



Department of Energy

Washington, DC 20585

JUN 15 1993

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Mr. Charles J. Haughney  
Chief, Source Containment and  
Devices Branch  
Division of Industrial and Medical  
Nuclear Safety, NMSS  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Haughney:

You are invited to participate in a Multi-Purpose Canister Workshop sponsored by the Department of Energy's Office of Civilian Radioactive Waste Management (OCRWM). The workshop will be held on July 1-2, 1993, at the Hyatt Regency Crystal City in Arlington, Virginia.

The workshop is intended to provide you and others interested in the program with an opportunity to learn more about the Multi-Purpose Canister (MPC) concept under consideration by OCRWM. The workshop will provide participants with an opportunity to exchange various views on the subject and provide OCRWM with their perspectives.

The MPC initiative follows wide-spread interest expressed by regulators, the scientific community, and the nuclear industry for a nuclear waste management system that considers the compatibility of the various steps required in storage, transportation, and geologic disposal of spent nuclear fuel. Our initial studies have indicated that the MPC concept may provide this system-wide compatibility and offer additional benefits to the system.

The day-and-a-half workshop will be structured to encourage participants to have an open dialogue about the technical and institutional considerations of such a system. This process will be facilitated through break-out sessions, each covering a particular subject area of the MPC conceptual design effort. Information developed during these sessions will be evaluated and considered during the current MPC conceptual design phase. A second workshop will be scheduled at a later date to address those items identified for follow-up and to provide an update of the conceptual design effort.

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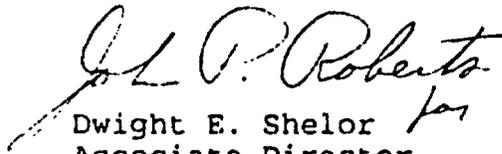
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To help you prepare for participation, you will find enclosed background information about the MFC concept, a description of the break-out sessions, and a preliminary workshop agenda. On the enclosed registration form, you may suggest additional discussion topics related to a particular break-out session, and indicate whether you would like to make any brief remarks during the initial plenary session. This input will assist our planning effort and will be reflected in the final agenda.

Please complete and return the registration form by June 21, 1993, and indicate which break-out session(s) your representative(s) will attend. Organizations may send more than one representative. If you have any questions or comments about the workshop, contact Priscilla Bunton at (202) 586-8365.

I hope you will plan to attend and participate.

Sincerely,

A handwritten signature in cursive script that reads "D. E. Shelor". The signature is written in dark ink and is positioned above the typed name.

Dwight E. Shelor  
Associate Director  
Office of Systems and Compliance  
Office of Civilian Radioactive  
Waste Management

Enclosures

cc: Frederick C. Sturz, NRC

## PRELIMINARY AGENDA

U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
Multi-Purpose Canister Workshop  
July 1-2, 1993

### Thursday, July 1:

8:00 to 8:30am Registration and coffee reception

8:30 to 8:45am Welcome and overview of workshop objectives  
Lake H. Barrett, Acting Director, OCRWM

8:45 to 9:00am Background and overview of MPC concept  
Ronald A. Milner, Director  
Office of Storage & Transportation, OCRWM

9:00 to 9:15am Overview of workshop process  
Facilitator

9:15 to 10:30am Open discussion and remark period

10:30 to 10:45am Break

10:45 to 11:15am Overview of break-out session discussion topics  
Jeffrey R. Williams, Chief  
Facilities Development Branch, OCRWM

11:15 to Noon Break-out sessions begin:  
Session A Repository Considerations  
Session B MPC System Operating Concept  
(Reactor site, Transportation,  
Storage and Disposal)  
Session C Technical Aspects of the MPC Design  
Session D Information and Institutional Requirements

Noon to 1:30pm Lunch - on your own

1:30 to 3:00pm Break-out sessions continue

3:00 to 3:15pm Break

3:15 to 5:00pm Break-out sessions continue

Friday, July 2:

- 8:30 to 9:00am Coffee reception
- 9:00 to 10:30am Break-out sessions and preparation of summary presentations
- 10:30 to 10:45am Break
- 10:45 to 11:45am Presentations of break-out session summaries and open discussion
- 11:45 to Noon Closing comments and adjournment

REGISTRATION FORM

U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
Multi-Purpose Canister Workshop  
July 1-2, 1993

Please provide (in type or print) the below requested information by June 11.

Organization or Company: \_\_\_\_\_

Address: \_\_\_\_\_

Zip: \_\_\_\_\_ Phone: \_\_\_\_\_

ATTENDANCE LIST

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Break-out Session Selection: \_\_\_\_\_

You may suggest additional topics for a particular break-out session in the space below (attach a separate page, if necessary):

Note the first-day agenda item "open discussion and remark period." To assist us in developing the final agenda, please indicate whether you plan to make opening remarks and request the approximate amount of time you will need:

YES NO TIME REQUESTED(MINUTES)

Return this form to: Tommy Smith  
MPC Workshop  
Civilian Radioactive Waste Management, M&O  
2650 Park Tower Drive, Suite 800  
Vienna, Virginia 22180  
Fax: (703) 204-8581 Phone: (703) 204-8978

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**HOTEL INFORMATION**  
**U.S. Department of Energy**  
**Office of Civilian Radioactive Waste Management**  
**Multi-Purpose Canister Workshop**  
**July 1-2, 1993**

**Address:** Hyatt Regency Crystal City  
2799 Jefferson Davis Highway  
Arlington, Virginia 22202

**Telephone:** (703) 418-1234

**FAX:** (703) 418-1289

**Reservations:**

A block of rooms under the title "MPC Workshop" has been reserved at the Government rate of \$110.00 (single or double) per night for all persons attending the workshop. Please refer to the MPC workshop when making reservations in order to get this reduced rate. Make reservations by calling the telephone number listed above. Reservations should be made before June 1<sup>st</sup> in order to get this rate.

**Transportation:**

The Hyatt Regency Crystal City provides a complimentary shuttle service to and from National Airport and the Crystal City Metro station. Call 1-800-346-0102 from the airport baggage area or the Crystal City Metro station to arrange shuttle service to the hotel.

**Directions:**

From Washington: [1] Cross 14th Street Bridge; [2] Stay in far left lane; [3] Exit Crystal City/Pentagon City (this becomes Jefferson Davis Highway); [4] Left on 27th Street to the hotel.

From Baltimore: [1] I-95 South following signs to Richmond, VA; [2] Stay in far right lane, go over the Woodrow Wilson bridge; [3] Exit Alexandria/Arlington, Route 1 North (this becomes Jefferson Davis Highway); [4] Stay on Route 1 to Crystal City; [5] Right on 27th Street to hotel.

From Richmond: [1] I-95 North; [2] Exit Glebe Road South; [3] Left on Jefferson Davis Highway (Route 1); [4] Right on 27th Street to hotel.

From 495: [1] 495 to George Washington Parkway; [2] Take National Airport Exit, stay in right lane; [3] Exit right at Crystal City sign, turn right at signal light; [4] Cross bridge, take Alexandria, Route 1 South exit onto Jefferson Davis Highway; [5] At next light, left on 27th Street to hotel.

## BREAK-OUT SESSION DESCRIPTIONS

U.S. Department of Energy  
Office of Civilian Radioactive Waste Management  
Multi-Purpose Canister Workshop  
July 1-2, 1993

### Format

Workshop participants are asked to choose which break-out sessions best match their areas of interest or expertise. Organizations may send more than one representative. Following the initial plenary session, workshop participants will assemble in their respective break-out rooms for a brief, get-acquainted period prior to breaking for lunch.

After lunch, break-out sessions will resume and continue with discussions of the topic areas, supported by members of the MPC conceptual design team. These topics have been identified as being among the key considerations of the MPC conceptual design process. Participants are encouraged to ask questions and/or raise issues they feel are important for evaluation during the MPC conceptual design phase. Each session will be moderated by a professional, third-party facilitator.

The purpose of this workshop is identification, rather than resolution, of institutional and technical issues. While there is a great deal of information about an MPC system to be passed on to workshop participants, much evaluation remains in the current conceptual design phase of MPC-system development. Issues identified during the workshop will be evaluated and addressed at a second workshop to be scheduled later this year.

### Repository Considerations

This break-out session will focus on technical issues relating to how the MPC concept will be integrated into the repository element of the waste management system. Identification of potential repository requirements during the conceptual design phase will help increase the probability of full utilization of the MPC. Suggested topics identified for discussion include the following:

- \* Thermal characteristics of the spent nuclear fuel (SNF) and compatibility with a permanent geologic repository
- \* MPC design compatibility with the waste package design
- \* MPC size and weight considerations for on-site mobility
- \* Material property considerations for long-term disposal
- \* SNF capacity of the MPC and the impact on the repository
- \* Radiological/Shielding Considerations

## MPC System Operating Concept (Storage at Reactor, MRS, Transportation, Disposal)

This break-out session will focus on the overall MPC system operating concept. By doing so, issues related to the many system interfaces may be more readily identified. It will also enable participants to see the concept from a number of perspectives and better understand the entire concept. Suggested topics identified for discussion include:

- \* Transportation Considerations
- \* Dry storage requirements: reactor site and Monitored Retrievable Storage (MRS)
- \* Reactor-site technical and logistical interface considerations
- \* Repository Interface considerations
- \* Economics relative to the reference system

## Technical Aspects of the MPC Design

This break-out session will focus on the technical design considerations of the MPC. While other break-out sessions deal with issues that may be a factor in the MPC design, it is also important to examine the canister itself from a structural and safety perspective. Suggested topics for discussion in this session include:

- \* Closure mechanisms
- \* Burn-up credit and its impact on design
- \* Material selection
- \* Quality Assurance considerations
- \* Testing methodologies
- \* Regulatory requirements

## Information and Institutional Requirements

This break-out session will focus on obtaining input regarding methods the Office of Civilian Radioactive Waste Management (OCRWM) should employ to best meet the information needs of interested parties. In addition, this session will serve as an opportunity to identify any institutional considerations for the MPC conceptual design. Suggested topics for discussion include:

- \* Communicating effectively with external audiences about the MPC
- \* Gaining confidence in the sound development and deployment of the MPC concept
- \* Working relationships with affected governments and other interested parties
- \* Public involvement in the decision-making process

**BACKGROUND INFORMATION**  
**U.S Department of Energy**  
**Office of Civilian Radioactive Waste Management**  
**Multi-Purpose Canister Workshop**  
**July 1-2, 1993**

**Reference System for Managing Nuclear Waste**

The reference system for managing spent nuclear fuel (fuel assemblies) in the Civilian Radioactive Waste Management System (CRWMS) would involve the use of single-purpose casks for the separate purposes of storage, transportation, and permanent geologic disposal. Prior to acceptance by the Department of Energy (DOE), fuel assemblies would be stored at reactor sites in either the spent fuel pool, dry storage casks, or dry storage vaults.

Upon acceptance by DOE, fuel assemblies would be loaded into transportation casks in the spent fuel pool; fuel assemblies in dry storage would be returned to the spent fuel pool and removed from the storage cask or sealed canister prior to loading into transportation casks. The transportation casks would be shipped by truck or rail to the Monitored Retrievable Storage Facility (MRS) where the fuel assemblies would be removed from the transportation casks and placed into storage casks.

Once the mined geologic disposal system (MGDS) becomes operational, the fuel assemblies would be removed from storage casks and loaded into transportation casks for shipment by rail to the MGDS. Upon arrival at the MGDS, the fuel assemblies would be removed from the transportation casks and placed into waste packages, which would then be emplaced in the underground repository.

**Development of the MPC System Concept**

The reference system involves the handling and rehandling of individual assemblies in the spent fuel pools at reactors and in shielded transfer cells at the MRS and MGDS. An MPC-based system would involve sealed, metallic canisters holding multiple fuel assemblies in an inert environment. The canisters would be sealed with the expectation that the fuel assemblies would not have to be removed. The canisters would be placed in separate overpacks or casks for storage, transportation, and geologic disposal.

The Nuclear Waste Technical Review Board (NWTRB), the Edison Electric Institute, the Electric Power Research Institute, and the U.S. Department of Energy have identified a number of advantages of an MPC system over the reference system including:

- \* Overall waste management system compatibility
- \* Decreased handling of individual spent nuclear fuel assemblies
- \* Reduced low-level waste generation and facilitation of decommissioning and dismantlement of the fuel-handling portions of the MRS and MGDS
- \* Simplified spent fuel handling facilities at both the MRS and MGDS

## MPC Background Information (Continued)

A conceptual design and technical plan to implement the MPC concept will be developed with emphasis on early deployment of MPCs for at-reactor and at-MRS storage. It must be recognized that final decisions on MGDS operations and waste package design may result in necessary design changes and necessitate development of a second phase of MPCs.

The first phase of implementation involves a detailed evaluation of the MPC concept with the objective of completing a conceptual design of a rail/barge MPC system and being prepared for a decision regarding implementation of the concept in the fall of 1993. The MPC conceptual design will utilize information in the MRS conceptual design, include consideration of regulatory and licensing issues and MGDS studies. Discussions will be held with utilities on implementation details relevant to reactor sites. Phase 1 cask acquisition efforts are expected to proceed as previously planned in the reference system.

The second phase would include the Safety Analysis Report (SAR) design and licensing for both the storage and transportation elements of the MPC concept. The goal would be on-site dry storage using MPCs at reactors and, for the third phase, at the MRS. The MPC deployment date is dependent upon strategies and decisions on prototype testing and transportation overpack acquisition.

The fourth phase builds upon decisions that will be made during the MGDS advanced conceptual design (ACD) and the license application design (LAD) and should result in the final, optimized MPC design for assured deployment throughout the CRWMS, including geologic disposal.

There are a number of considerations which may impact upon the implementation of the MPC concept. These include programmatic decisions, NRC licensing issues, economic determinations, and design parameters. Some important considerations include:

- \* Results of radiological safety assessments
- \* Consideration of MPC compatibility with the repository
- \* Ease of facility decommissioning and dismantlement
- \* Use of standardized at-reactor storage units
- \* Capacity of MPCs (number of fuel elements held)
- \* Receipt of burn-up credit from NRC
- \* Results of economics evaluation of the overall MPC system relative to the reference system
- \* Involvement of external parties in the decision-making process

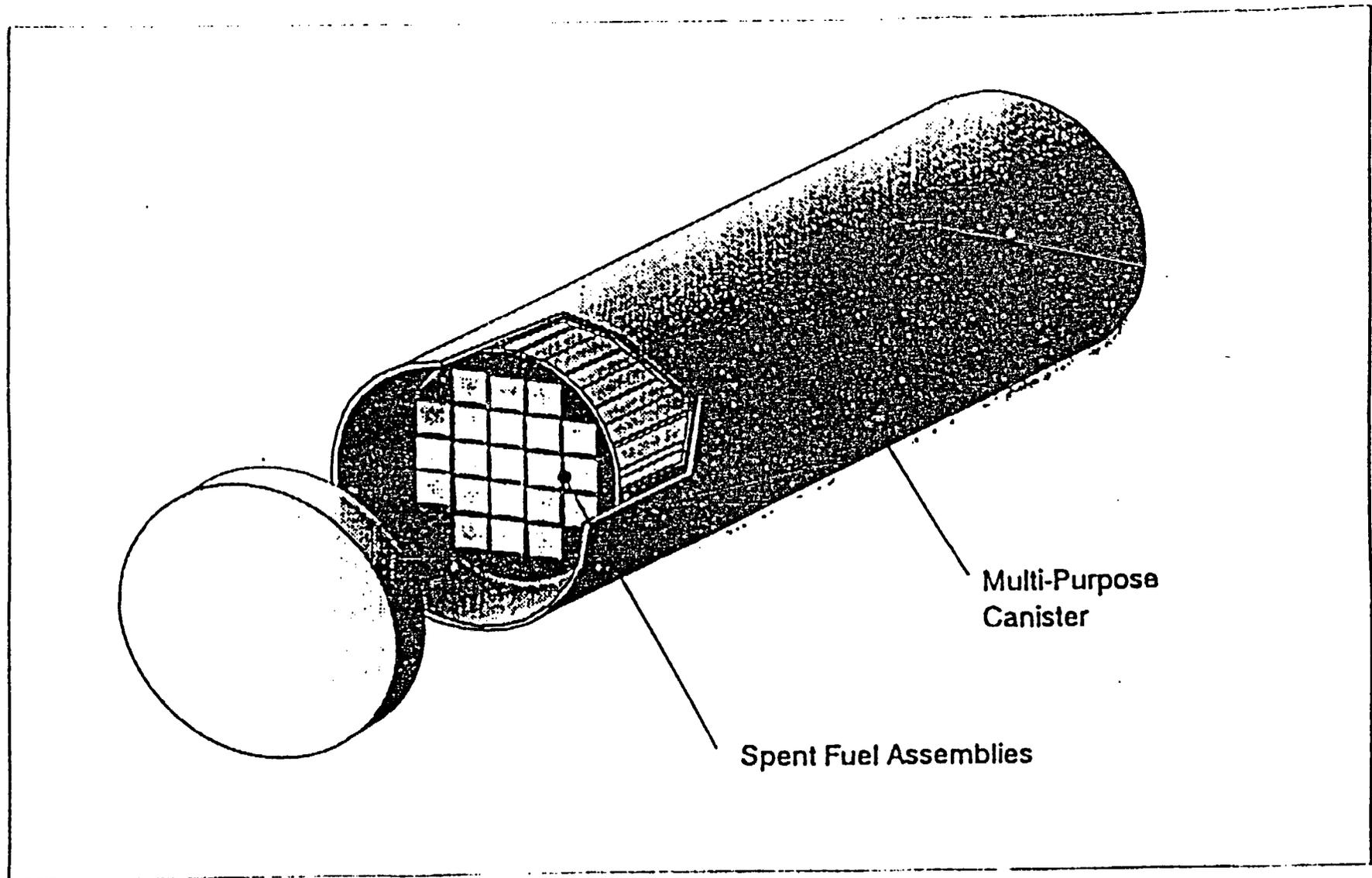
To obtain additional information about the Civilian Radioactive Waste Management System, the following Department of Energy publications are suggested:

- \* DOE's Yucca Mountain Studies; 12/92; DOE/RW-0345P.
- \* Designing the MRS; 3/92; DOE/RW-0407.
- \* Transporting Radioactive Material; No Date; DOE/DP-0064
- \* Draft Mission Plan Amendment; 9/91; DOE/RW-0316P
- \* Transportation Institutional Plan; 8/86; DOE/RW-0094

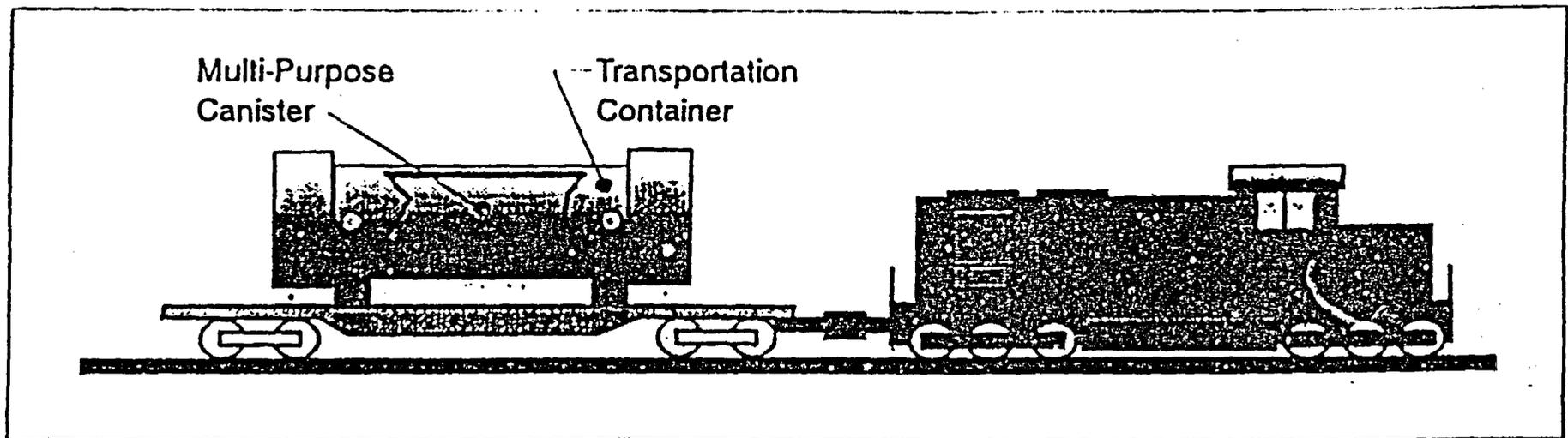
*(When requesting a publication, use the title, date, and document number)*

These and other related publications are available by calling:  
1-800-225-MWPA or 488-5513 in Washington, D.C.

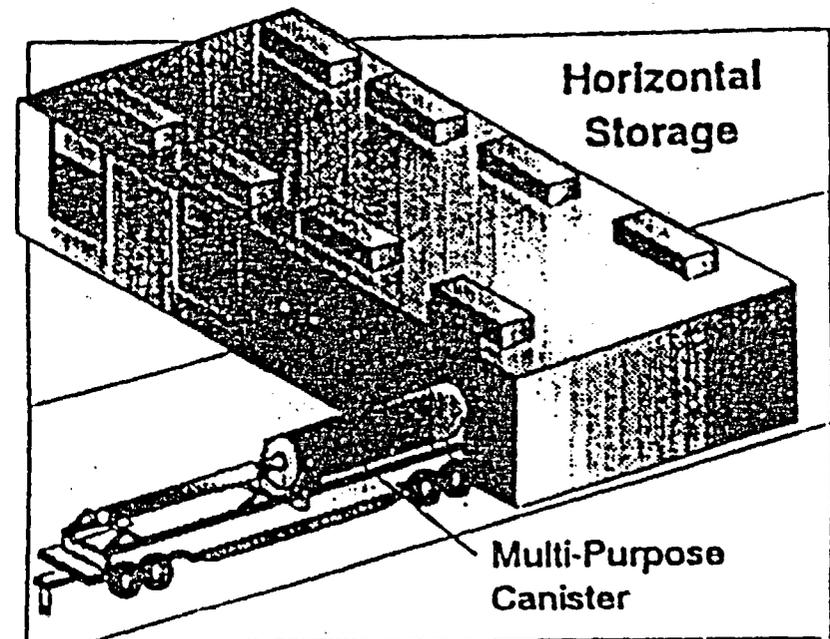
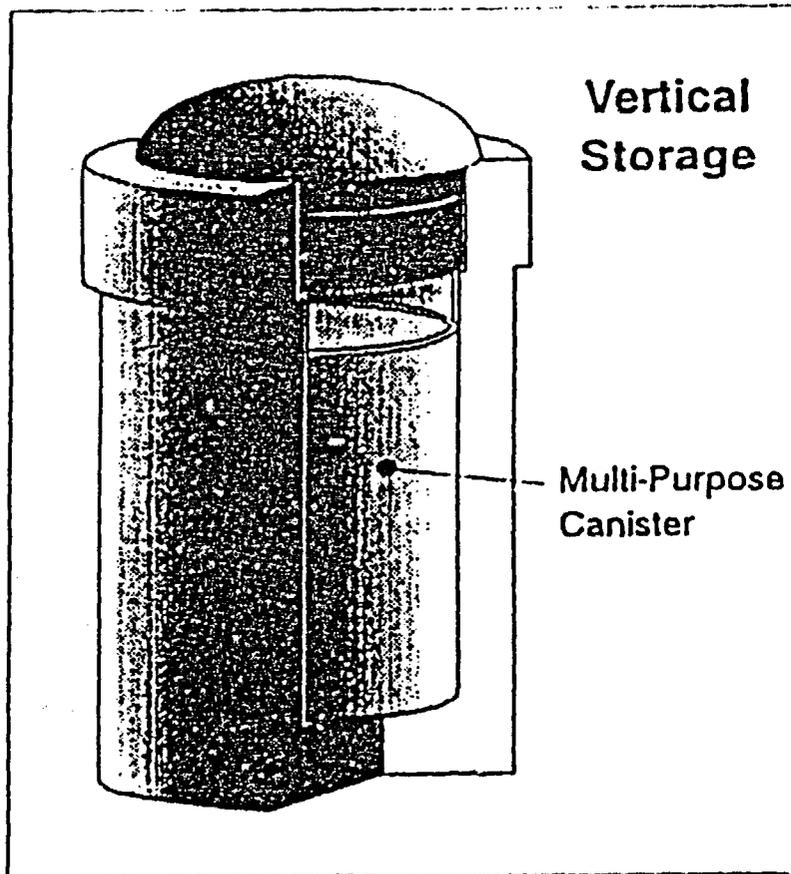
# MULTI-PURPOSE CANISTER (MPC)



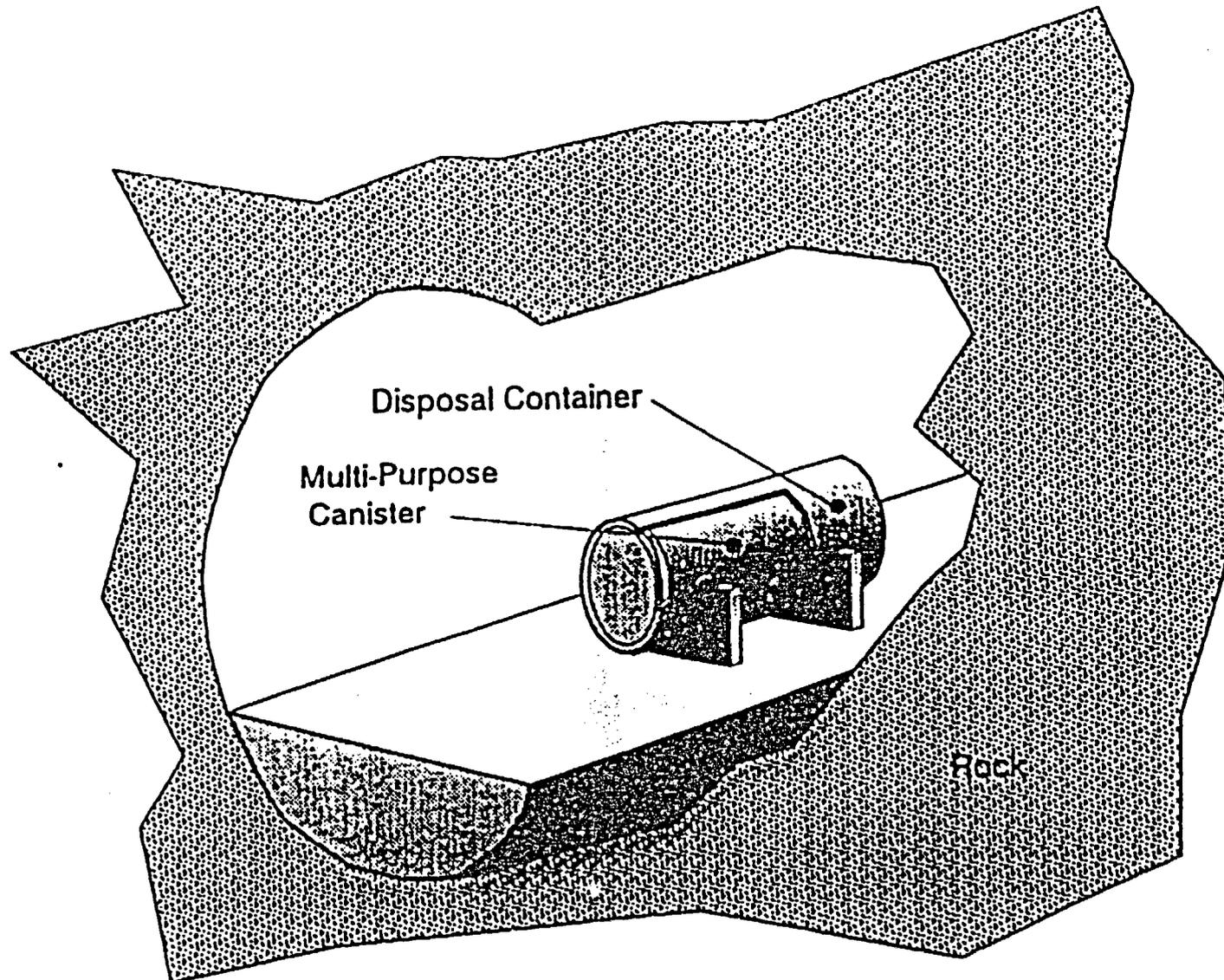
# TRANSPORTATION CASK and MPC



# DRY STORAGE and MPC



# PERMANENT GEOLOGIC DISPOSAL and MPC



# Nuclear Fuel

