition or membership would have to be drawn from individuals who have earned the trust and confidence of the public.

The concept of redundant reliability systems is common in engineering disciplines where two or more independent control systems are installed as insurance against failure in any one system. Applying this concept to the administration of the program for radioactive waste management suggests a

potential for enhancing both the reality and the public perception of reliability in the design and execution of that program. Redundant reliability systems in the administration of the radioactive waste management program represent a means of providing a "defense in depth" system that assures the safe isolation of the high-level waste. The independence of the licensing process under the aegis of the Nuclear Regulatory Commission is, in effect, an application of this principle in the structure of federal machinery.

To assure the maximum degree of confidence in the institutional processes for the disposal of high-level radioactive waste, the concept of redundant reliability systems as utilized in engineering applications should be fully incorporated in the administrative systems of the waste management program.

NOTES

1. White House Press Release, October 8, 1981
2. A detailed analysis of the waste management programs of other nuclear power nations is presented in "Assessment of National Systems for Obtaining Local Siting Acceptance of Nuclear Waste Management Facilities (1981)." Prepared for the Department of Energy by International Energy Associates Ltd., December 31, 1981.
3. "Managing Commercial High-Level Radioactive Waste," Office of Technology Assessment, April 1981, p.5.
4. OTA, op. cit., p33.,34
5. "National Plan for Siting High-Level Radioactive Waste Repositories and Environmental Assessment," Public Draft, DOE/NWTS-4, DOE/EA-151, February, 1982
6. "Recommendations on National Radioactive Waste Management Policies," State Planning Council on Radioactive Waste Management, Executive Summary, Report to The President, August 1, 1981, p.i.
7. S. 1662 (Report No. 97-282), Calendar No. 393, p.103.
8. "High-Level Radioactive Waste Management": Social, Polical and Institutional Aspects of Program Planning," Institute of Governmental Studies," University of California, Berkeley, October 15, 1980, p.4.2.
9. "Framework for Community Planning Associated with Nuclear Waste Repository Siting," Office of Nuclear Waste Isolation, Battelle Memorial Institute, Columbus, Ohio, October, 1981.

10. "Report on Government Corporations," Report based on a Study by a Panel of the National Academy of Public Administration for the Office of Management and Budget, August, 1981.
11. A discussion of the funding issues is contained in "Alternative Funding Mechanisms for the Nuclear Waste Management Program", a paper prepared in the Office of the Assistant Secretary for Nuclear Energy, DOE.
12. Rolph, Elizabeth S., "Nuclear Power and the Public Safety: A Study in Regulation," D. C. Heath, Lexington, Mass., 1979.

Appendix 1

Panel on Radioactive Waste Management

Philip M. Burgess, Executive Director, Western Governor's Policy Office  
(WESTPO)

William O. Doub, Doub and Muntzing

Harold B. Finger, Staff Executive, Power System Strategic Planning and  
Development Operation, General Electric Corporation

Phillip S. Hughes, (Chairman) Under Secretary, Smithsonian Institution

Martin Landau, Institute of Governmental Studies, University of California,  
Berkeley

Hilliard W. Paige, Director, International Energy Associates, Inc.

David Stevens, Office of the Governor, Olympia, Washington

David B. Walker, Assistant Director, Advisory Commission on Intergovernmental  
Relations

Staff: Erasmus H. Kloman, Senior Research Associate, National Academy of  
Public Administration

**Analysis of Responses to  
September 25 Letter of Inquiry and  
Other Statements Provided to the Panel**

The following analysis is based on a review of the 14 responses to the letter sent to a list of 22 addressees selected on the basis of their perspectives on the institutional issues of radioactive waste management. Responses were received from eight state governments, five industry respondents and two environmental organizations. Other statements supplied to the panel aside from the 14 responses are also considered here. The analysis begins with those substantive areas where the highest degree of consensus emerged and concludes with those where there are the sharpest divisions.

1. Socioeconomic Impact Assistance

Of all the issues raised, the one cited most frequently was the need for provision by the Federal Government of economic impact assistance to affected communities. All three groups of respondents recognized the need to compensate states and localities for all the specific costs and losses associated with the establishment of a repository. Details on how needs for assistance should be measured or the mechanisms for providing it were not specified.

2. An Open Participatory Process

All respondents endorse the principle of an open participatory process in which states and potential host localities have full concurrence provisions of S. 1662 although the state position on Congressional support of siting decisions differs as noted in point 5 below.

A few respondents advocated federal assistance to potential host states to develop the technical expertise needed for informed participation, and no response opposed such assistance. The Michigan response supports fundings of the entire consultation and concurrence process by DOE.

Industry responses oppose any mechanism which would allow the Federal Government to lose control or be overridden by state veto authority.

3. Redundant Reviews

The concept that siting of radioactive waste facilities is sufficiently hazardous to justify duplication or back-up review systems is reflected in several responses. Commonwealth Edison recommends using the National Research Council to assess the risk in specific siting decisions.

The Environmental Defense Fund discusses the potential duplication of effort involved in the filing of environmental impact statements which may be required of both DOE and NRC. At the point when DOE begins the consultation process with a host community it may be required to develop an EIS, but there are legal ambiguities surrounding the questions of when such an EIS is triggered. In any event, the NRC represents an independent regulatory authority not bound by DOE-state decisions reached through consultation and

concurrence. As such it provides a second tier of assurance in protecting public health and safety.

#### 4. Fixed Schedule

Industry responses favor fixed schedules and an end to the vacillation and reorganization which has characterized past policy and programs. The Atomic Industrial Forum argues this point as follows: "Fix times certain for decision-making with the objective of eliminating to the extent possible further procrastination." AIF's support for pursuing a "workable and satisfactory" solution as opposed to a "perfect" or "best" solution is a corollary to this point.

The Edison Electric Institute argues for a systems approach to regulation of waste management. This approach would recognize that the success of the program depends on total performance of all components of the system. Regulatory requirements should set standards for the system as a whole rather than separating out the single components for regulation as proposed NRC and EPA rules would do.

#### 5. Congressional Involvement

One of the areas of least agreement as between industry representatives, on the one hand, and state representatives and environmental groups, on the other hand, concerns the specific provisions for Congressional involvement. It is generally agreed that on a question of such great national significance

Congress must and will be significantly involved. Beyond this general agreement, however, there is little consensus on the mechanics of a legislative-executive agreement. The governors and the State Planning Council favor a two-house endorsement of the siting decision rather than single-house support as provided by S. 1662

Dr. William Taylor of Michigan addressed the federal override question in a similar vein stating that a shared decision making process should not be subject to an override. Even though such an override might be legal, he states, its political feasibility would be in doubt.

6. Independent Agency

The independent agency concept was mentioned only in the testimony of Sherwood Smith representing the industry associations. He favors a public corporation as a means of achieving better management than a government agency is likely to provide. He advocates the inclusion of industry representatives on the board of such a corporation.

## Congressional Committees and Subcommittees Having Oversight on Radioactive Waste Matters

Senate

Committee on Appropriations  
 - Subcommittee on Energy and Water Development

Committee on Energy and Natural Resources  
 - Subcommittee on Research and Development

Committee on Armed Services  
 - Subcommittee on Military Construction  
 - Subcommittee on Strategic & Theatre Nuclear Forces

Committee on Environment and Public Works  
 - Subcommittee on Nuclear Regulation

Committee on Government Affairs  
 - Subcommittee on Energy, Nuclear Proliferation, and  
 Federal Services

Committee on Commerce, Science, and Transportation

House of Representatives

Committee on Appropriations  
 - Subcommittee on Energy and Water Development

Committee on Energy and Commerce  
 - Subcommittee on Energy, Conservation, and Power

Committee on Interior and Insular Affairs  
 - Subcommittee on Energy and Environment

Committee on Science and Technology  
 - Subcommittee on Energy Research and Production

Committee on Armed Services

Chairman

Mark Hatfield (OR)  
 Mark Hatfield (OR)\*

James McClure (ID)  
 Pete Domenici (NM)

John Tower (TX)  
 Strom Thurmond (SC)  
 John Warner (VA)

Robert Stafford (VT)  
 Alan Simpson (WY)

William Roth Jr. (DE)  
 Charles Percy (IL)

Bob Packwood (OR)

Jamie Whitten (MS)  
 Tom Bevill (AL)

John Dingell (MI)  
 Richard Ottinger (NY)

Morris K. Udall (AR)  
 Morris K. Udall (AR)

Don Fuqua (FA)  
 Marilyn Lloyd Bouquard (TN)

Melvin Price (IL)

Ranking Minority

Wm. Proxmire (WI)  
 J. Bennett Johnston (LA)

Henry Jackson (WA)  
 Wendell Ford (KY) \*\*

John Stennis (MS)  
 Gary Hart (CO)  
 Henry Jackson (WA)

Jennings Randolph (WV)  
 Gary Hart (CO)

Thomas Eagleton (MO)  
 John Glenn (OH)

Howard W. Cannon (NE)

Silvio Conte (MS)  
 John Myers (IN)

James Broyhill (NC)  
 Carlos Moorhead (CA)

Manuel Lujan (NM)  
 Manuel Lujan (NM)

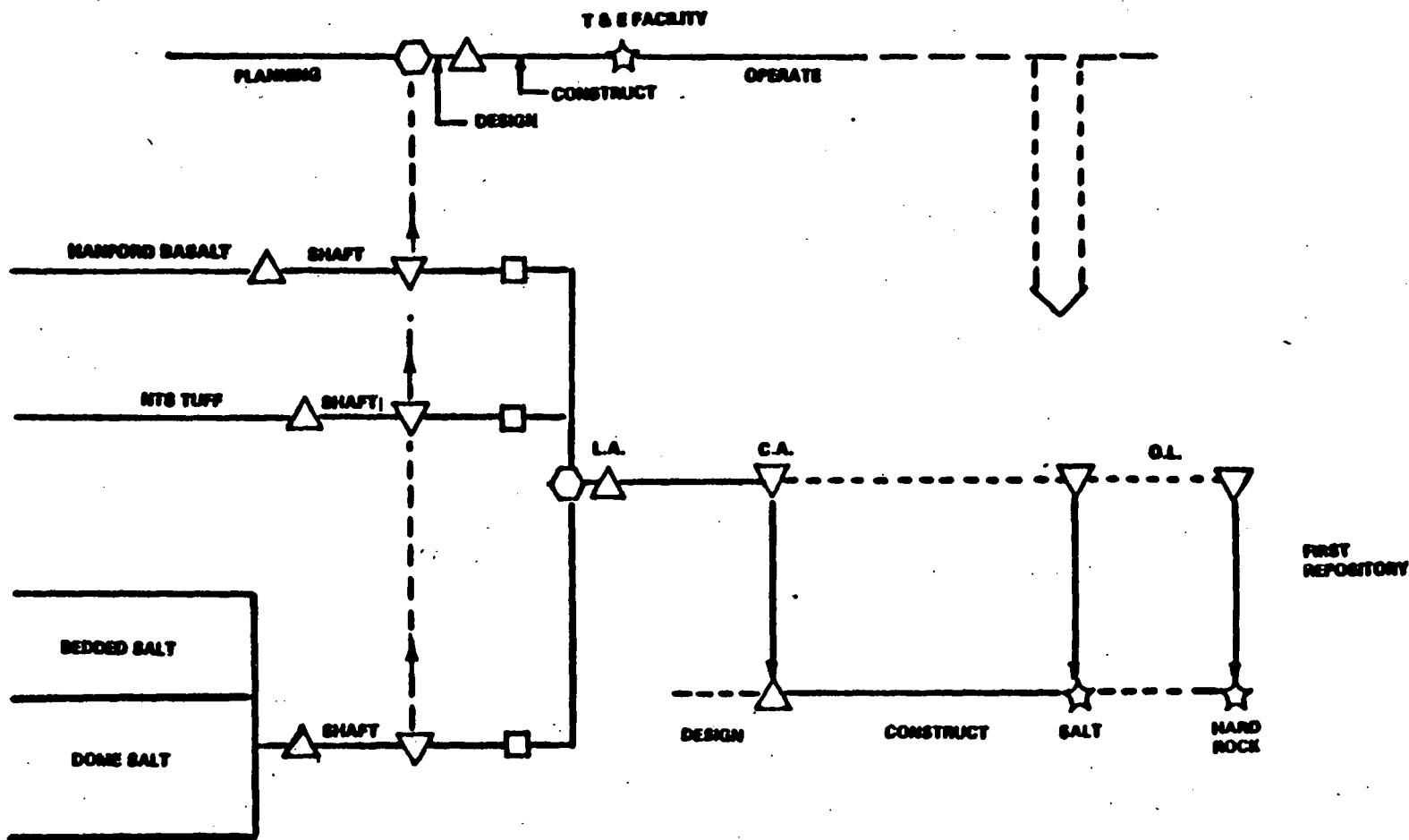
Larry Winn, Jr. (KS)  
 Manuel Lujan (NM)

Wm. Dickinson (AL),

\* James McClure (ID) second ranking majority member

\*\* J. Bennett Johnston (LA) second ranking minority member

# WASTE ISOLATION PROGRAM



- ▲ START
- ▼ COMPLETE
- ★ STARTUP
- REPOSITORY SITE SUITABILITY DETERMINED
- SITE SELECTION

- L.A. LICENSE APPLICATION
- C.A. CONSTRUCTION AUTHORIZATION
- O.L. OPERATING LICENSE

05/12/82