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National Academy of Public Administration

RECOVERING PUBLIC TRUST
AND CONFIDENCE
IN MANAGING RADIOACTIVE WASTE

Summary of a Workshop
October 31 — November 1, 1991

A Report
for the
United States
Department of Energy

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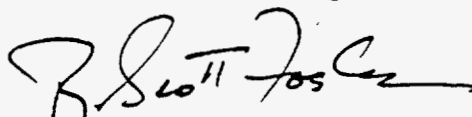
PREFACE

The director of the Task Force on Civilian Radioactive Waste Management of the Secretary of Energy Advisory Board, United States Department of Energy, asked the National Academy of Public Administration, to convene a group of approximately one dozen individuals to attend a two-day "state-of-the-art" workshop on the issue of how institutions establish, maintain, or recover trust and confidence among significant members of their task environments.

The Academy invited a selected group of managers and other individuals who have been involved in the matter of institutional legitimacy to participate in the workshop. The group represented a diverse set of backgrounds and organizational settings. The workshop was held in Alexandria, Virginia, on October 31 and November 1, 1991. (See Appendix A.) Also in attendance as observers were individuals from the Department of Energy, contractor personnel, and other interested parties. (See Appendix B.).

Each individual reviewed in advance selected background documents relating to the management of nuclear wastes. The Academy asked each of them to reflect on their experiences managing substances that have the potential of harm to the public, and to prepare a brief presentation describing their experiences and observations regarding effective practices for managing nuclear waste or other hazardous materials.

The purpose of the workshop was not to propose priorities and program directions, but to develop and present the considered views of the attendees on what is known about how organizations establish, maintain, lose, and regain public trust and confidence. The National Academy of Public Administration has been pleased to assist in this important effort.



R. Scott Fosler

President

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NATIONAL ACADEMY OF PUBLIC ADMINISTRATION

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held

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Under Contract With:

United States Department of Energy

INTRODUCTION

PROJECT ORIGIN

In 1989 the Secretary of Energy established the Secretary's Advisory Board to provide independent advice on long-range strategic planning issues affecting the department. The board is composed of approximately 30 individuals, including energy producers, consumers, and policy analysis specialists with knowledge of and interest in the broad set of activities for which the Department is responsible.

The board conducts a large part of its business through Task Forces. (See Appendix C.) As part of its program, the board's Task Force on Civilian Radioactive Waste Management, which is chaired by Dr. Todd La Porte, University of California (Berkeley), requested that the National Academy of Public Administration (NAPA) plan and conduct a workshop on managing radioactive waste. The workshop was to involve experts familiar with "hands-on" management of hazardous waste, radioactive waste, and related challenges involving the need for public trust and confidence. (See Appendix D.) In parallel, the task force requested that the National Academy of Science (NAS) conduct a similar workshop involving scholars with expertise in research related to organizational credibility. Representatives from both workshops will engage in discussions with the task force in a second workshop setting in February 1992.

In its request to NAPA, the task force emphasized that the extraordinary challenges of developing a national system for managing and disposing of radioactive wastes were the initial stimuli for the task force and for its choice to examine the lack of institutional trust and confidence as a principal problem. To strengthen public trust and confidence, the Department of Energy wanted to explore the way that it deals with individuals and organizations in the outside world and its internal policies and processes for meeting its responsibilities in radioactive waste management.

In response to a request from NAPA and NAS staff for additional information on the character of the nation's radioactive waste system, Dr. La Porte conceptualized and characterized

the United States radioactive waste management system for the information of the participants, a number of whom could not be expected to have such knowledge given the diverse spheres of expertise represented among the group. (See Appendix E.)

THE WORKSHOP APPROACH

The workshop was chaired by Academy Fellow, Peter L. Szanton. It consisted of individual presentations by the participants based upon their experiences, followed by discussion and questions. A summary discussion on the second day captured the general conclusions of the participants and identified and consolidated their considered views regarding management practices that facilitate the establishment, recovery and maintenance of public trust and confidence in institutions.

The presentations and individuals who gave them were arranged in four groupings.

Perspectives from the Environmental Community

Management Lessons Learned in Clean-up Situations

- Maj. Gen. (Ret.) George H. Akin, president, Akin Associates
- Thomas P. Grumbly, president, Clean Sites, Inc.

Management Lessons Learned in Transportation

- Leo Tierney, director, Hazardous Materials Management, Union Pacific Railroad
- Mark Johnson, director, Hazardous Materials Services, Roadway Express, Inc.

Other participants in the Workshop were: Gail Bingham, vice president and director, RESOLVE, World Wildlife Foundation; Dr. Metlay, staff director, DOE Task Force on Civilian Radioactive Waste Management; Dr. P. Brett Hammond, the director of Academy studies for NAPA; and Robert C. Crawford, the project director. Also in attendance were observers from the Department of Energy, from several of the department's contractor organizations, and from other public and private institutions.

NATURE OF THE CHALLENGE

There was a general recognition among the participants that the challenge involved with the management of radioactive waste is one of the most complex and difficult issues facing our society. Some of the key characteristics of the waste management challenge include:

- The substances involved represent a substantial threat to individual and environmental well-being;
- The public has little confidence because of perceptions of past government responses to the issue;
- The public is reluctant to accept risks that are imposed upon them;
- The threat is essentially invisible;
- The signs of errors in management are hard to recognize;
- There is a high level of oversight as well as intense government and public interest group involvement;

- There are many different "publics," each with its own special interests and concerns;
- People who were responsible for the problems may have gone away long before the problems surface;
- The consequence of errors is high, and there is a low tolerance for errors;
- Storage time encompasses generations;
- There are complications caused by the perceptions regarding past activities in the weapons-related and the civilian programs; and
- Organizational relationships and apportionments of responsibilities are complicated and complex.

In addressing the central issue of ways to ensure public trust and confidence, the participants generally agreed that the basic issue is whether or not the public believes that the government can and will do what it promises to do. They identified two fundamental questions facing public managers in any effort to improve public trust and confidence:

- What needs to be done to heighten capability in an organization to make change possible?
- What must be done to change organizational and individual behavior to achieve public trust and confidence?

A consistent thread running throughout the workshop discussions was the recognition by the participants that faith in public and private institutions and large-scale technologies has been severely strained in recent years. Perhaps the most visible example of this phenomenon is nuclear energy and radioactive waste management.

The Department of Energy has acknowledged that prior governmental actions in this area have affected its credibility - executive branch officials have told lies or made promises that were impossible to keep. The government has reneged on agreements and its spokespersons have not been credible and/or were not capable of dealing in an effective way with the concerned public.

This is not to imply that the Department of Energy and its associated contractors all have done these things. Many individuals in the management system at all levels have recognized the problems inherent in past approaches and are endeavoring to improve the way that things are done. But the department may still not fully accept conflicting views about policies, approaches or operations. Unfortunately, structure and tradition within the Department of Energy do not make such improvements easy to come by.

The Department of Energy is perceived by many as rigid and reluctant to divulge information. It is often seen as an agency that does not ask outside experts to perform reviews and appraisals and to make suggestions, and it is seen as tending not to involve affected outside parties in discussions of the need for a certain approach or facility, preferring to fall back on "Congress has given us a mandate," and the like. It is viewed by some as just going through the motions of public interaction, paying scant attention to inputs from the public and making little or no change in its preconceived directions based on the outside input. It is seen as making a decision about what is a proper course of action and then trying to convince the public that the department's approach is the correct one.

In the view of a number of workshop participants, the department has not answered some basic questions about radioactive waste and the facilities existing or proposed to handle it. Why is this facility needed? Why is this option the one that must be followed? Why must it be done at the sites currently under review? Why must radioactive waste be stored underground?

One of the approaches to channeling public concern constructively is a proactive program of risk communication. As expressed in the report of a National Academy of Science study of risk communication:

Governmental attempts to influence citizens' beliefs and actions can be justified only to the extent that some legitimate public process has culminated in the decision that using [government-sponsored information about risk] to influence behavior serves an important public purpose. (Committee on Risk Perception and Communication, Improving Risk Communication, National Academy Press, 1989 pp.90)



SUMMARY OF VIEWS ON ACHIEVING PUBLIC TRUST AND CONFIDENCE

The participants suggested a range of management practices that the Department of Energy could initiate or, if in place, reinforce to increase the effectiveness of its radioactive waste management activities. Most suggestions fell into one of two categories: (1) Changing Approaches to Communicating with the Public; and (2) Enhancing DOE's Organizational Capabilities.

CHANGING APPROACHES TO COMMUNICATING WITH THE PUBLIC

Openness

- Continued secretary-level commitment and constant monitoring is needed to ensure that the department and its subsidiary organizations use a more open approach in dealing with public stakeholders in the management of radioactive waste.
- A clear, simple overall strategy for the program is needed for the public, Congress, and department staff.
- Appropriate levels of officials need to deal with public groups, in one-on-one setting and public gatherings. Senior level officials should deal directly with the public so that they gain first-hand knowledge of public concerns and so that the public feels that it is dealing with individuals with policy and technical knowledge and broad perspectives who can commit the department to positive actions in response to public concerns.
- The department must avoid deciding that a facility is needed and then trying to make the public agree with that decision. The public will ask, "Why must it be operated here, now or at all?" If the department responds that such a question is beyond the scope of the

discussion, and that they want to talk about operating it, not why it should be operated, prospects for effective communication and consensus become blurred.

- Achieve an understanding with local officials and the public in affected communities that when problems arise they will be recognized, addressed, and dealt with in an open and responsive fashion and will be resolved as quickly and effectively as possible, bringing to bear all available resources of the department.

- When severe problems are recognized at a given location, experience in a number of settings indicates that effective methods for dealing with such situations are to admit the problem, engage in open decisionmaking, with all stakeholders and continue aggressive, strong management leadership to work through the problem over time.

- Maintain continuing positive and open contact with public officials in areas impacted by waste management operations.

- Endeavor to do a complete and understandable job of communicating risk to affected parties, in particular, and to the nation in general.

- In view of the complex and potentially disastrous situations related to radioactive waste in some locations, the department should regularly inform the Office of Management and Budget and Congress of the status of the program and what needs to be done to protect the population and the environment. This is especially evident given the resource limitations facing government at the present time.

Public Participation

- The commitment to more open and complete public participation and involvement throughout the process needs to be institutionalized so that it is stable from administration to administration.

- Consider developing a structured partnership approach for general policy and planning issues and for specific sites. The department could develop planning teams involving major stakeholders who would meet throughout the deliberation and action phases of a major activity. They would also monitor activities when they are underway.

- Consider options and approaches to implement the French approach of highlighting and maximizing economic incentives and benefits to those individuals who live in close proximity to radioactive waste facilities. This approach balances risks versus benefits.

- Expand the issues in which the publics affected by waste management activities can be involved and have some input. This could include conducting provisions for health screening over time in the communities surrounding a facility.

- Engage with the public and public representatives in joint data gathering and share data with the public after the government has developed it - for example, in site characterization activities.

- In cases such as Yucca Mountain, in which the department is responsible for characterizing a site, it should supplement the layers of independent oversight of the characterization by setting up an independent, small group with the ability and funds to work. This independent review group would feed back information to the department and the scientific community representatives working with it.

- Obtain meaningful input from the public before decisions are made and urge the Congress to do the same before passing legislation. For example, in addition to the traditional hearing process, key congressional committees could engage key stakeholders in exploratory and planning teams as it considers its approach to dealing with radioactive waste management issues.

- Design relationships with outside stakeholders in such a way that incentives for the groups are aligned with their self-interest. Consider their inputs seriously so they have an

impact upon the decision-making process. For example, offer public interest groups the opportunity to monitor and evaluate implementation.

- Where DOE does not adopt stakeholder recommendations and/or suggestions it should clearly communicate the reasons for non-adoption.

- Find and use additional ways to ensure that all of the most directly affected publics have access to independent sources of technical knowledge, such as structured linkages to universities and non-profit technical institutions. Respond to such expert inputs and judgments openly, rather than treating them as an unwanted complication that slows things down.

- Consider forming teams of responsible individuals working in the field of radioactive waste disposal and individuals from communities near well-managed radioactive waste management facilities. Dispatch such teams into communities near, or being considered for, waste facilities to: provide real-life experiences of how waste management can be properly done; provide access to technical resources; and demonstrate that solid and concerned people are involved.

- The transportation industry has in the pilot stage an activity called, Transportation Community Awareness and Emergency Response (TRANSCAER). This is a partnership between railroads, trucking companies, the chemical industry and communities. The consortium provides communities with information, experts, and other resources to use in planning to minimize problems caused by the transportation of hazardous materials through the communities. A technique of this sort might be useful in radioactive waste management.

- An industry consortium, the Hazardous Materials Advisory Council, advises the Department of Transportation and is composed of trade associations, the Association of American Railroads, the American Trucking Association, chemical companies, container manufacturers and others. A similar mechanism could help gain additional meaningful public interest input into planning for the radioactive waste management program. The mix of such

a group should likely be expanded to include representatives of the environmental public interest groups.

Behavior

- Develop and promulgate a clear, simple program strategy. It should demonstrate that openness is the watchword, provide guidance as to how the department plans to proceed to implement the approach, and assign accountability for making this approach an integral and effective part of the department's operations.

- Provide the public with more, and more understandable, information dealing with the nature of the need to manage radioactive waste, the technical options for doing so, and the implications and risks associated with each.

- Educating department staff and other stakeholders who will be involved in the planning process in dispute resolution techniques. Encourage them to participate in a process of education in this area and apply the lessons learned as they cooperate with each other in the planning process.

- Radioactive waste management is a complex and sensitive subject. Do not err on the side of low risks and low costs when planning to deal with it.

- Consider uncertainties such as policy adjustment and resources. When promises are made - keep them!

- Indications are that the notification provisions in negotiated agreements dealing with the management of radioactive waste are not always utilized as required by the agreement. If trust and confidence are to be maintained, such provisions must be followed to the letter. If true joint planning and stakeholder participation is in place, the stakeholders will be aware of

the need to and the reason for revisions in milestones and the like well before any official notification is dispatched.

- The department might consider using negotiated rulemaking in selected instances in an endeavor to develop dialogue along constructive, as opposed to adversarial, lines.

- Reevaluate previous decisions (including those made years ago, such as no reprocessing of fuel from the civilian reactors) to determine their current efficacy given changes in technology and public attitudes. Make certain that the basic issue as to whether certain things still need to be done at all is fully addressed.

ENHANCEMENT OF ORGANIZATIONAL CAPABILITY

It is clear that behavioral change is not sufficient. The department must have the necessary capacity to make it effective. This section provides the views of the workshop participants concerning ways to enhance the department's capability to accommodate the behavioral changes suggested in the previous sections.

Organization

- Keep the organization structure simple and responsive.
- Ensure that the assignment of roles among the various responsible agencies, private companies and the public and related groups are clearly specified and understood. Identify the significant stakeholders and spell out their roles carefully and fully.
- Ensure that technically qualified staff represent the department in dealing with public groups as they participate in program planning and implementation. More staff may be needed.

- Provide sufficient authority to project officials to enable them to handle normal decisions and problems at their level.

- Eliminate the differentiation between the management of defense-related waste and civilian waste.

- Establish a new agency or quasi-governmental entity to have as its sole responsibility the accomplishment of nuclear waste management and clean-up. Given the negative image that is the heritage of the past nuclear activities in the country and the overwhelming challenges facing the nation in dealing with the radioactive waste and clean-up problems, this is worth discussing again with Congress and the administration.

- Continue to establish signed agreements between the department and various states to permit the states to oversee certain Department operations. These have had positive effects in the states that have them.

- Consider having the public health impact assessments for waste sites performed by health authorities with community involvement rather than by entities connected with the department. Implications are that more credence would be given to such assessments from a detached institution.

Process

- Increase the range of decisions that entail consulting with all affected parties, and be willing to cancel, modify or repeal decisions when knowledgeable outside sources provide input that indicates change is needed.

- Develop heightened openness to change. For example, consider options that may be counter-intuitive to approaches based upon traditional technical analysis, especially where

public attitude and motivation are concerned. Do not let the technical solution be the only determinant of policy and actions.

- Make a conscious and continuing general effort to break from traditional patterns when it is clear that they are no longer workable given changed and changing circumstances. Build in incentives for employees to stimulate change and avoid at all costs falling into the siege mentality that so easily results from constant attacks from without and frustrations within.

- Reduce restrictions on information about the program in general and individual projects in particular.

- Set specific and understandable objectives for project activities with realistic timetables. Subject objectives to critical, independent review and then move ahead, indicating the actions for adjustment and modification that were taken based on the reviews.

- Use the National Environmental Protection Act provisions vigorously and positively. Do not arbitrarily or frivolously exclude sites just because they pose problems. Be aggressive in setting and/or accepting strong and reasonable environmental standards and pursue their achievement vigorously.

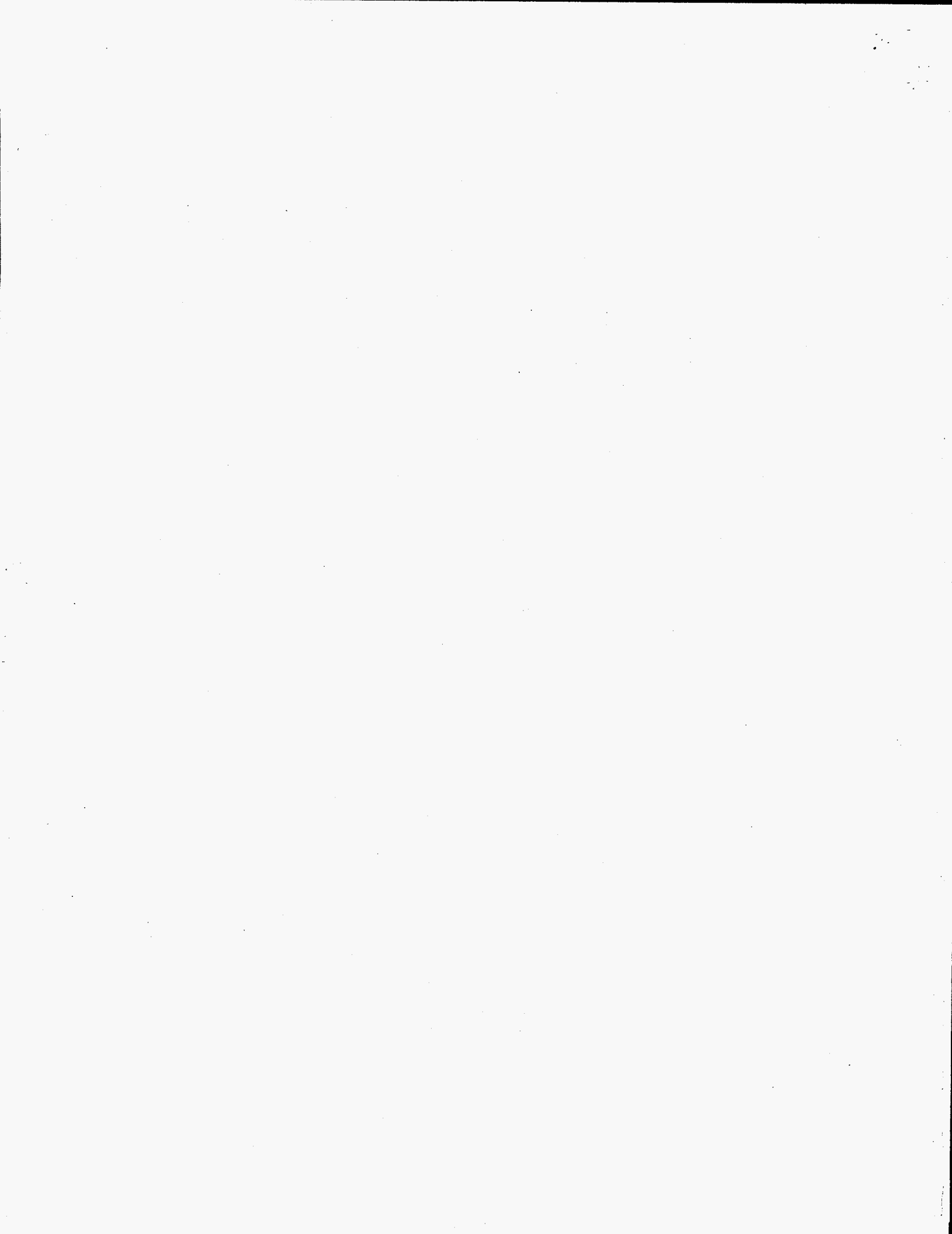
- In dealing with difficult situations in waste management facilities issues such as are faced at Hanford, consider establishing of a "remedy selection process" approach. This involves organizing a group of outside, concerned stakeholders to assist in assessing options to correct problems, revise utilization goals for portions of the reservation, and help in the implementation and assessment stages.

- Work to obtain from Congress and utilities the funds needed to satisfy the department's advertised clean-up plans. When administration decisions provide lower funding levels than that required, the department needs to take the lead in revising its plans and informing affected parties of the implications of the reduction.

- When special shipping is required, contact carriers and all jurisdictions through which the shipment is being transported and provide detailed information on arrangements, risks, etc. Department representatives must accompany such shipments. There must be complete candor if state or local units, such as governors' offices and emergency responders, and private sector parties are to be supportive and prepared to assist in safe passage.

- Communicate better with transportation carriers. Carriers lack clarity about the specific departmental capability to deal with emergency responses to transportation accidents.

- Provide local emergency responders and carriers with the same level of information and training about defense-related waste that they have for dealing with accidents involving civilian radioactive waste.



DEEPER THEMES AND GENERAL CONCLUSIONS

The participants in the workshop agreed that there are individuals in the Department of Energy and its associated institutions who use techniques designed to improve public trust and confidence. Although the participants identified numerous problems with the nation's current approach to the management of radioactive wastes, and identified management practices that could be applied to improve the situation, participants who had knowledge of the department's activities agreed that clear improvements have been made during the administration of the present Secretary of Energy.

The department has adopted a more proactive stance, with more emphasis on identifying and endeavoring to deal with problems at an early stage. For example, when he assumed the office, Secretary Watkins acknowledged that there were serious problems in the civilian radioactive waste program. He restructured it, stretched out program milestones to be more realistic, obtained a well-respected program director, began to reach out to the public in a more effective way, and achieved a fuller and more open airing of technical and institutional concerns. Without question, and with the full recognition that difficult tasks and unresolved issues remain, the program is generally in better shape now than previously.

Workshop participants were asked to consider the radioactive waste issues from internal and external perspectives. They agreed that there was much interconnection between these internal elements (such as management control systems) and external components (such as public education), and that they had to be considered together. There are, for example, legislative and executive branch requirements designed to enhance the Department of Energy's management

public and private sectors and bring them in as fuller partners in the process. The potential partners must also respond and contribute in appropriate ways.

One of the foundations for an effective partnership is a consensus on major issues facing the department as it moves to meet its responsibilities. The workshop participants noted the lack of consensus on past or existing issues, such as Yucca Mountain, MRS, and weapons site clean-up. A more comprehensive approach emphasizing collaboration could assist the Department as it moves toward a true national system for dealing with the radioactive waste problem.

Workshop participants discussed the following general themes associated with improving public trust and credibility.

OPENNESS AND MEANINGFUL PARTICIPATION

The prevailing themes running through the Workshop discussions were "openness in the process" and "meaningful participation." "Openness" was viewed as the key to achieving and maintaining the public trust and confidence that is essential if the radioactive waste management program is to achieve its goals. "Meaningful participation" was seen as encompassing the concept of openness, but going beyond dissemination of facts, problems and approaches. Participation would provide opportunities for interested parties to affect the decision-making process. One can have openness without meaningful participation, but one cannot have meaningful participation without openness.

Participants believed that the past lack of openness and meaningful involvement by the public and its representatives has been a major factor contributing to the problems the United States faces in managing radioactive wastes. The participants recognized that in the context of traditional management practices, involving "outsiders" has often been considered arduous and not helpful. From the manager's point of view, such involvement never/seldom/sometimes works. However, most workshop participants thought that the characteristics of radioactive waste management require responsible managers to operate as openly as possible.

Workshop participants recognized that openness in managing the radioactive waste program requires a conscientious effort at all levels of the organization to identify all parties with a legitimate interest (the stakeholders) in an activity and to inform them at an early point in the planning and decision-making processes. This proactive communication should continue through the implementation and monitoring phases.

Effective openness gives stakeholders access to information and expertise. Openness also means departmental officials must pay serious attention to stakeholder views and be willing to adjust plans and implementing actions based on their inputs and thus help the nation achieve its goals. At the same time, it must be recognized that there is not just one "public" to deal with. There is a complex of "publics," each with its own needs and concerns. Thus, the public must be carefully considered and various needs and concerns addressed as best they can be given resources available.

The challenge is to achieve a balance in which the responsible public managers and all legitimate interested parties and communities share relevant information. While workshop participants recognize it is not their role to specify to the Department of Energy precisely what that balance should be, they suggest the department needs to search for a better balance than has existed in the past or exists at the present time.

A point made by a number of workshop participants was that the American public, when it is adequately informed and involved, is quite understanding of the difficulties government faces in dealing with severe problems in the face of constrained resources and other limiting factors. People have shown that they will work within these constraints if brought along as part of the team, and if they are dealt with honestly and openly. It is essential, however, that they believe that the government representatives are trying to do the best job that they can in the face of difficult constraints over which they often have no control. One of the examples of building such community understanding and cooperation in the face of a perceived severe toxic waste hazard was the U.S. Army's efforts to reach out to an angry community near the Aberdeen Proving Grounds and to quell their anger through effective communication.

CHANGE IN THE MANAGEMENT PARADIGM

There was a consensus apparent among the workshop participants that the United States is undergoing a paradigm shift about the nature of the management of public organizations, particularly those that have a direct impact upon the lives of citizens or of the world in which we live. The change involves a movement away from detailed pre-planning and analytic comprehensiveness, to participatory planning and learning and acceptance of the inevitability of some degree of error. It also brings with it a need to reconsider purely technically based courses of action and to make better decisions that take into account changing conditions and the needs and perspectives of those citizens and institutions who are affected by the decisions and resulting actions.

The workshop participants believed that the Department of Energy, especially given the high degree of sensitivity and complexity involved in radioactive waste management, would be well-advised to work more aggressively to share responsibility and authority with affected parties to get the job done. At the same time, all concerned -- the people and neighborhoods affected, the technical community, department management, its contractors and other supporting organizations, the administration, and Congress -- must recognize that such a paradigm change requires all such segments to work together so the shared authority becomes an effective tool for concrete achievement. Movement in this direction may well result in a need to gain agreement for project schedule adjustments, because of the time required to achieve the full benefits that could accrue from such a move.

A staff member of the congressional Office of Technology Assessment (OTA) described an interesting approach to satisfying the need to consider the needs and perspectives of those citizens and institutions who are likely to be affected by the actions of government. The OTA is known for having a well-honed and comprehensive approach to involve principal stakeholder groups and individuals in the various studies that it undertakes. Greater participation of all stakeholders, while possibly requiring longer timelines in the early part of activities, could result in a much less adversarial process than the current process, with less time being required

overall. For example, it would appear that, to a considerable degree, the heavy use of litigation by public groups may be associated with the current ineffectiveness or unavailability of cooperative means. Any move to reduce adversarial aspects of policymaking could result in less time being required to get the job done with far less residual bad feeling among the parties.

Inherent in such a role for stakeholders is the need for them to accept some responsibility for working constructively to make the process work. In this connection, a number of the participants strongly suggested that the department must ensure that any involved stakeholders are legitimate representatives of a key segment of the public, and that individuals with private or hidden agendas do not disrupt an essential activity for their own ends.

Openness and meaningful involvement are critical in ensuring public trust and confidence. However, it must remain clear that the constituted government will retain the final decision authority for the ultimate course of action.

THE BOTTOM LINE

The workshop participants recognized the challenge the department faces in managing radioactive waste. The situation has developed over many years, societal conditions and relevant technologies are dynamic, the cast of characters has continually changed, and the nature of the hazards posed to the population and the environment are substantial. The participants assessed their own and each others' experiences in managing or being involved in managing of threatening substances and offered their views on the actions the department could take to restore public trust and confidence in the radioactive waste management process.

The specific points and general conclusions presented in this report summarize the ideas that emerged during the workshop. The participants hope that their observations -- building as they do on the themes of openness, meaningful public participation, and a fundamental change in traditional management strategies, will assist the department as it moves to dispel public

concerns in this area, as well as improve its ability to manage the nation's radioactive wastes in a safe, efficient, and effective manner.

APPENDICES

APPENDIX A

PARTICIPANT BACKGROUND SUMMARIES

1. **Peter L. Szanton, Chair*** - president, Szanton Associates; former associate director, U.S. Office of Management and Budget; research director, Commission on the Organization of the Government for the Conduct of Foreign Policy; fellow, Institute of Politics, JFK School of Government, Harvard University; president, New York City-Rand Institute.
2. **Dr. John F. Ahearne** - executive director, Sigma Xi; vice president and senior fellow, Resources for the Future; chairman and commissioner of the Nuclear Regulatory Commission; White House Energy Office and deputy assistant secretary of Energy; deputy and principal deputy assistant secretary of Defense; Office of the Secretary of Defense.
3. **Maj. Gen. (Ret.) George H. Akin** - president, Akin Associates; commanding general, U.S. Army Test and Evaluation Command and Aberdeen Proving Ground; deputy commanding general, U.S. Army Communications-Electronics Command; assistant chief of staff for logistics, C4/J4/G4, Combined Forces Command/United States Forces Korea/Eighth U.S. Army; district adviser, Vietnam, and other key assignments in logistics, operations research analysis, and maintenance at Ft. Lee, VA, Frankfurt, Germany, Anniston, AL, Chambersburg, PA, and Ft. Hood, TX.
4. **Gail Bingham** - vice president and director, RESOLVE, World Wildlife Federation; Senior Associate at RESOLVE, Center for Environmental Conflict Resolution (became part of The Conservation Foundation in 1981); planning positions in India and in local government in Washington State; national board member and former president of the District of Columbia Chapter of the Society of Professionals in Dispute Resolution; chair of the Board of Directors of the Western Network in Santa Fe, NM.

*Academy Fellow

5. **Thomas P. Grumbly** - President, Clean Sites, Inc.; Executive Director, Health Effects Institute; partner, Temple, Barker and Sloane, Inc. (Consulting); staff director, Investigations and Oversight Subcommittee of the House Committee on Science and Technology; associate administrator, Food Safety and Quality Service, U.S. Department of Agriculture; executive assistant to the Commissioner, Food and Drug Administration; examiner, U.S. Office of Management and Budget.
6. **Mark Johnson** - director, Hazardous Materials Services, Roadway Express; member, Board of Directors, Hazardous Materials Advisory Council (HMAC); past chairman, HMAC Education and Training Committee; past chairman, Hazardous Materials Committee of the American Trucking Association; member, Summit County, Ohio, Emergency Planning Committee.
7. **Dr. Yves Kaluzny** - head, Nuclear Service, Ministry of Industry, General Direction of Energy and Raw Material; head, Fuel Cycle Department, Direction for the Safety of Nuclear Installations, Ministry of Industry and Ministry of Environment, French Government; Laser Fusion Research; engineer, LaHAGUE reprocessing plant.
8. **Dan W. Reicher** - senior attorney, Natural Resources Defense Council; adjunct professor, University of Maryland Law School; assistant district attorney, Environmental Protection Division, Massachusetts Attorney General's Office; law clerk, U.S. District Court, Boston, MA; staff member, President's Commission on the Accident at Three Mile Island; legal assistant, U.S. Department of Justice, Hazardous Waste Section.
9. **Charles W. Taylor** - chairman Emeritus and Director, Nuclear Fuel Services, Inc.; manager, Nuclear Fuel Technology, manager, Commercial Reprocessing Plant Design and Construction, manager, Design and Construction of Reactor Materials Plant, W.R.Grace; research technologist and pilot plant operator, National Lead Company; research and development chemist, Vitro Corporation of America (Manhattan Project).

10. **Leo Tierney** - director, Hazardous Materials Management, Union Pacific Railroad; for the last 13 of 31 years with Union Pacific, assured hazardous materials regulatory compliance and managed hazardous materials emergency response efforts; earlier positions within Union Pacific in the engineering department; currently vice-chairman

DEPARTMENT OF ENERGY REPRESENTATIVE

Dr. Daniel S. Metlay - director, Task Force on Civilian Radioactive Waste Management, Department of Energy; research scientist, Brookhaven National Laboratory; has been involved in several studies of nuclear waste management, including the Nuclear Regulatory Commission's Task Force on Goals and Objectives, the Office of Science and Technology's Interagency Review Group on alternative technological strategies, and the Office of Technology Assessment's Report to Congress; has conducted research on public attitudes toward technology, on error correction in federal bureaucracies, and on the role interest groups play in regulating health and environmental risks; previously a professor at Indiana University and the Massachusetts Institute of Technology.

NAPA PROJECT STAFF

Dr. P. Brett Hammond - director of Academy studies, National Academy of Public Administration; associate executive director and acting executive director, Commission on Behavioral and Social Studies and Education, National Academy of Sciences; faculty member, University of California at Los Angeles and Berkeley, working in American state, local and national government and bureaucracy policy analysis, science policy and organization theory; served as associate editor of Policy Sciences and as a consultant to the Office of Technology Assessment.

Robert C. Crawford - project director, NAPA/DOE Workshop; executive vice president, CSG Holdings, Inc.; president, CEO Support Services; director, Intergovernmental Science Program, National Science Foundation; assistant associate director for research utilization and for civil preparedness planning, Federal Emergency Management Agency; deputy director, State and Local Programs, and deputy director for federal coordination, Office of Economic Opportunity; program analyst, Division of Military Application and executive assistant to the manager, Schenectady Naval Reactors Operations Office, Atomic Energy Commission.

APPENDIX B
OBSERVERS FROM THE DEPARTMENT OF ENERGY
DEPARTMENT OF ENERGY CONTRACTORS AND OTHERS

DEPARTMENT OF ENERGY STAFF

1. Mr. Jerome D. Saltzman, director, External Relations, Office of Civilian Radioactive Waste Management/DOE
2. Ms. Nona F. Shepard, risk management and risk communication coordinator, Office of Civilian Radioactive Waste Management/DOE
3. Mr. Jake Stewart, staff member, Secretary of Energy Advisory Board, DOE
4. Ms. Susan Heard, Staff, Secretary of Energy Advisory Board, DOE
5. Mr. Andrew Weiss, staff, Secretary of Energy Advisory Board, DOE

DEPARTMENT OF ENERGY CONTRACTOR PERSONNEL

1. Mr. John Burns, senior associate, JK Associates, Inc., Silver Spring, MD
2. Dr. Jonathon L. Katz, policy analyst, Roy F. Weston Co., Washington, D.C.
3. Ms. Patricia Van Nelson, acting manager, External Liaison and Program Relations Department and the Institutional and Impact Analysis Department, Roy F. Weston Co., Wash., D.C.

OTHER OBSERVERS

1. Mr. James F. Butanis, chief, Environmental Quality Office, U.S. Army Test and Evaluation Command, Aberdeen, MD
2. Mr. Ron C. Callen, director, Nuclear Waste Program Assessment Office, National Association of Regulatory Commissioners, Washington, D.C.
3. Dr. Rob Coppock, director, Division on Human Behavior and Performance, National Academy of Sciences, Washington, D.C.
4. Dr. Bertrand G. de Galassus, attache for nuclear energy, Embassy of France, Washington, D.C.

5. Ms. Emelia L. Govan, senior analyst, Office of Technology Assessment, U.S. Congress, Washington, D.C.
6. Elgie Holstein, Washington representative, Nye County, Nevada Board of Commissioners
7. Dr. Yves Marque, deputy director, ANDRAC, Paris, France
8. Mr. Loring E. Mills, vice president, Nuclear Activities, Edison Electric Institute, Washington, D.C.
9. Mr. Phil Niedzielski-Eichner, technical advisor, Nye County, Nevada Board of Commissioners

APPENDIX C

STATUS OF THE DEPARTMENT OF ENERGY TASK FORCE ON CIVILIAN RADIOACTIVE WASTE MANAGEMENT

In his address to the NAPA/DOE Workshop, Dr. Daniel S. Metlay, director of the Department of Energy's Task Force on Civilian Radioactive Waste Management, provided a status report on the Task Force and its activities. A summary of this status report is provided here as an important part of the background surrounding the workshop.

Nearly two years ago, the secretary of Energy established the Secretary's Advisory Board to provide him with independent advice. This advice was to bear largely on long-range strategic planning issues that affect the department. The Board is composed of approximately 30 individuals representing energy producers, consumers, and policy analysis specialists. It thus covers a range of sectors in the society that have an interest in the broad set of activities for which the department is responsible. The Board meets roughly twice a year and conducts a large part of its business through task forces.

There are four task forces operating at present, examining issues as diverse as the future of the National Laboratories, the use of economic modelling by the department and the environmental impact process within the department, especially with regard to the defense complex clean-up activities.

The Task Force on Civilian Radioactive Waste Management was created after conversations between the secretary and the Advisory Board. It is composed of 14 individuals, four of whom are members of the Secretary's Energy Advisory Board. The chairperson of this task force is Professor Todd R. La Porte, who is on the faculty of the University of California in Berkeley. Conversations between the Advisory Board and the secretary led to the creation of the Task Force. Its charter is to focus on a key institutional question affecting radioactive waste management programs in the department - measures the department can take to strengthen the level of public trust and confidence in its activities in this area.

The department is interested in the question of public trust and confidence for two reasons. First, because of the pragmatic reason that programmatic success in this area hinges upon successfully establishing and maintaining public trust and confidence. Second, because it reflects the secretary's philosophy that public trust and confidence are important ingredients of good governance.

The task force has been asked to do four things: 1) explicate the range of meaning that the term "public trust and confidence" is given and understand the kind of factors that affect the levels of public trust and confidence; 2) assess alternative organization, financial, regulatory and legislative arrangements and ask how these might be used to strengthen public trust and confidence; 3) consider how those arrangements might also affect other programmatic objectives, such as costs or schedules; and, 4) provide recommendations to the secretary on what might be done, and guidance on how to implement those recommendations.

When the task force was established in May 1991, its focus was on the civilian radioactive waste management program. As the secretary considered the charter, he recognized immediately that the issues that the task force would address cut across a number of other programs with which the department is involved. As a result, in September 1991, he requested that the scope of the charter be broadened to include the department's effort at managing and cleaning up the Defense waste complex as well.

In pursuit of its responsibilities, the task force commissioned a paper that reviews the literature on what the notion of public trust and confidence is understood to mean. A second paper looks at the public opinion literature on trust and government in general, and trust in the Department of Energy in particular. These papers are in addition to a number of case studies of past departmental actions, and were done to capture the positive and the negative lessons learned.

The task force is also developing a census of interested organizations in a effort to make contact with as many affected parties as possible to obtain their views. It is developing a functional analysis of policymaking for technical design and development and for the operating organizations that comprise the waste management system.

APPENDIX D

METLAY/HAMMOND EXCHANGE OF LETTERS



Secretary of Energy Advisory Board
Washington, DC 20585

February 20, 1991

Brett Hammond
Vice-President
National Academy of Public Administration
1120 G Street NW
Washington DC

Dear Brett:

This note is to follow up our conversation on Friday, February 15, 1991.

At that time, I told you that the Secretary of Energy had created a Task Force on Civilian Radioactive Waste Management whose charter was to explore the question of ensuring public trust and confidence in the policy-making, technical design and development, and operating organizations responsible for managing nuclear wastes.

In order to establish a firm empirical foundation for the Task Force's efforts, I request that you convene a group of approximately one dozen individuals to attend a two-day, "state-of-the-art" workshop concentrating on the pragmatic issue of how institutions establish their legitimacy and credibility with significant members of their task environments. The individuals invited should have experience either managing or designing organizations that have had to grapple with that problem. To focus the group's discussions, three or four thought-provoking papers could be commissioned. I do not believe that it is necessary that either consensus or recommendations emerge from the workshop. Rather the considered views of the attendees on what is known about how organizations establish, maintain, lose, and regain public trust and confidence should suffice. Thus the proceedings should be recorded and provided to the Task Force. Finally, roughly six of the individuals will be asked to attend a second two-day work shop, sponsored by the Secretary of Energy Advisory Board, and interact with social and behavioral scientists who have expertise in this aspect of organization theory and design.

I would appreciate it if you could pursue this matter with the appropriate people at the Academy and provide us with an estimated budget.

Sincerely,

A handwritten signature in cursive script that reads "Daniel Metlay".

Daniel Metlay
Task Force Director



National Academy of Public Administration
Chartered by Congress

March 26, 1991

Dr. Daniel Metlay, Task Force Director
Task Force on Civilian Radioactive Waste Management
Secretary of Energy Advisory Board, 7B 198
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Dr. Metlay:

This letter confirms the willingness of the National Academy of Public Administration Foundation (the Academy) to conduct one workshop for the Department of Energy and to participate in a second meeting in conjunction with a parallel effort at the National Academy of Sciences. A Working Group on Radioactive Waste Management would be formed to plan and conduct a workshop convening a small group of public management experts to explore the question of how the Department of Energy might improve its institutional credibility in area of radioactive waste management. This workshop will be planned and conducted in consultation with and for the benefit of members of the Task Force on Civilian Radioactive Waste Management. The management experts will be asked to reason deductively from their experience in order to specify, to the extent possible, critical factors and necessary and sufficient conditions to create institutional legitimacy--including both public trust and institutional trustworthiness--in an operation for handling nuclear wastes. The management experts will also be asked to indicate their individual confidence in these deductions, and to suggest additional institutional design and staffing activities, including research, that might increase that confidence.

The purpose of the workshop is a knowledge building exercise to:

- (a) better acquaint the Task Force with the range of available practical knowledge regarding the key public management challenges in establishing and maintaining institutional legitimacy and credibility with the various significant external and internal groups and individuals important to management of a radioactive waste system;
- (b) help explore and clarify fundamental principles drawn from practical management experience in designing, constructing, organizing, and running other large-scale systems related to these issues; and

- (c) consider how these principles and practical experience from other institutional settings can and cannot be applied to radioactive waste management and whether they would be likely to enhance institutional credibility and legitimacy.

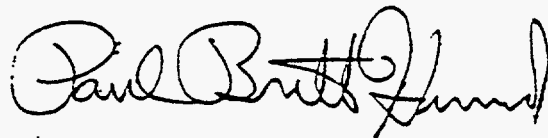
These include what is known about how organizations establish, maintain, lose, and regain public trust and confidence in products, services, and the institutions providing them. Such knowledge might be drawn from experience in the public sector, private firms, and non-profit organizations. Included in this examination would be institutional policies and choices affecting both the substance and internal workings of the organization as well as its public image. A second smaller meeting will explore a similar range of issues with the Task Force on Civilian Radioactive Waste Management, the Secretary of Energy Advisory Board, and the National Academy of Sciences (NAS). The NAS will be engaged in a parallel effort to identify management principles drawn from social science theory and findings.

Experts involved in the two meeting will include a carefully balanced group of managers and practice-oriented scholars drawn from a range of relevant private businesses, public agencies, schools of policy analysis and management, and organizational design and development. The purpose is not to propose priorities and program directions. The purpose is to provide the Task Force and the Secretary's Advisory Committee with access to the best current practice in relevant fields.

Following the two meetings, the Working Group, assisted by the staff of the National Academy of Public Administration, would produce a summary of the workshop including two to three papers commissioned for the workshop on topics selected by the Working Group. The workshop summary report would be subject to normal Academy review procedures.

The estimated cost of the two workshops is \$73,448. A draft budget is attached.

Sincerely,



P. Brett Hammond
Director of Academy Studies

cc: Ray Kline
Mort Cohen

APPENDIX E

**Notes on Conceptualizing and Characterizing
the US Radioactive Waste Management System
in Improving its Institutional Trustworthiness**

by

Dr. Todd R. La Porte, Chairperson
SEAB Task Force on Radioactive Waste Management

Introduction

This note was prepared at the request of the staff of both the National Academy of Science (NAS) and Public Administration (NAPA) workshop projects on Institutional Trust and Confidence sponsored by the SEAB Task Force on Radioactive Waste Management. While the Task Force does not intend the two Workshops to focus on the specific problems of the DOE's radioactive waste management program, sketching our conceptualization and characterization of the radioactive waste system may be useful for their deliberations.

The extraordinary challenges of developing a national system for managing and disposing of high level civilian radioactive wastes were the initial stimuli for the Task Force and for its choice of the conditions of institutional trust and confidence as a principle problem. Demand for public trust and confidence certainly pertain to the DOE programs but they are not limited to them. Indeed, since the original terms of reference, our purview has widened to include defense wastes and the extensive efforts environmental remediation. We believe that the issues, analytical considerations, and solutions are general ones and apply to other governmental programs involving the management of demanding, intrinsically hazardous technologies. We hope the Workshops take the more general expression of these problems even though they are perhaps most dramatically evident in the radioactive waste management arena.

We include a sketch of preliminary thinking about the process of public concern and rough requisites for maintaining or recovering public trust and confidence (T&C), and the elements and phases in the development of a radioactive waste management system. (This "system" is not yet well integrated nor very thoroughly explicated in plans or actuality. Materials are attached indicating the approximate scale of the effort.)

Conceptualizing the Objects of Public Trust and Confidence

When we speak of trust or mistrust in institutions or the loss of credibility in an institution to what or whom do we refer? The "public", and groups within it lose confidence in the performance of an agency, a firm, the legislature, or an institution, e.g., the press. People do not ordinarily distinguish between different "parts" of an organization (or the institutional matrix

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When we speak of trust or mistrust in institutions or the loss of credibility in an institution to what or whom do we refer? The "public", and groups within it lose confidence in the performance of an agency, a firm, the legislature, or an institution, e.g., the press. People do not ordinarily distinguish between different "parts" of an organization (or the institutional matrix

within which it is embedded) when they say they "don't trust it." But it is useful to do so when the purpose of the analysis is to discover what changes in an institution or organization may be necessary to assure (recover) trust in it. It seems apparent that there are several "objects of trust" that emerge from a rough process of public discovery something like the following.

* The public first becomes concerned as policy and/or program outcomes produce unpleasant surprises. Affected groups (publics) then wish more information about and form the responsible agency. Rarely is it offered in a forthcoming, non-defensive mode. Upon experiencing defensiveness (and possibly biased information), groups wish for a process which minimizes the costs (in time and money) of assuring themselves as full as range of information (and answers to their questions) as possible, i.e. and "open process".

* Continued agency defensiveness prompts demands for systematic, often formal, public participation processes. This involves both access to official oversight processes, e.g., GAO, Inspector General records, Congressional hearings, etc., and, regularized processes for direct agency-citizen interaction.¹

* Once publics "get in," they wish to discover conditions that evoke increased confidence as a function of deepening familiarization with (or "sampling" of) the organization, i.e., the structure, processes and culture of the program. These functions involve both the regular means of information/interacting with salient publics, and, more importantly, organizational properties that assure highly reliable, safe operations including process of discovering and rectifying the sources of errors before failures of consequence occur.

* Having discovered these properties, publics wish to be assured that conditions external to the organization permit these properties to be maintained and/or strengthened. This may require the institutionalization of regulatory and/or oversight bodies, measures to guarantee resources, continuity of managerial and technical personnel, etc.

¹ So far the government (and academic) T&C dialogue has centered on these points, i.e., types of information, e.g., de-classification and public education, and formal public participation. Little effort has been focussed on the aspects to follow: the properties of the operating agencies and the regulatory and super-ordinate legal framework.

There are, in effect, multiple objects of Public Trust and Confidence.

1. Trust in policy and production outcome: That those promised will be forthcoming; and that when they are achieved there will be few off-setting negative surprises.²

2. Trust in process: That internal processes of study and policy determination will be fair, i.e., inclusive of the whole range of considerations that are relevant to operations and outcomes; and that there are fair processes for gathering opinion and reflections from those who have an external stake in the outcomes, i.e., all parties are informed about proceedings and their views are taken into account at a time (in time) when they could have a bearing on determining outcomes.

3. Trust in the competence and operational skills of professionals and managers: That they will strive for the highest levels of performance, even in the face of changing technical and operational requirements; and that the strength of the culture of reliability is appropriate to the hazards involved in the organization's operations and for potentially effected publics.

4. Trust that elements in the superordinate legal, political and economics system re-enforce the conditions noted above during the period (time) of potential risk: That the institutions of watchfulness will play their respective roles in re-enforcing the conditions noted above; and that institutions of formal legal power will not vitiate the condition that make possible public trust and confidence in the other aspects noted above.

Each of these aspects of trust and confidence apply to the different functions involved in the deployment and operation of the U. S. waste management system.

² If outcomes are achieved more rapidly than promised or have less negative effects than forecast, this does not erode T&C. It may, however, have a ricocheting effect where the unexpectedly high levels of attainment become the norm for the next iteration and increase the difficulty of meeting public expectations.

Rough Orientation to the U. S. Radioactive Waste Management "System."

At least four different "parts" or functions of the Radioactive Waste System are likely to be the objects of trust and/or the source of distrust: The first one in now in place, the second partially so, others still must be developed.

* The Policy Element. Those who direct the enterprise; who give expression to its values and objectives, e.g., senior officials or corporate officers. In terms of government agencies, this would include not only the top political and administrative leaders of the DOE, but its key overseers in the President's office and the congress.

[Are they sufficiently technically competent to develop plans and designs that actually fulfill their stated promise?]

* The Operational Element. Those who give operational life to plans and technical designs furnished by others. These would include the operations that: collect wastes from their origins, e.g., the 70 separate sites containing some 110 nuclear power reactors, transport of waste casks about half by truck, half by rail to intermediate and final storage facilities, and the preparation of these materials for final disposal in deep repositories. Usually we think of these activities as internal to the organization in question, i.e., their operating units. In our case, however, the Department has been directed to "contract out" its design and operational functions to the private sector. These contracting firms also become the objects of trust or distrust.

[Are these systems operated in a manner consistent with the designs? Are operators candid in their statement of needs and watchful in protecting the integrity of the systems for which they responsibility? Does the contracting agency have the technical and management competence, directed through effective monitoring programs, to assure the faithful execution of technical and operational functions by the contractors.]

* The Regulatory Element. Those Federal and state regulatory agencies legally charged with monitoring various aspects of the rail and truck transport systems, the mining operation,

the quality of the management of the intermediate storage and final repository facilities, and the overall performance of the agencies in question. In the case at hand, the Nuclear Regulatory Commission, the EPA, and state Occupation Health and Safety Agencies would become deeply involved.

[Do these agencies have the competence and resolve to understand the relevant organizational operations and encourage functional activities and/or sanction inappropriate ones?]

The failure of any of these groups to live up to their responsibilities gives reason for public distrust of the institution. Each function may fail in ways more or less unique to it; each type of failure is likely to require a different remedy.

Phases in Developing and Deploying the U. S. Radioactive Waste Management System

Current plans call for a national radioactive waste systems for disposing of high-level wastes from commercial power reactors and the manufacture of nuclear weapons (defense wastes). The system would include:

- A. The development of a Monitored Retrievable storage (MRS) facility estimated to be operating by about 2000 to continue to about 2045. Wastes would be accumulated in the MRS at a increasing annual rate to stabilize in the year 2015.
- B. The parallel development of the industrial system needed to carry on (and regulate) deep mining and repository development and the truck and rail transport systems necessary to move the accumulated wastes to and from the MRS and to the repository.
- C. The system would be fully matured by 2015. This system would operate across most of the states and some Indian nations, with a national system for transporting commercial and defense wastes, repository management, and the regulatory and safety related activities derived from current environmental and nuclear regulatory requirements. Also included would be the

processes and safeguards for discovering that a repository had "failed" and that deposition needed to be reversed, i.e., unpacking the site midway through its filling lifetime.

D. The operational and regulatory activities and processes for terminating, closing up, and "walking away" from a fully loaded repository in about 2075.

Key Determinate Properties of the Materials and Disposal Technology

Finally, radioactive materials and the technologies and location of final burial produce have two properties that locates its management at the extremes of two key variables in the conditions sustaining a high measure of public trust and confidence.

A. The degree to which the hazards involved are seen to occasion damage varying from modest to wholly unacceptable. The public perceives the failure to securely sequester radioactive wastes to result possibly in wholly unacceptable, dreadful health and biological damage in the present and in the future (especially, via the irreversible contamination of underground aquifers).

B. The time necessary to discover that failures have occurred varying from immediately to very long after those responsible for the major decisions and operations have left the agency (or this life altogether.) Once radioactive wastes are buried, accidental escape into water supplies would not likely be discovered for thousands of years, due to the very long time periods required for corrosion of waste repository casks and then the very slow migration of dissolved wastes through the surrounding rock.

REPOSITORY OPERATIONS

SURFACE FACILITIES

The waste handling building makes up the majority of the repository surface facilities. The waste handling building has approximately 163,000 sq. ft. total floor space and a volume approximately 4.8 million sq. ft. which includes a storage vault capacity for 224 containers. A single rail line passes through a cask receiving bay that accommodates three rail cars in tandem. A truck receiving bay is included to handle the small volume of waste received at the repository

shipped by truck. Two cask unloading cells, with a total of three floor ports, accommodate the entire 3,400 MTU/year throughput of spent fuel, DHLW and WVHLW.

There are four basic operations that occur during the process of preparing wastes for emplacement:

1. Receive Waste Shipments - During this operation the shipment (rail or truck) is admitted onto the site. The shipment is surveyed for leakage and inspected for damage. Depending on the queue for throughput at the time of admittance, the shipment will either go to temporary surface storage or be directly transferred to the receiving area to be unloaded. If a problem is detected with the cask it will be moved to an off-normal handling area where the problem will be corrected prior to being moved to the receiving area.
2. Unload Shipping Cask - Upon arrival the first step is to remove the personnel barrier and check the outer cavity and surface of the cask for contamination. The cask is then unopened from horizontal to vertical and either moved to a decontamination bay to be decontaminated, or directly transferred to the cask preparation area. Once a cask has arrived at the preparation area, the outer cover is removed and the lid surface is then surveyed for leakage, wiped clean if needed, and a gas sample is taken from the inner cavity. The inner lid fasteners are then removed and the hot cell adapter is set-up. Next the inner lid and spacers are removed and the spent fuel assemblies are transferred into the unloading hot cell. The waste is now ready for Step 3, Prepare Waste for Disposal, but the transportation cask simultaneously goes through several additional steps.

After the spent fuel assemblies are removed from the transportation casks, the inner cask cavity is thoroughly inspected, and then the spacers and inner lid are replaced. The cask is returned to the cask preparation area and the inner lid surfaces are checked for contamination and wiped

clean if necessary. Next the outer cover and fasteners will be replaced, and the cask is returned to the receiving area and prepared for its return trip. The cask will be decontaminated once again if necessary prior to shipment.

3. **Prepare Waste for Disposal** - The first step in this operation is to load the waste into disposal containers. After loading, the cover is then welded to the containers and the weld is inspected. If the weld is satisfactory the container is transferred to a decontamination station. If the weld is not satisfactory the weld will be repaired prior to being transferred to the decontamination station. After the decontamination operation is performed, the disposal container is loaded onto a transfer cart. Depending on the emplacement queue, the container will either go directly to the underground facility or be temporarily placed in a surface storage vault.

To place the disposal container in the surface storage vault it must first be lifted onto a container transfer machine. This large machine will transport the loaded container to the storage vault and lower the container into the storage rack. When the container is ready for emplacement the same machine will retrieve the container and move it to the emplacement staging area.

4. **Transfer Container to Disposal** - The disposal container is positioned on an emplacement transporter at the transfer station. From there the transporter takes the disposal container underground to the emplacement drifts.

UNDERGROUND FACILITIES

Once a disposal container has completed all necessary operations at the surface facilities, it is ready for emplacement in the underground facilities. The containers are moved by a transporter down the main ramps to the drifts. The transporter then turns the disposal container

from horizontal to vertical and places the container in a lined bore-hole. The transporter then moves to the surface facilities for another trip while the bore-hole is sealed. No back-filling is done during the caretaker period, as the disposal container must be readily available to be pulled out of the bore-holes and moved to the surface for inspection and testing (performance Confirmation). At the end of the caretaker phase the underground will be back-filled with the previously excavated ruff.

Enclosure 1

**AVERAGE REPOSITORY WEEKLY OPERATING FACTORS
AVERAGE WEEK FOR THE YEAR 2015**

SURFACE FACILITY

MTU handled:	58 spent fuel and 8 HLW
Casks received and unloaded:	4 spent fuel and 3 HLW
Assemblies loaded into disposal containers:	141 BWR and 75 PWR
Disposal containers loaded, welded, and transported underground:	29 spent fuel and 15 HLW
Tuff handled at the muck pile:	204,775 cubic feet

UNDERGROUND

Disposal containers emplaced and bore-holes drilled:	29 spent fuel and 15 HLW
Volume of material excavated and handled:	204,775 cubic feet
Linear feet mined:	635 feet
Tons excavated and handled:	14,800 tons

Enclosure 2

Transportation Operation in 2015

- * 877 truck cask shipment per year or 17 truck shipments per week.
- * 212 from-reactor rail cask per year or 4 from-reactor rail cask per week (1 shipment).
- * 207 from-MRS rail cask per year or 4 from-MRS rail cask per week (1 shipment).
- * 45 rail reactors visited per year or 1 rail reactor per week.
- * 33 truck reactors visited per year or about 1 truck reactor every two weeks.
- * Average turnaround time for from-reactor truck cask is 1.5 days at each site.
- * Average turnaround time for from-reactor rail cask is 3 days at each site.

APPENDIX F

HIGHLIGHTS OF PARTICIPANT PRESENTATIONS

DAN W. REICHER - As a member of the environmental public interest group community, Mr. Reicher presented views on radioactive waste management from that perspective. He began by indicating that his organization, and, in fact, several of the national environmental organizations, have long supported geologic disposal of nuclear waste, but he indicated that his organization has long opposed the monitored retrievable storage concept. His organization feels that nuclear power as an energy source may warrant further study, but that the industry should compete on a level economic playing field. Mr. Reicher commented that past program implementation activities and the current program, which provides for the characterization of a geologic site in only one state, are not likely to cause a large segment of the public to have trust and confidence in the program. With regard to the issue of improving public trust and confidence, and after noting Secretary Watkins' acknowledgement of past problems and his moves to improve the program, Mr. Reicher advanced five proposals for further improvement: 1. the Department must continue to acknowledge past mistakes as they are noted and really endeavor to change; 2). public access to information and lines of communication must be improved; 3). it must be recognized that there are many publics to be dealt with; 4). recognize that merely providing mechanisms for public participation is necessary by not sufficient; and, 5). standard setting must result in the establishment of strict standards with tight enforcement.

DR. JOHN F. AHEARNE - Dr. Ahearne began by posing several fundamental questions that the Department is facing: How does one get Yucca Mountain approved as a repository? How does one get the public to accept the clean-up programs at Hanford and Rocky Flats and so forth? How does one get the public to accept starting up at Rocky Flats and Savannah River? How to improve the public confidence in the Department? He pointed out that these are separable questions, they are not the same. He mentioned a study which he chaired for the National Academy of Science which resulted in a book dealing with the communication of risk - and highlighted the fact that the Department of Energy's programs are almost all on the wrong side of the factors affecting how risk is perceived and evaluated. They are unfamiliar, they are not understood, they are not controllable by individuals, and so forth - it has nothing to do with the Department of Energy. Programs such as the radioactive waste program fall on the side of

the equation that increases public concern. A second problem is that there is no readily acceptable need or benefit. What is the Department's answer to the question of why does it have to be built here? - or even, why does it have to be built? With regard to a geological repository, there seems to be no good standing answer to the question of why it needs to be built. Dr. Ahearne then lists some specific Department problems like lack of credibility based upon past performance, a feeling of many that the Department is incompetent, and the weapons program which is an albatross around the neck of any waste management program. In the conflict and confusion over risk questions often the communication process is at fault or at least exacerbates the problem. Risk communication in the public debate over radioactive waste management is successful to the extent it raises the level of understanding of relevant issues or actions among the affected and interested parties. People tend to strongly believe that the costs and benefits are not equally distributed, they do not agree on which harms are most to be avoided or which benefits are most worth seeking, and finally, as citizens in a democracy they really expect to participate in a debate and want their participation to lead to some effect. Many times Department staff representatives sent to deal with the public are not competent, they are restricted in what they can say, they cannot answer questions, they cannot engage in discussion. The Department in general is rigid and does not listen - it does not like to do critical reviews and it does not like to have knowledgeable outside experts do critical reviews. It needs to have more dialogue and openness.

DR. YVES KALUZNY - Representing the French government, Dr. Kaluzny focused in his presentation on his country's large scale nuclear energy program with regard to both the power plant and the fuel cycle facilities. He indicated that nuclear energy now generates about 65,000 megawatts of power (75% of electricity production), with five more plants under construction with more planned by the end of the century. Dr. Kaluzny described the plants involved in the fuel cycle, and indicated that there are two surface radioactive waste repositories at the present time, with additional interim storage facilities. The program originated as a military program in the 1950's - the substantial civilian power activity began in 1974 after the international oil crisis. The program is deemed to have succeeded for several reasons - in particular, the public's confidence in French nuclear technology as it was developed in the weapons program, the considerable political stability over the period during which the development was accomplished, and the significant capability of the country's industrial

organizations. As to the choice of sites, the majority were selected before the Three-Mile Island accident by a process of pre-selection and then negotiations were begun with local political leaders. In this process, the leaders were allowed to choose one of the sites, and explanations were then made to explain the economical advantages that would inure from the establishment of such a nuclear power plant in their area. In connection with existing sites, the opposition never stopped any construction, mainly due to the good confidence and trust that the local people had in the utility company involved. Recently, development has become more difficult due to the emergence of the ecological movement. Still, no existing nuclear sites, save for one which became a symbol for the anti-nuclear movement in France, have been abandoned because of public protest. Dr. Kaluzny indicated that there is a need for improvement in the general agreement or consensus about the desirability of nuclear power in France. He advanced certain requirements for public trust and confidence - such as, good communication on what nuclear energy is and why it is needed, good information on safety considerations, communication before site selection, local committees at each site with wide representation who are kept fully informed, opening of the facilities for visits, and use of general access information systems to gain details on nuclear status in the country. He pointed out that there is no opposition to surface repository sites in France, but that, while there has been significant movement toward the identification of a geologic site, there is substantial opposition to this approach. This activity has resulted finally in a decision to identify two sites which will be subjected to a 15-year study. At that point there will be a debate and a decision will be taken on whether or not to have a geologic repository, and which of the two sites studied, if either, will be designated to serve that purpose. Dr. Kaluzny described the French reprocessing facilities, the difficulties encountered in setting a new plant and how they were overcome by strong local involvement, and in particular, by the positive economic impact on the area. Many jobs have been created, local tax revenues have increased by 12 times in ten years, and grants and loans for economic development have been awarded. The key is that a true partnership was established and benefits have been factored in to counterbalance the inherent risks. Plant capacity has been increased, with absolutely no problem of acceptance.

MAJ. GEN.(RET.) GEORGE H. AKIN - General Akin described lessons learned at Aberdeen Proving Ground during his assignment there as Commanding Officer. While he was dealing with the serious environmental problems that he encountered upon his arrival at

Aberdeen, the General also had to deal with similar issues and problems at other facilities under his command such as the White Sands Missile Range, Dugway Proving Grounds, the Cold Regions Test Center in Alaska, and the Tropic Test Center in Panama. He developed a model for clean-up activities that was ultimately adopted by the Department of Defense for implementation across that system. As General Akin assumed command, there were three senior civilian employees under indictment for pollution violations, and the installation was not doing at all well in managing the hazardous materials which were a part of or which emanated from its activities. Relentless press coverage was occurring, the Federal Bureau of Investigation, the Environmental Protection Agency, State and local agencies all were involved. The organization was in disarray, there was a high level of workforce distrust, and no single entity was in charge. General Akin opened up the gates to all parties, calling a meeting to discuss the situation and what was going to be done about it with all parties affected, the Aberdeen staff, EPA, State agencies, the Baltimore Sun, etc. These meetings were held every month - a two-hour session, chaired by the General. The goals of the meetings were twofold: to inform all parties of the problem and to let them know that they were part of the solution, and, to restore credibility by demonstrating in the open that the organization was trying to clean up its act and do what was right. The staff briefed the General in the open about problems and corrective actions - no holds barred. Strong management action was taken to specify policy and operational controls in activities affecting environmental quality, including disciplinary measures for improper actions whenever appropriate. Significant dollar resources were aggressively sought to assist in the clean-up activities and much of that requested was obtained, some through the Superfund authority. Staff was trained and motivated to perform properly, close work was done with both Federal and State environmental protection staff members, and significant efforts were expended in educating people both about the problems and about what was being done to resolve them. General Akin advanced numerous suggestions about how managers can improve public trust and confidence, among these are: elevate issues to the management level where people have the authority and can command the resources to do something about a bad situation, be open and honest, get all interested parties involved and helping with the solution, prioritize problems in order to make the best impact with available resources, and get the media on your side. He stressed that there comes a time when one must make the best decision possible given what is known at that time - one must bite the bullet, do what needs to be done, and move on.

THOMAS P. GRUMBLY - Mr. Grumbly began by observing that, while there may be a potential trade-off between the time it takes to get to solutions to problems and the mobilization of the necessary level of public trust and confidence to make truly meaningful decisions, his experience is that if more time is spent up-front in the decisionmaking process, much less time is spent at the end fighting problems. However, to achieve recognition of this is difficult, especially if a situation is viewed as a significant emergency that appears to be dealt with immediately. Mr. Grumbly, while acknowledging the extreme difficulty of the radioactive waste management problem, expressed his feeling that there are ways to approach it. He described the American culture as an adversarial one in which we believe that truth comes out of an adversarial process in which both sides present their best case and out of that come the best solutions to problems. Accompanying that, he sees a low level of political participation and education in the society at the moment. Mr. Grumbly pointed out that when these characteristics are coupled with issues that involve scientific bases that are not established, large problems are created. Mr. Grumbly's organization is involved in the clean-up of waste sites. Involved in this are: the achievement of agreement among responsible parties as to what each will have to pay, the oversight of the technical side of clean-up, and the management of clean-ups on site. In Mr. Grumbly's opinion, it is important in dealing with the sensitive and complex issues surrounding radioactive waste management that managers remain on the lookout for opportunities to address the issues and problems that are counter-intuitive in the sense that one does not always go with the best analytical approach. In particular, he feels that the right people have to be involved from the start if the credibility that is so critical to organizational achievement is realized. These people have to have a significant degree of independence and appropriate incentives. Mr. Grumbly emphasized that science cannot be imposed on the public - one must develop a dialogue about what the right answer is and what the uncertainties are with a view to achieving a gradual convergence of views rather than having one party dominating the other. He sees a need for the scientific community to be more empowered in terms of the influence of their contributions to the process and a need at the community level to ensure that all stakeholders in the process have the advantage of the scientific knowledge that is available. In radioactive waste areas, the Department should keep the organization and the process simple and should find a better way to set objectives that are specific to specific sites. Individuals at the field level must have the authority to make decisions, the Department must keep its promises, and continuing oversight of contractors is required.

DON J. WOMELDORF - Mr. Womeldorf has been involved in the planning for a low level waste facility for California. He has also been involved in the development of the Southwestern Compact with the States of Arizona, and North and South Dakota. The California Department of Health Services had the lead in adopting regulations which were compatible with those of the Nuclear Regulatory Commission. It was also instructed to find by a competitive process a private firm whose job it would be to be a so-called license designee. The designee was to put all the money up-front, to find a site, to characterize it, and then to apply to the Department for a license. If a license is granted, then the license designee will operate the facility under the regulation of the Department. Mr. Womeldorf laid out in considerable detail the process that has been gone through to date. Regulations were adopted, a license designee was selected (US Ecology) in 1985, and in 1986 and 1987 they engaged in a massive site selection effort. They began with 18 potential sites, finally selecting one for characterization, submitting a license application in 1989. Review of the application has been underway, while, at the same time, an environmental impact statement is being prepared - a license decision is anticipated imminently. The Department has a traditional advisory committee that provides overall policy guidance and direction. It also has ad hoc advisory groups which are described by Mr. Womeldorf as being quite important. These groups are set up to deal with issues as they surface in such areas as liability, design of trenches, fiscal review, mixed waste management, etc. Typically, everybody who is affected is included in the ad hoc groups. They have worked well. The company mounted a public information and involvement campaign in the 18 candidate site areas, going out directly to the citizenry. In addition to producing and disseminating printed information, they provided money to the League of Women Voters to form and coordinate a citizens advisory committee, with representatives of diverse interests in the three counties that were involved. Three rounds of meetings were held in the affected desert communities, to collect comments, then coming back again to show what they had done based upon the comments. Credibility was being established, and the meetings concluded with a third round which ultimately reduced the candidate areas to three. Then, the League of Women Voters formed local advisory committees in the three finalist areas and these met frequently to review site characterization data as it was received. Ultimately, the site determined to be the technically best was selected. The committee for that site remains in place, and it is intended that it will become a monitoring committee if and when the site becomes operational. In addition to all of the above three public scoping meetings were held, with extensive public agency and entity

involvement. There were two hearings of a legislative rather than an adjudicatory nature in 1990 and 1991, and work is still being done as a follow-up to the latter hearing to consider somewhere in the range of 4,000 comments from 850 commentators. As to lessons learned, Mr. Womeldorf stressed that public and public agency involvement is essential, one must remember that whatever you do you will not reach everyone who is affected, no matter what efforts are made you will not make believers out of everyone, a good tactic is to get people to visit operating sites, do not shrug off perception because that is fact to the perceiver, recognize that there are hidden agendas that you can not directly address and respond to the presented issues so they will stand up in court, and remember that an agency has responsibilities assigned by law, these must be satisfied, the work must go on - with as much public involvement as can be accomplished.

CHARLES W. TAYLOR - Mr. Taylor reflected upon forty years of experience in the field of nuclear energy, zeroing in especially on his experiences in citing a facility in the mid-1950's. He indicated that the societal setting at that time was significantly different than that faced by managers in the radioactive waste management area today. After looking at a site which met his company's specification in terms of proximity to Oak Ridge and transportation, they encountered resistance in the community for economic competition reasons. The locus of their search for a site was then changed because they had no wish to be in a community which did not really want their operation. They exercised one of their back-up options and focused, and eventually cited their plant in a neighboring state where it remains to this time. Mr. Taylor's point in terms of lessons learned was that do not put yourself in an adversarial position from a sitting standpoint if it is not absolutely necessary for you to do so. In the second site, his company reached out to the community, having local political people coming into the plant before it opened for familiarization. Mr. Taylor emphasized the need to have good communication between the people who are regulating the operation as well as the community itself. He has paid special attention, as a plant operator to being particularly proactive and responsive to the individuals regulating his operation, paying special attention to bringing regulators from the Federal and State governments together to ensure consistency of their approaches. The need for communication has increased as more players have entered into the ballgame and the company has remained proactive in dealing with them. Mr. Taylor emphasized that solid safety practices and quality control are essential. The key in this area is top level

endorsement and follow-through to see that high standards in these important functions are maintained at the operational level. Should accidents occur, facts should not be held back, they should be revealed - the community will be more understanding than might be expected. Such openness goes a long way in maintaining organizational credibility. Mr. Taylor pointed out that, while critical incidents in nuclear facilities are a most serious matter, care must be taken to keep them in the proper perspective in terms of the real hazard posed. In this connection, it is important to understand the waste management business from its real health implications and not from what is perceived by the anti-nuclear community and by individuals who do not understand the technical aspects. Mr. Taylor indicated that technology exists for safely storing high level wastes and made the point that at some future time when political and economic atmospheres are right it might well be that the considerable valuable material placed in storage might be recovered. Plans were made to close the fuel cycle through reprocessing and reclamation at a New York State site in the 1950's, companies joined together to do the job, the Congress gave a 15-year commitment, and the fuel backlog to that time of some 600 tons of fuel were processed before the plant was shut down. At that point, the plant was expanded to a capacity of up to two tons per day in anticipation of increased power reactor activity in the country. The plant did not operate at the expanded capacity due to Nuclear Regulatory Commission earthquake requirements, and it was turned over to the Federal government in 1972. Mr. Taylor's company was cited by President Johnson for excellence in developing a working relationship between the government and the private sector.

LEO TIERNEY - Union Pacific has about 29,000 employees and operates in 19 states and approximately 3,000 political subdivisions, with a resulting strong grassroots presence in its area of operation. Mr. Tierney described their plant as 100 feet wide and 20,000 miles long. They transport more than 300,000 carloads of hazardous materials a year - this represents about 8% of their business. State and local government are a major factor to be taken into account as they perform their business function, with much oversight involved from that quarter. The company's public trust and confidence is tested on a daily basis. Union Pacific has been operating at locations for more than 100 years. While they may have used state-of-the-art practices in the disposing of wastes during that period of time, 50 years ago the state-of-the-art was crude to say the least. They have grade crossing problems, they have problems associated with the construction of new yards or the expansion of existing yards, and they have problems

associated with hazardous materials transportation. They do have a common carrier obligation to transport goods at a reasonable rate, and therefore cannot avoid risks by refusing to transport certain commodities. They have to manage that risk. They have approximately 275 non-accident-related releases of hazardous materials during the course of a year, and may experience six or so major accidents during a year involving hazardous materials. These incidents with hazardous materials are probably the most frequent test of their public trust and confidence level. If such public trust and confidence did not exist, they would quickly lose their ability to manage the outcome of a hazardous materials incident. Furthermore, there would be heightened attempts at the Federal, State and local levels to regulate their operations in an effort to improve hazardous materials transportation safety. One of the best ways to establish trust and confidence in their activities is through their emergency response efforts. The railroad has established routine contacts with the emergency response community throughout their territory by frequent contacts by their 23 special agents. The special agents are members of the railroad police department and are trained in hazardous materials response. They provide training in for fire fighters in fire stations, state fire schools and at regional conferences. In addition, they sponsor a hazardous material tank car safety course at Pueblo, Colorado, twice each year. They have good in-house capability to respond effectively to hazardous materials emergencies that occur on the railroad through their special agents. The railroad must maintain its credibility with the State and local governments with which it must deal. It maintains a presence in the state houses and contacts local governments frequently. The local manager is the key at the community level. To ensure public trust and confidence, managers must follow-through on commitments. They must respond positively to regulators and cooperate in ensuring that standards are met. Mr. Tierney mentioned his involvement over the years with the Department of Energy and identified several issues which have resulted in some adversarial relationships. These included: special trains or dedicated trains, and the training of local responders to handle transportation related emergencies - there is a program to provide emergency response training on the civilian side, but not on the defense side. Mr. Tierney concluded by stressing the key role that the nuclear power industry itself has in the matter of public trust and confidence and raised the issue of reconsideration President Carter's rule on reprocessing with the thought that such activity would lessen the pressures to get a geologic repository in place. He also wonders why the nuclear power industry does not have the responsibility of designing, constructing, owning and operating necessary waste disposal rather than relying on the government.

MARK JOHNSON - Mr. Johnson's company, Roadway Express, Inc., does not transport waste materials, including nuclear waste. It does, however, transport a lot of hazardous materials, particularly chemicals. The company has about 650 terminals, and operates in over 20,000 jurisdictions in all 50 states. It also has operations in Canada, Europe, and in American territories. In a typical day, the company will pick up and deliver about 60,000 shipments, most of which are less than 1,000 pounds. With an average shipment time of four to five days, they have in transportation about 300,000 shipments at a given point in time. Public trust and confidence is a factor in everyday operations in every Roadway facility. By way of additional perspective on his personal approach to the issue of public trust and confidence, Mr. Johnson mentioned that he is involved in his home community in a county planning committee that deals with chemical issues, including a local Superfund site. He is also Chairman of an enforcement committee that makes recommendations to a local prosecutor on enforcement actions. Mr. Johnson indicated that the trucking industry in general has a low level of public trust and confidence. The public does not believe that there is a high level of oversight of the industry, but, particularly with regard to the larger and more responsible carriers, there is such high oversight and a high level of enforcement. In terms of the public view, there is a high consequence of error in terms of disruption of traffic flow in particular, with an accompanying low tolerance for such error to the perhaps tens of thousands of individuals delayed by an incident on a beltway in a major metropolitan area. The industry has had for years a siege mentality stemming initially from the it is both Federally and State regulated, almost a public utility attitude. Also, the public perceives the regulators as representing some other interest than the public. The chemical industry, like the trucking industry does not enjoy a high level of public trust and confidence, and the two together as they often are in transportation are a bad combination. Both public and private sector organizations in the country have very little credibility given past events. The lack of credibility comes more from not telling the whole truth as opposed to lying. All institutions, and the trucking industry is doing this, must begin to reach out to the public and make an effort to deal with people on a local basis to become a part of the community. Confidence must be gained, or objectives sought will not be achieved, in either the public or private sectors. Mr. Johnson described the public outreach efforts underway in the trucking industry, such as America's Road Team which visits communities to show that truck drivers are real people and to enter into dialogue with the communities. Roadway does this from its own locations as well. He also described

TRANSCAER, Transportation Community Awareness and Emergency Response, a planning group which helps communities plan for transportation emergencies, offering information, resources - it reflects a partnership between railroads, trucking companies, the chemical industry and the community and it seems to be working. Mr. Johnson pointed out that matters clearly are the community's business if they affect the health and safety of the community. Building trust and confidence is a long process. One must listen to the community, not just interest groups - there must be willingness to change plans to accommodate the desires and needs of the community if the just is going to be properly done. Promises must be kept, even at the cost of missing deadlines. Success in improving the credibility of the trucking industry will determine in the long run whether the industry will continue to be in business and be competitive.