

# STATUS AND PROJECTED ACTIVITIES OF THE MONITORED RETRIEVABLE STORAGE REVIEW COMMISSION

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## ABSTRACT

Since its formation on June 14, 1988, the Monitored Retrievable Storage (MRS) Review Commission has made progress towards its goal of making a recommendation to Congress on the need for a monitored retrievable storage facility as part of the nation's highlevel radioactive waste management system. This paper will discuss why the Commission was created and describe the progress the Commission has made in preparing its report to Congress, which will be delivered on November 1, 1989.

## HISTORY OF MONITORED RETRIEVABLE STORAGE

The controversy over the need for an MRS facility is directly linked to efforts to site a permanent deep geologic repository (Table I). As early as 1957, the National Academy of Sciences (NAS) issued a report concluding that disposal of spent fuel in a stable geologic media looked promising. In fact, the National Academy of Sciences suggested that salt would be a viable medium for the disposal site. In 1970, the Atomic Energy Commission (AEC) committed the federal government to develop a repository for high-level waste on federal land. The AEC subsequently began to explore a site for the first repository at Lyons, Kansas. However, the project was abandoned because of technical, political, and institutional roadblocks that arose during its implementation.

In 1972, the AEC recommended development of the first of many federal storage facilities for spent fuel. This facility, the Retrievable Surface Storage Facility or RSSF, was to serve as a back-up facility, providing long-term storage (up to 100 years) until a permanent repository was available. The proposal was criticized by the Environmental Protection Agency (EPA) and others, however, for not giving adequate attention to permanent disposal. As a result, the RSSF proposal was withdrawn in 1975.

TABLE I  
MRS Chronology

1957	NAS concludes geologic repository for spent fuel is feasible
1979	AEC tries to establish federal repository at Lyons, Kansas but is unsuccessful due to severe criticism
1972	AEC proposes Retrievable Surface Storage Facility (RSSF) as backup storage for repository
1975	AEC withdraws RSSF proposal. ERDA initiates siting program in 36 states towards goal of having six repositories
1976	ERDA program substantially curtailed and budget allocation reduced
1977	Barnwell reprocessing plant licensing halted under nonproliferation policy. DOE proposes away from reactor storage (AFR) for temporary storage of spent fuel. Congress does not authorize it
1980	IRG recommends characterization of 4-5 sites in 2-3 geologic media
1981	President lifts ban on reprocessing; withdraws AFR; initiates characterization of 3 potential repository sites in 2 geologic media

- 1983 President signs the Nuclear Waste Policy Act (NWPA) and directs DOE to provide Congress with proposal for one or more MRS facilities
- 1985 DOE issues two reports, one of which identifies three possible sites in Tennessee for an MRS facility. Tennessee files suit in U.S. District Court alleging that DOE did not comply with the NWPA by not consulting the state. Extensive court proceedings ensue
- 1987 Congress passes NWP Amendments Act of 1987, revoking DOE proposal to site a facility in Tennessee but retaining DOE authority to construct and operate one MRS facility under certain conditions. Creates MRS Commission

The AEC's successor, the Energy Research and Development Administration (ERDA), launched an effort in 1975 to site six repositories by the year 2000. Letters were sent to the Governors of 36 states stating the agency's plans and asking for their cooperation. The ensuing outcry not only killed the plan for six geologic repositories but restricted significantly the scope of any future siting program.

The idea of interim storage surfaced again in 1977 when the Department of Energy (DOE), ERDA's successor, initiated a plan for away-from-reactor (AFR) storage. The need for interim storage became more pressing at this time because of President Carter's decision to ban commercial reprocessing as part of his nonproliferation policy, which resulted in cancellation of the development of reprocessing facilities at the Barnwell, South Carolina plant.

In the absence of a place to send spent fuel for reprocessing or permanent disposal, the utilities were beginning to run out of on-site storage capacity. Thus, the AFR concept was attractive to the industry. Under this concept, DOE proposed to store spent fuel temporarily in a separate federal facility for a one-time fee.

In 1980, an Interagency Review Group (IRG) established by President Carter proposed that DOE proceed with deep geologic disposal by recommending four or five sites, characterizing two or three in different geologic media, and selecting one for licensing. A year later, in 1981, the Reagan administration lifted the ban on reprocessing, withdrew the away-from-reactor storage proposal, and decided to characterize three sites in two geologic media for a permanent repository.

In 1982, Congress passed the Nuclear Waste Policy Act. It established certain requirements for site characterization and site selection of the permanent repository, and directed DOE to submit a proposal by June 1, 1985 for the construction of one or more monitored retrievable storage facilities

for high-level radioactive waste and spent nuclear fuel." At that time, DOE contemplated that the MRS would no longer serve as just a back-up facility for the repository. Rather, it would serve as an important part of an integrated waste management system. Its primary function would be waste preparation for emplacement in a permanent repository. Possible activities to be performed at an MRS included fuel rod consolidation, repackaging, and storage until shipment to a permanent repository for disposal.

DOE believed that such a system would have several benefits including system implementation advantages, a reduction in possible transportation impacts, more cost effective storage as compared to at-reactor storage, simplification of the system for receiving wastes at the repository, and better integration into the overall waste management system.

In April 1985, DOE identified three candidate sites for an MRS facility, all of which were located in Tennessee. Tennessee filed suit in U.S. District Court to prevent submission of the proposal to Congress, alleging that in not consulting with the state, DOE failed to comply with the Nuclear Waste Policy Act. Extensive court proceedings ensued but the way was finally cleared for DOE to submit the proposal in March 1987. At that time, DOE formally

proposed to site the facility in Oak Ridge at the former site proposed for the Clinch River Breeder Reactor. Later that year, the Congress, in the Nuclear Waste Policy Amendments Act of 1987, rejected the DOE proposal to site the facility at Oak Ridge.

The history to this point demonstrates that the efforts to site a permanent repository for deep geologic disposal of high-level waste and spent fuel have been delayed for a variety of political, technical, and institutional reasons. And, as siting of a permanent repository has been delayed, the responsible agencies have attempted to meet their obligation to remove the spent fuel from the reactor sites by introducing various ways to store spent fuel. Proposals to create interim storage facilities have also been unsuccessful--in part due to Congressional concern that construction of a temporary storage facility will take pressure away from the need to site and construct a permanent disposal facility.

**THE NUCLEAR WASTE POLICY AMENDMENTS ACT OF 1987**

The provisions in the 1987 Amendments regarding the MRS were among the most controversial in the act. Some say difficulty in reaching agreement on these provisions threatened passage of the entire bill (Table II).

**TABLE II**  
Waste Policy Amendments Act Provisions.

Interested Parties	DOE	Utilities	Tennessee
Need for an MRS	System Flexibility and Reliability  Early implementation of parts of program Needed Spent fuel storage capability	See as only practical way DOE can meet 1988 contractual commitment	Supplemental at-reactor storage using dual purpose casks safer and more cost effective
Transportation	MRS as central transport depot will reduce transport risks	MRS as central transport depot will reduce transport risks	Favors direct shipment from reactor to repository by dedicated train
Economic Costs	Additional net cost of MRS small fraction of total system cost	Additional net cost of MRS small fraction of total system cost	MRS will add substantially to total system cost
Rod Consolidation	Initially assumed necessary. This now being reevaluated	Have taken no position	Unnecessary and risky
Linkages of MRS and Repository	DOE proposed linkages to Congress. Congress tightened linkages. DOE has taken no position on tightened linkage.	Linked MRS of little or no value	Linkages needed to avoid de facto repository
Overall Safety & Environmental Impacts	Smaller with MRS due to reduction in transport risks	Smaller with MRS due to reduction in transport risks	MRS will potentially increase risks
Interested Parties	GAO	Environmental Groups	

**TABLE II (Continued)**

Need for an MRS	DOE has not made its case	Generally oppose MRS. Favor at-reactor storage
Transportation	DOE has no considered optimal non-MRS transportation strategies	Favors direct shipment from reactor to repository by dedicated train
Economic Costs	DOE has probably underestimated MRS	MRS will add substantially to total system cost
Rod Consolidation	Takes no position	Unnecessary and risky
Linkages of MRS and Repository	DOE will not attain objectives with linked MRS	Linkages needed to avoid de facto repository
Overall Safety & Environmental Impacts	Takes no position	MRS will potentially increase risks

Proponents of the MRS (principally DOE and the nuclear industry) argued that, in addition to providing needed spent fuel storage capacity, a central integrated monitored retrievable storage facility would (1) accelerate the waste disposal program by allowing early licensing and implementation of substantial portions of the program, including establishment of a transportation system, and (2) increase system flexibility and reliability.

Others, for example the State of Tennessee, environmental groups, and the General Accounting Office (GAO), argued that DOE did not present a fair comparison of an MRS and a no-MRS option. They asserted that DOE had (1) underestimated MRS costs and risks, (2) ignored risks associated with rod consolidation, and (3) used sub-optimal transportation strategies for the no-MRS options.

The utilities took the position that linking the MRS to the repository would severely limit the usefulness of the MRS. Environmental groups claimed an MRS not tied inextricably to the repository would become a de facto repository, indefinitely delaying the hard political decisions needed to put a permanent geologic repository into operation.

In the 1987 Amendments to the NWPA, although Congress revoked the Department of Energy's decision to site an MRS on the Clinch River in Roane County, Tennessee, Congress did authorize the Department to site, construct, and operate one monitored retrievable storage facility subject to certain conditions. One of those conditions is that the Secretary of Energy must conduct a survey and evaluation of potentially suitable sites for an MRS facility, but may not do so until the MRS Commission submits its report to Congress. Also, in response to the concern expressed continuously over the years that an MRS facility might become a permanent repository by default, Congress placed certain restrictions--more commonly called "linkages"--on the operation of any MRS facility (Table III).

**TABLE III**  
Nuclear Waste Policy Act 1987  
Amendments  
"LINKAGES"

The 1987 amendments impose the following restrictions upon the operation of any MRS facility:

1. The construction of an MRS facility may not begin until the nrc has issued license for construction of a repository
2. The construction of any MRS facility or acceptance of spent fuel or high-level waste shall be prohibited if the permanent repository license is revoked or if construction of the repository ceases
3. A maximum of 10,000 MTU of spent fuel may be received at any mrs facility prior to the acceptance of spent fuel or high-level waste at the repository
4. A maximum of 15,000 MTU of spent nuclear fuel may be stored at any one time at any MRS facility

These "linkages" state (1) that construction of any MRS facility may not begin until the Nuclear Regulatory Commission has issued a license for the construction of a repository; and (2) that construction of any MRS facility or acceptance of spent nuclear fuel or high-level radioactive waste shall be prohibited if the repository license is revoked by the NRC or if construction of the repository ceases.

The "linkages" also limit the amount of spent fuel processed or stored at a facility. A maximum of 10,000 mtu of spent fuel may be received at any MRS facility prior to the acceptance of spent fuel or highlevel waste at the repository. And a maximum of 15,000 mtu of spent nuclear fuel may be stored at any one time at any MRS facility.

#### **THE COMMISSION'S STATUTORY MANDATE**

The Nuclear Waste Policy Amendments Act of 1987, which establishes the Commission, requires it to (Table IV):  
--review the adequacy of the Department of Energy's evaluation of the advantages and disadvantages of creating an MRS,

- obtain comment and data from affected parties,
- evaluate the need for an MRS from a technical perspective, and
- make a recommendation to Congress as to whether an MRS facility should be included in the national nuclear waste management system.

TABLE IV

The Monitored Retrievable Storage Review Commission  
Nuclear Waste Policy Amendments Act Provisions

The MRS Commission shall prepare a report on the need for an MRS facility, as part of the process the Commission shall:

- Review the adequacy of the department of energy's evaluation of the advantages and disadvantages of creating an MRS
- Obtain comment and data from affected parties
- Evaluate the need for an MRS from a technical perspective
- Make a recommendation to Congress as to whether an MRS facility should be included in the national nuclear waste management system

In preparing a report, the commission shall also compare an MRS facility to the alternative of at-reactor storage of spent nuclear fuel, taking into consideration:

- Repository design and construction
- Waste package design
- Waste preparation
- Waste transportation systems
- The reliability of each option to ensure the disposal of waste
- The ability of the secretary of DOE under each option to fulfill his contractual obligations to accept the waste
- Economic factors, including the cost impact imposed on the rate payer

Congress also required the MRS Commission to compare an MRS facility to the alternative of at-reactor storage of spent fuel. The law says the Commission shall take into consideration repository design and construction, waste package design, waste preparation, waste transportation systems, the reliability of each option to ensure waste disposal, and economic factors, including the cost impact on the nation's ratepayers.

The statute originally required the Commission to deliver a report to Congress on June 1, 1989. However, in October of 1988, to compensate for the additional months it took Congress to appoint the three Commissioners, Congress granted a legislative extension until November 1, 1989. The Commissioners were sworn in on June 14, 1988. They are: Mr. Alex Radin of Radin and Associates in Washington, D.C., Dr. Dale E. Klein of The University of Texas, Austin, Texas, and Dr. Frank L. Parker of Vanderbilt University, Nashville, Tennessee. Mr. Radin is serving as Chairman.

## ORGANIZATION OF THE COMMISSION

Since taking office in June, the Commission has organized administratively and hired a small staff of professionals to perform research, supervise contracts, and advise the Commission in the preparation of the report (Table V). The staff includes two systems analysts, a transportation specialist, and an economist. The day-to-day activities of the staff are managed by an Executive Director, who also serves as General Counsel. The Commission has been operating as a collegial body and has been involved in directing the research and establishing the methodology for writing the report.

Steps have been taken to ensure that the Commission's activities are as accessible as possible to interested persons. All meetings of the Commission with outside persons or organizations are open to the public. Notices of meetings are placed in the Federal Register, and press releases announcing significant developments are issued. Transcripts are made of public meetings and, along with routine correspondence with outside persons and the data that the Commission is accumulating, are available for review in a Public Document Room established at the Commission's offices.

## INFORMATION COLLECTION

The Commission is working to make its evaluation as professional and unbiased as possible by reading and evaluating work that has been done on the subject, by gathering first-hand information about work being done by utilities and others, and where necessary, by conducting its own studies.

In July 1988, the Department of Energy (DOE), the Nuclear Regulatory Commission (NRC), members of Congress and Congressional staff, the General Accounting Office (GAO), the nuclear industry, the State of Tennessee, and environmental groups briefed the Commission on the work on monitored retrievable storage that had been done before the Commission was created.

The Commission then requested a series of briefings on specific topics by representatives of DOE and NRC. DOE presented information on ongoing engineering studies on the need for an MRS, on rod consolidation, its dry cask storage study, and the status of the repository program. NRC briefed the Commission on its procedures for licensing independent spent fuel storage installations and for certifying casks for transportation of spent nuclear fuel.

The Commission visited the H.B. Robinson Nuclear Project in Hartsville, South Carolina and the Surry Nuclear Power Station in Surry, Virginia, the only commercial plants in the country which have already developed dry storage facilities for spent fuel. (Other utilities are exploring the possibility of dry cask storage.)

TABLE V

The Commission  
 Alex Radin, Chairman  
 Dr. Dale E. Klein  
 Dr. Frank L. Parker

Director Reference Services Sauci S. Churchill		Executive Director and General Counsel Jane A. Axelrad	Administrative Officer Nancy L. Creason Secretaries Barbara M. Carnes Maggie Geiger
Director Systems Analysis Analysis James C. Malaro	Chief Economist Allan G. Pulsipher	Director Transportation Sherwood C. Chu Systems Analyst Remi B. Langum	Director External Affairs Paula N. Alford

At the Surry and Robinson facilities, the Commission observed two different types of dry storage, examined spent fuel handling and transportation facilities, and discussed with the two utilities their plans and concerns regarding the need for a federal MRS. The Virginia Power Company is storing fuel in GNS nodular cast iron casks in an independent spent fuel storage installation located outside the fencepost of the Surry Nuclear Power Plant. In contrast, Carolina Power and Light is using concrete bunkers designed by NUHOMS to store the fuel within the boundary of the Robinson site. Carolina Power and Light had not, at the time of the Commission's visit, loaded fuel into the storage modules.

In early February, Commissioner Klein attended a demonstration in Milwaukee, Wisconsin, of the Nuclear Assurance Corporation's recently developed system for at-reactor rod consolidation. This demonstration was informative with regard to the latest technological developments on rod consolidation and provided some insights regarding the feasibility of using this technology at the reactor sites.

In addition to the U.S. site visits, members of the Commission visited four countries in Europe to examine possible components of an MRS system. Different approaches to spent fuel management were examined, ranging from wet storage at CLAB in Sweden to the dry storage of vitrified high-level wastes from reprocessing at La Hague in France. The Commission also visited the Gorleben facility in the Federal Republic of Germany and the Grimsel underground laboratory in Switzerland.

Some of the European countries visited seem to have solved their interim spent fuel storage problems with relative ease by building centralized storage facilities. Most are addressing the problem of permanent disposal on a more attenuated schedule than is the United States. European programs, however, are much smaller in magnitude than those in the United States. Also, distances within European countries are shorter, and population density is greater.

Consequently, the European experience is not necessarily applicable in the United States.

#### PUBLIC HEARINGS

Consistent with Congressional direction to obtain comment and available data on monitored retrievable storage from affected parties, including states containing potentially acceptable sites, the Commission has sought to obtain the views of a broad spectrum of people and organizations. To provide the opportunity for interested persons to present their views, the Commission held a series of public hearings in different sections of the country. Hearings were held on December 1-2, 1988 in Washington, D.C.; January 5, 1989 in Denver, Colorado; January 9, 1989 in San Francisco, California; January 16-17, 1989 and February 16-17, 1989 in Atlanta, Georgia. The Commission sent out more than 6,000 notices of the hearings to persons and organizations around the country, noticed the hearings in the Federal Register, and announced them over the wire services and in press releases sent to the regions in which they were being held. A second hearing was scheduled in Atlanta to accommodate the large number of people requesting to testify there.

The hearings have been well attended and have produced a wealth of information the Commission will consider during its deliberations. Private citizens, nuclear waste experts, nuclear utilities, representatives of state and local governments, members of Congress, and representatives of citizen and environmental groups testified during the hearings, and expressed a wide variety of views.

Forty-eight people testified as scheduled witnesses before the Commission during the first four public hearings. Of the forty-eight, eighteen persons spoke in favor of an MRS, twenty-three spoke against, and seven raised issues relevant to the need for an MRS, but did not take a position on whether one should be built. In addition, eighteen people spoke before the Commission on a "walk-in" basis, and 46 people submitted written statements for the record. The Commission listened to all views presented and questioned

each witness concerning the rationale and long-term consequences of his or her recommendations.

With few exceptions, persons testifying before the Commission supported the siting and construction of a repository for the permanent disposal of high-level radioactive waste, whether an MRS is built or not. There were differences in opinion, however, as to the speed with which such an effort should be undertaken.

A majority of the representatives of the nuclear industry spoke in favor of an MRS, citing the need for such a facility so that DOE could meet its statutory obligation to accept spent fuel by January 31, 1998. Industry advocates of an MRS argued that timeliness in the siting and construction of an MRS is critical, since the usefulness of an MRS facility would diminish if it were made operational on the same schedule as a permanent repository. They recommended that the provisions in the Nuclear Waste Policy Amendments Act of 1987 (NWPAA) statute linking the schedule for construction of a potential MRS facility to the permanent repository be removed or changed. According to the utility industry, large amounts of money have been spent out of the Nuclear Waste Fund to solve the waste problem, but no resolution is in sight. Several utility representatives also expressed the concern that environmentalists and local interest groups would oppose attempts to increase at-reactor storage at individual sites. Some representatives of the nuclear industry stated, however, that high-level wastes could be stored at the reactor sites, and favored that alternative. Generally, they said continual slippage in DOE's schedule for opening the repository made it highly unlikely that an MRS could be sited and constructed successfully within a reasonable time, especially in view of the "linkages" between the repository and an MRS. These utilities asserted that it is more cost effective and equally safe to store the wastes at reactor sites while moving as fast as possible to construct a permanent repository. Nuclear industry representatives said they should be compensated for onsite storage costs if DOE is unable to meet its contractual commitment and accept spent fuel by January 31, 1998. Most of the environmental and citizen groups who testified were opposed to an MRS, preferring the alternative of continued at-reactor storage until such time as a permanent repository is available to accept spent fuel. Spokespersons for environmental organizations expressed a wide range of reasons for opposing an MRS, including health, safety, transportation, cost, socioeconomic, lifestyle, ethical and moral factors. Almost all environmentalists expressed the concern that if an MRS facility were constructed, it would become a de facto repository. Environmentalists strongly supported the statutory restrictions placed on the MRS in the NWP Amendments Act of 1987 to keep such a facility from becoming a de facto repository in the event that the Yucca Mountain, Nevada site is determined to be unsuitable for a permanent repository. In some cases, environmentalists favored strengthening the "linkages" in the law between the MRS facility and a permanent repository. Some environmental groups also asserted that an MRS would result in additional handling and transportation of spent fuel with

greater risk of accidents than if spent fuel were sent directly from the reactor sites to the repository.

Most state and local government representatives refrained from taking a position on the MRS but raised concerns about (1) the transportation of high-level radioactive wastes through their regions, and (2) the emergency response capabilities of local communities along the transportation routes. They stressed the need for an early decision on whether to include an MRS in the nuclear waste management system to allow sufficient time for planning and emergency response training along the proposed routes.

Private citizens spoke both for and against an MRS. The testimony of several citizens centered on the location of an MRS even though the MRS Review Commission has no responsibility for recommending a site for an MRS if the Commission should recommend construction of such a facility. Some individuals testified that no additional nuclear wastes should be generated unless and until a safe method of disposal has been demonstrated.

Most private citizens represented groups opposed to the siting of an MRS facility in their community, state, and in some cases, the country. Such groups and individuals tended to oppose an MRS for reasons similar to those raised by environmental groups, but such groups also opposed an MRS on grounds that it could cause economic deterioration or loss of tourism to their state or community. A few private citizens or citizen groups promoted the location of an MRS facility in their localities, citing the need for economic growth in their communities, and stating that an MRS would not endanger a host community's overall health and safety.

#### REPRESENTATIVE STRATEGIES

The Commission has begun to outline the scope of its report, to identify the issues it intends to address in the report, and to develop the criteria upon which its evaluation will be based. The report will address all of the issues enumerated in the Nuclear Waste Policy Amendments Act as well as additional issues raised during the public hearings and briefings. The focus of the study will be an evaluation of a series of alternative waste management strategies, including the alternative of at-reactor storage specifically addressed in the statute. During its preliminary discussions, the Commission has identified four generic strategies representing many possible configurations of waste management systems which it is likely to evaluate in the final report. These strategies are sufficiently representative of the full spectrum of available options to enable the Commission to make a meaningful recommendation, but are concise enough to be susceptible to evaluation within the limited time and resources available to the Commission. The strategies were synthesized from the set of "scenarios" defined by DOE for its systems studies, the alternatives evaluated by the State of Tennessee, and the views expressed during the public hearings. The four generic strategies are as follows (Table VI):

1. At-reactor storage until repository ready to accept spent fuel (No MRS),

2. Hybrid systems with a mix of at-reactor storage and MRS storage at regional MRS facilities until repository ready to accept spent fuel (Mix of at-reactor and one or more MRSs),
3. Storage at central facility until repository ready to accept spent fuel (MRS-storage only), and
4. Handling and storage at central facility until repository ready to accept spent fuel (Multi-function MRS).

**TABLE VI**  
**REPRESENTATIVE STRATEGIES**

1. At-reactor storage until repository ready to accept spent fuel (No MRS)
2. Hybrid systems with a mix of at-reactor storage and MRS storage at regional MRS facilities until repository ready to accept spent fuel (Mix of at-reactor and one or more MRSs)
3. Storage at central facility until repository ready to accept spent fuel (MRS-storage only)
4. Handling and storage at central facility until repository ready to accept spent fuel (Multi-function MRS)

The Commission intends to evaluate these strategies under a variety of scenarios regarding the integrated waste management system. The scenarios will vary depending upon the postulated scheduling of waste acceptance at a repository, fuel burnup, emerging technologies such as rod consolidation and dual purpose or universal casks, and other related factors.

The strategies will be evaluated with regard to the following (Table VII):

1. Overall safety and environmental impacts,
2. Effect on safe, efficient preparation of spent fuel for safe, permanent disposal (impact on repository design and construction; waste preparation; waste package design; fabrication; and standardization),
3. Transportation impacts (will include consideration of dual purpose and universal casks),
4. Flexibility and reliability of the national nuclear waste management program,
5. Economic efficiency,
6. Effects on public confidence in the national nuclear waste program,
7. Likelihood of meeting applicable regulatory requirements,
8. Likelihood of adverse impacts on reactor operations,
9. Equity of the system (e.g., regarding distribution of costs and benefits), and
10. Likelihood that DOE will be able to meet its contractual obligations.

**TABLE VII**  
**CRITERIA FOR EVALUATION**

1. Overall safety and environmental impacts
2. Effect on safe, efficient preparation of spent fuel for safe, permanent disposal (impact on repository design and construction; waste preparation; waste package design; fabrication; and standardization)
3. Transportation impacts (will include consideration of dual purpose and universal casks)
4. Flexibility and reliability of the national nuclear waste management program
5. Economic efficiency
6. Effects on public confidence in the national nuclear waste program
7. Likelihood of meeting applicable regulatory requirements
8. Likelihood of adverse impacts on reactor operations
9. Equity of the system (e.g. regarding distribution of costs and benefits)
10. Likelihood that DOE will be able to meet its contractual obligations

#### **CONTRACTOR ASSISTANCE**

The Commission decided to obtain contractor assistance to augment its staff efforts to perform the complex analyses that must be done to prepare its report. Contracts totalling more than \$825,000 were awarded for five technical tasks that will provide data and tools the Commission will use to perform its evaluation. Three of the tasks involve reviews of the existing literature, assembling of data bases, and the development of models to allow the staff to evaluate the strategies with regard to economic costs, transportation impacts, and need for storage and at-reactor storage capacity. The fourth task involves examining the issue of rod consolidation and quantifying the risks, benefits, economic costs, and the need for use of this technology. The fifth task involves the development of an integrated systems model to incorporate the results of the other studies and assess the overall risks, benefits, and economic costs of alternative strategies. The following companies will be performing this work for the Commission:

ICF Technology Inc. Transportation and Systems Integration Model Studies;  
Golder Associates Inc. Cost Study; and  
EBASCO Need for Storage and At-reactor Capability and Rod Consolidation Studies.

#### **CONCLUSION**

In the next few months, the Commission will hold additional briefings on specific topics to be addressed in the report. One briefing is scheduled for March 16, 1989 to hear from DOE regarding the preliminary results of its system studies. Later this spring, the Commission expects to hear

from DOE regarding its current position on the need for an MRS. In addition, the Commission will continue to assimi-

late and assess the available data in preparation for writing its report later this year.