

## **MGDS License Application Annotated Outline**

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### **Section 7.2 Radiation Protection**



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**LIST OF INFORMATION NEEDS**

- 7.2-1 A formal Radiation Protection Program needs to be developed in a document separate from the SAR. The name of this document needs to be available for reference in the SAR.
- 7.2-2 The development of a Design ALARA Manual and Training
- 7.2-3 The development of an Operations ALARA Manual and Training
- 7.2.1-1 GROA organization chart needs to be defined and located within Section 7.3 for reference in this section.
- 7.2.1-2 A description of the necessary personnel qualifications and experience levels for key jobs.
- 7.2.1-3 The development of a Geologic Repository Operations Area organization chart.
- 7.2.1.2-1 The identification of applicable personnel qualifications for the radiation protection organization.
- 7.2.2-1 Facility Layout Drawing on Instrumentation and Sampling Points for On-Site Monitoring (Normal and Off-Normal)
- 7.2.2.1-1 Identification of where the radiation protection and chemistry laboratories are located.
- 7.2.2.1-2 Verification of laboratory facilities, what they are called, their function and where they are located.
- 7.2.2.1-3 Verification of location and function of the change rooms.
- 7.2.2.1.1-1 Determination of the boundaries of the RCA.
- 7.2.2.1.1-2 Provide a series of figures that show the normal operation radiation zones in the facility (cross-reference Section 4.1).
- 7.2.2.1.1-3 Provide layout drawings showing the restricted in / free out access doors in the RCA.
- 7.2.2.1.1-4 Provide layout drawings showing the contamination checkpoints in each building.

**LIST OF INFORMATION NEEDS (continued)**

- 7.2.2.1.1-5 Verify the use of a single point access into the RCA.
- 7.2.2.2-1 Identify the portable and laboratory instruments used in the radiation protection program.
- 7.2.2.2.1-1 Verify the use and type of isotopic detectors providing contamination information. Provide descriptive information of monitors to use in the text of the license application section 7.2.2.2.1.
- 7.2.2.2.3-1 Provide a discussion on the use of regulatory guides 8.4 and 8.9 for personnel monitoring equipment.
- 7.2.2.2.3-2 Provide the specifications for personnel radiation protection equipment.
- 7.2.3-1 Cost/Benefit method use during procedure development needs to be established in light of existing regulatory guidance.
- 7.2.3-2 Provide a general radiation protection manual suitable for reference in the license application.
- 7.2.3.1-1 Radiation Survey methods and frequencies need to be identified.
- 7.2.3.2-1 Verification that a Radiation work Permit/ Standing Radiation Work Permit process will be used.
- 7.2.3.2-2 Verification of the use and title of the individual dose card process.
- 7.2.3.3-1 Personnel dosimetry plans need to be established including whole body criteria, etc.
- 7.2.3.3-2 Whole body counting and Bioassay criteria
- 7.2.3.3-3 Verification of the TLD processing laboratory accreditation program.
- 7.2.3.4-1 Features of personnel decontamination systems.
- 7.2.3.7-1 Target contamination limits for systems that contain, collect, store, or transport radioactive solids and liquids.
- 7.2.4-1 An environmental monitoring program must be developed and may be summarized in portions of the SAR.

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**LIST OF INFORMATION NEEDS (continued)**

- 7.2.4-2 Description of:
- All radioactive materials processing and handling within GROA facilities, both qualitative and quantitative
  - Other in-plant area and process monitoring systems
  - Text, tabular data, schematics for effluent monitoring systems.
- 7.2.4.1-1 Details of the Gaseous and Particulate Monitoring System including major features, justification of systems and major instruments.
- 7.2.4.1-2 Details of the Gaseous and Particulate Monitoring System sampling frequencies and action limits.
- 7.2.4.1-3 Details of the Gaseous and Particulate Monitoring System process flow diagrams.
- 7.2.4.2-1 Details of the Liquid Waste Monitoring System including major features, justification of systems and major instruments.
- 7.2.4.2-2 Details of the Liquid Waste Monitoring System sampling frequencies and action limits.
- 7.2.4.2-3 Details of the Liquid Waste Monitoring System process flow diagrams
- 7.2.4.3-1 Details of the Solid Waste Monitoring System including major features, justification of systems and major instruments.
- 7.2.4.3-2 Details of the Solid Waste Monitoring System sampling frequencies and action limits.
- 7.2.4.3-3 Details of the Solid Waste Monitoring System process flow diagrams.
- 7.2.5.1-1 Program for identifying and monitoring critical pathways relevant to the GROA needs to be identified and summarized. The critical pathways need to be identified.
- 7.2.5.2-1 Need to identify the pre-operation program to acquire background radiation information for the GROA. Time frame over which study is conducted needs to be identified as well as the locations monitored and results observed.
- 7.2.5.2-2 The locations monitored and results observed for the preparation program to acquire background radiation information for the GROA.

**LIST OF INFORMATION NEEDS (continued)**

- 7.2.5.3-1      Need to develop an Off-site Dose Calculation Manual to provide details of operational radiological monitoring program as a separate document from the SAR. Identify details of environmental samples collected and summarize parts of program that show compliance with 60.111 and provide assurance that SSCs are functioning properly.
  
- 7.2.5.4-1      Need to summarize background levels of radiation and expected contribution from GROA activities.
  
- 7.2.5.5-1      Details of operational meteorological program including collection and analysis frequencies and locations of monitoring stations.

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## 7.2 RADIATION PROTECTION

This section describes the Radiation Protection Program [INN 7.2-1] at the GROA. An overview of the organizational responsibilities relevant to radiation protection at the GROA is also presented. [The facilities, equipment, and instrumentation used to monitor and control the internal and external exposure to workers and the public during normal operations, anticipated operational occurrences, and radiological emergencies as required by 10 CFR 20, *Standards for Protection Against Radiation*, and 10 CFR 60 are also presented. The Radiation Protection Program for the GROA is designed to protect personnel, and the public in compliance with all applicable regulations.]

The goal of the Radiation Protection Program is to maintain radiation exposures as low as reasonably achievable (ALARA) by maintaining the annual dose to individual GROA personnel ALARA. To achieve this, ALARA concepts are integrated into all phases of the project. There is also an individual responsibility to minimize personnel exposures. Individuals are trained in techniques to minimize personnel exposures, and procedures have been written to accomplish work activities while minimizing exposures. In addition, the Radiation Protection program is tasked with keeping the annual collective dose to GROA personnel (i.e., the sum of annual doses to all GROA personnel) ALARA during the design, construction, maintenance, operation, and decommissioning of the facility. [In order to satisfy this goal, the facility management is committed to maintaining exposures ALARA, and the personnel responsible for implementing the program are proactively searching for ways to reduce exposures.]

Two manuals are used to specify design and facility operation ALARA guidelines. The Design ALARA Manual [INN 7.2-2] specifies guidelines to be used during the design phase of the facility and modifications to existing design. The Operations ALARA Manual [INN 7.2-3] specifies guidelines used during operations to maintain exposures ALARA and is used by the Radiation Protection Staff.

The basic objectives of the Radiation Protection Program is to protect personnel and the public, and provide for monitoring the facility. The Radiation Protection Program includes provisions for performing surveys, sampling airborne radioactive material, area radiation monitoring, personnel monitoring, and a variety of radiation protection activities. The facilities Radiation Protection Manager has the overall responsibility for the program.

### 7.2.1 Organization

The administrative organization is responsible for and has appropriate authority for assuring that the three basic objectives of the Radiation Protection Program at the MGDS facility are achieved. These objectives are to:

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- Protect personnel;
- Protect the public;
- Monitor the facility.

Protection of personnel means surveillance and control over internal and external radiation exposure and maintaining the exposure of all personnel within permissible limits, and ALARA, in compliance with applicable regulations and license conditions.

Protection of the public includes surveillance and control over all facility conditions and operations that may affect the health and safety of the public. It includes such activities as monitoring radioactive gaseous releases, liquid and solid waste releases, and the shipment of radioactive materials. It also involves conducting an environmental monitoring program and supporting the MGDS facility emergency plan.

Monitoring of the facility includes the continuous determination and evaluation of the radiological status of the facility for operational safety and radiation exposure control purposes. This work is done in order to warn of possible detrimental changes and exposure hazards, to determine changes or improvements needed, and to note trends for planning future maintenance work.

The administrative organization is also responsible for, and has appropriate authority for, maintaining occupational exposures as far below the specified limits as is reasonably achievable by ensuring that:

- a. Facility personnel are aware of management's commitment to keep occupational exposures ALARA.
- b. Formal reviews are performed periodically to determine how exposures might be lowered.
- c. There is a well supervised radiation protection capability with well defined responsibilities.
- d. Facility workers receive sufficient ALARA training.
- e. Radiation Protection is provided with sufficient authority to enforce safe facility operation.
- f. Modifications to operating and maintenance procedures and to facility equipment are made where they will substantially reduce exposures at a reasonable cost.

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- g. The radiation protection staff understands the origins of radiation exposures in the facility and seeks ways to reduce exposures.
- h. Adequate equipment and supplies for radiation protection work are provided.

The Radiation Protection Organization's implementation of Regulatory Guides 8.8 and 8.10 guidance will be addressed as the organizational structure is developed [INN 7.2.1-1].

Personnel qualifications and experience will be documented and responsibilities listed in Table 7.2.1-1 [INN 7.2.1-2] as individuals are named to key management positions. An organizational chart of radiation protection personnel is presented in Figure 7.2.1-1 [INN 7.2.1-3].

Regulatory Position 1 of Regulatory Guide 8.8 identifies two key positions important to maintaining occupational exposures ALARA. These are the Repository Manager and the Radiation Protection Manager. Establishing the positions and responsibilities of the Repository Manager and Radiation Protection Manager satisfies the guidance presented in Regulatory Guide 8.8. An overview of the responsibilities of each of these positions at the GROA is presented below. The location of these positions in the GROA organization is depicted in Figure 7.2.1-1 [INN 7.2.1-3].

#### **7.2.1.1 Repository Manager**

The Repository Manager is responsible for all aspects of GROA operations including the Radiation Protection Program. In order to satisfy this general responsibility, the following specific responsibilities are assigned to the Repository Manager:

- a. Supporting the Radiation Protection Manager in formulating and implementing a Radiation Protection Program for maintaining GROA occupational radiation exposures ALARA.
- b. Participating in the selection of specific ALARA goals and objectives for the repository.
- c. Ensuring support for the Radiation Protection Program from all repository personnel.
- d. Expediting the collection and dissemination of data and information concerning the Radiation Protection Program to U.S. Department of Energy (DOE) management.

#### **7.2.1.2 Radiation Protection Manager**

The Radiation Protection Manager has a safety function and responsibility to both employees and management. Therefore, the Radiation Protection Manager will report directly to the Repository Manager since the Radiation Protection Manager's primary duties may sometimes conflict with other groups whose primary responsibilities are related to the continuity of

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GROA operations. The administrative organization reporting to the Radiation Protection Manager is responsible for ensuring that Radiation Protection Program goals are achieved. [The personnel comprising the radiation protection staff will have appropriate qualifications as shown in Table 7.2.1.2-1 [INN 7.2.1.2-1] and authority to ensure the goals are achieved.]

Some of the responsibilities of the Radiation Protection Manager with respect to the ALARA program are:

- a. Participating in design reviews for facilities and equipment that can affect potential radiation exposures.
- b. Identifying locations, operations, and conditions that have the potential for causing significant exposures to radiation.
- c. Initiating and implementing an exposure control program.
- d. Developing plans, procedures, and methods for keeping radiation exposures to repository personnel ALARA.
- e. Reviewing and recommending changes in job procedures to maintain exposures ALARA.
- f. Participating in the development and approval of training programs related to work in radiation areas or involving radioactive materials.
- g. Supervising the radiation surveillance program to maintain data on exposures of, and doses to, GROA personnel by specific job function and type of work.
- h. Supervising the collection, analysis, and evaluation of data and information attained from radiological surveys and monitoring activities.
- i. Supervising, training, and qualifying the radiation protection staff of the repository.
- j. Ensuring that adequate radiation protection coverage is provided for repository personnel during all working hours.

### **7.2.2 Facilities, Instrumentation, and Equipment**

Planned locations for instrumentation and sampling points for radiation monitoring on-site during normal/off-normal operations are shown in Figure 7.2.2-1 [INN 7.2.2-1].

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**7.2.2.1 Facilities**

The facilities discussed in this section include the radiation protection laboratories and chemistry laboratories. The radiation protection and chemistry facilities are centrally located in the \_\_\_\_\_ [INN 7.2.2.1-1] building for efficiency of operation. Laboratory facilities consist of [a conventional chemistry laboratory, a radio-chemistry laboratory, a shielded counting room, a radiological sample preparation laboratory, a shielded radiation survey instrument calibration room, and a shielded radioactive source storage room [INN 7.2.2.1-2].]

These facilities are equipped for conducting the radiation protection and chemistry programs for the facility, for detecting, analyzing and measuring all types of radiation, and for evaluating any radiological problem that may reasonably be expected. Equipment for performing measurements for internal personnel dosimetry purposes, and for radio-bioassay is also included. In addition, a Radiation Protection operations office is provided in this location.

The counting room is shielded on all sides (including the floor and roof) to facilitate low level counting work. The radioactive source storage room also has shielded walls. In addition, extensive shielding of components has been utilized for the protection of personnel, both for routine operation and for maintenance.

Change room facilities are provided where personnel obtain clean protective clothing and other equipment required for facility work. The change rooms service the WHB, cask handling building, the onsite generated WHB, and the emplacement areas [INN 7.2.2.1-3]. The facilities are divided into clean and contaminated sections. The contaminated section of the change rooms is used for the removal and handling of contaminated protective clothing after use. Provisions for change and personnel decontamination are also available in the first aid room in the RCAs. Showers, sinks, and necessary radiation monitoring equipment are provided in all of the change rooms to aid in the decontamination of personnel.

Equipment decontamination facilities are also provided for large and small items of equipment, components and tools. In addition, a cask decontamination area and a decontamination laundry are provided.

Decontamination of work areas throughout the facility is facilitated by the provision of janitor's sinks in each major functional area of the buildings.

Written procedures govern the proper use of protective clothing, the change rooms, and the decontamination facilities.

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**7.2.2.1.1 Access Control**

In order to protect personnel from radiation and radioactive materials, the restricted area of the facility is divided into areas of increasingly controlled access depending on radiation levels. Protection of personnel from access to radiation areas and high radiation areas that exist temporarily or permanently as a result of facility operations and maintenance is by means of appropriate radiation warnings signs, barricades, locked doors, audible and visual indicators and alarms, as required by 10 CFR 20. Administrative controls are also used in conjunction with the above and, under certain conditions, keys are issued to authorized station personnel for access to limited access areas within the RCA.

Table 7.2.2.1.1-1 [INN 7.2.2.1.1-1] provides the boundaries of the RCA for each area in terms of the Radiation Zones shown in Figures 7.2.2.1.1-1 through 7.2.2.1.1-(n) [INN 7.2.2.1.1-2]. The main personnel entrance/exit point to/from the RCA is provided. A contamination control checkpoint that is equipped with appropriate monitoring instrumentation is located at this access point. All other personnel access points into the RCA are protected by restricted in/free out doors [INN 7.2.2.1.1-3], and are for emergency exits only. Contamination checkpoints are appropriately located [INN 7.2.2.1.1-4].

Before leaving the RCA, personnel are required to monitor themselves (with appropriate instruments, positioned near each exit door), to make sure that they are free of significant contamination.

Authorized personnel enter the RCA through a radiation protection access control point, and leave through the same area (after monitoring themselves) when exiting the RCA [INN 7.2.2.1.1-5].

Personnel required to utilize protective clothing obtain these items in the change rooms. Personnel enter the change room on the "clean side," put on required protective clothing, and proceed to the job location. After completing work, personnel:

- Remove contaminated outer protective clothing in the Radiation Control Zone set up near the work area;
- Proceed to the "contaminated" side of the change room and removed any remaining protective clothing;
- Wash and shower as necessary;
- Monitor themselves; and
- Proceed to the "clean side," put on personal clothing and exit.

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All persons entering the facility's Restricted Area must wear the personal monitoring equipment (thermoluminescent dosimeter (TLD), pocket dosimeters, etc.) prescribed by the facility Radiation Protection Manager in accordance with Nuclear Regulatory Commission (NRC) regulations, and must comply with applicable radiation work permits.

All work on systems or in locations where radioactive decontamination or external radiation is present requires a specific radiation work permit prepared under the direction of the station Radiation Protection Manager before work can begin. The radiological hazards associated with the job are determined and evaluated prior to issuing the permit. The radiation work permit lists the precautions to be taken including working time limits (for external and internal exposure) protective clothing to be worn and any radiation monitoring that may be required during the performance of the work. The permit is issued for personnel use; a copy is available to shift supervisors and a working copy is maintained by the radiation protection section.

All persons working under a permit are required to read the instructions on the permit and to fill out the information necessary on their daily dose card before and after entering the Radiation Control Zone. The information from the permit and the card is entered into the Radiation Exposure database and serves, in part, as a personnel monitoring record for the individuals involved.

#### **7.2.2.1.2 Protective Clothing**

Special "protective" or "anti-contamination" clothing is furnished and worn as necessary to protect personnel against contact with radioactive contamination. This clothing consists of coveralls, lab coats, hoods, gloves, and shoe covers. Change rooms are centrally located in the RCA for proper utilization of this protective clothing.

#### **7.2.2.2 Portable and Laboratory Equipment and Instrumentation**

The various types of portable and laboratory instruments used in the radiation protection program were selected to provide the appropriate detection capabilities, ranges, sensitivities, and accuracies required for the anticipated types and expected levels of radiation at the MGDS facility during normal operation and emergency conditions [INN 7.2.2.2-1].

These instruments are required to provide protection against radiation for station personnel (for surveys required by 10 CFR 20.1501), to control the release of effluents for the protection of the health and safety of the public (in compliance with Regulatory Guide 1.21), and to provide for all other radiological measurements necessary for personnel and public safety, and for the protection of property. Sufficient quantities are obtained to allow for use, calibration, maintenance and repair.

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#### 7.2.2.2.1 Laboratory Equipment

Instruments for radioactivity measurement and analysis are located in the counting room. Beta scintillation and gamma isotopic detectors provide contamination information. Sodium iodide detectors may also be provided [INN 7.2.2.2.1-1].

#### 7.2.2.2.2 Portable Radiation Monitoring Instruments and Equipment

Portable radiation survey and monitoring instruments for daily routine use are selected to cover the entire range from background to high levels for the radiation types of concerns. They are generally located in the radiation protection operations office and include the following as typical examples:

- a. Beta-gamma survey meters are used for detection of radioactive contamination on surfaces and for low level dose rate measurements.
- b. Low- and high-range beta gamma ionization chamber survey meters are used to cover the general range of dose rate measurements necessary for radiation protection purposes.
- c. Neutron rem dosimeter instruments are used to measure the sum of thermal, intermediate, and fast neutron dose rates for radiation protection purposes.
- d. Survey equipment for use in emergency situations is stored in emergency kits and is located in such areas as the operating areas, cask preparation areas, Control Room(s), main access drift, emplacement drift entrances, and emergency management centers.

Various portable airborne gaseous, particulate, and iodine samplers are also available for routine use as well as an assortment of special purpose and emergency type radiation survey instruments. This equipment is normally kept under radiation protection control. Necessary emergency instruments are located at a remote assembly point.

#### 7.2.2.2.3 Personal Monitoring Equipment

[Note: Specific reference on how guidance in RG. 8.4 & 8.9 will be followed should be discussed [INN 7.2.2.2.3-1].]

Fixed monitoring instruments are located at exits from the RCA. Whole body monitors and hand and foot monitors are also utilized at exits from the RCA. These instruments are intended as the primary control to prevent any contamination of personnel, materials, or equipment from being spread into the unrestricted areas of the facility. Appropriate monitoring instruments are also used at various maintenance locations or other work areas within the RCA for contamination control purposes. Portal monitors are utilized, as appropriate, to monitor personnel leaving the facility to prevent the spread of contamination.

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Personal monitoring equipment consists of TLDs and self-reading pocket dosimeters which are worn by those persons who ordinarily work in the RCA, whose jobs require frequent access to this area, or whose jobs involve significant levels of radiation exposure. In addition, wrist badges and/or finger tabs are readily available for use for measurement of extremity dose. This personal monitoring equipment is issued from the radiation protection badging area. Individuals' neutron radiation exposures are calculated in dose equivalents using neutron dose equivalent rates as measured by neutron survey instruments and known personnel occupancy times. The TLDs are periodically read in a TLD counter.

A body burden analyzer for routine screening of personnel for internal exposure is provided in a low background counting area. The facility equipment is sufficiently sensitive to detect in thyroid, lungs or whole body a few percent of the permissible body organ burden for those gamma emitting radionuclides expected.

A baseline body burden analysis will be performed on site visitors prior to any RCA entrance. During an RCA entrance, site visitors will be required to wear personal dosimetry to monitor for external radiation exposure. A site exit Body Burden Analysis will also be required for visitors to verify that no internal contamination has occurred.

Specifics on the radiation protection equipment are provided in Table 7.2.2.2.3-1 [INN 7.2.2.2.3-2].

#### **7.2.2.2.4 Respiratory Protection Equipment**

The primary objective of the Respiratory Protection Program is to limit the intake of airborne radioactive materials by personnel. The preferred method for achieving this objective is the application of engineering controls (process containment, ventilation systems, and local exhaust equipment). When additional engineering controls are impractical or cannot be applied, respiratory-protection equipment is provided and used.

Use of the facility's HVAC systems and portable air movers and filters will ensure control of airborne radioactivity levels. At times when airborne radioactivity problems exist, prompt assessment of the airborne activity levels is required. Radiological analyses of gaseous samples and/or particulate samples are performed. Radiation Protection personnel are knowledgeable in the appropriate facility procedures and are trained in the equipment required to determine airborne concentrations in the plant under all conditions. As a final alternative, respiratory protection equipment will be available for use in those situations where airborne radioactivity hazards exist and other control measures are inadequate at the location and time.

Respiratory-protection equipment, such as full-face masks, self-contained breathing apparatus, and chemical cartridge respirators, is properly selected and used to ensure that peak concentrations of airborne radioactive materials inhaled by an individual wearing the equipment, do not exceed the limits and requirements specified in 10 CFR 20, Appendix B to

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20.1001 - 20.2401 Table 1, and 10 CFR 20.170. 20.1703. The program is conducted in accordance with Regulatory Guide 8.15.

All respiratory-protection equipment is monitored for contamination, decontaminated as necessary, and otherwise cleaned and disinfected. Equipment inspections are made before and after each use to ensure that the equipment is functioning properly. Inspections are performed only by qualified personnel.

Respiratory-protection equipment is available in designated locations for use by qualified personnel. Normally, this equipment is issued by appropriate Radiation Protection personnel from a respiratory equipment facility.

#### **7.2.2.2.5 Instrument Calibration and Operational Checks**

In accordance with applicable regulatory guides all of the aforementioned instruments are subject to initial operational checks and calibration and to a continuing quality control program to ensure the accuracy of all measurements of radioactivity and radiation levels.

In addition, routine calibrations are performed after all repairs that could affect instrument calibration.

[Note: This section will also address instrument storage, calibration, and maintenance facilities. Describe the methods to be used for testing and calibration of radiation protection instrumentation (see draft reg guide OP 032-5 "Test and Calibration of Radiation Protection Instrumentation")]

Describe the types of the repository-protection equipment, protective clothing, and portable and laboratory equipment and instrumentation to be used. Describe the types of detectors and monitors, and the quantity, sensitivity, range, and frequency and methods of calibration for all the equipment and instrumentation mentioned above.

#### **7.2.3 Procedures**

[This section will describe the procedures to be used in the Radiation Protection Program to ensure contamination levels and radiation exposures will be ALARA. Procedures will be established for radiation surveys, radiation work permits, personnel dosimetry and exposure records, decontamination of surface facilities, radioactive material handling, respiratory protection, and ALARA practices. Where appropriate, cost-benefit analyses will be discussed to justify the development of procedures [INN 7.2.3-1].]

Operating procedures and administrative controls are provided to ensure that external exposures are maintained within the limits of 10 CFR 20 and ALARA during facility operations and maintenance. These procedures comply with the intent of Regulatory Guide 8.8. A Radiation Protection manual [INN 7.2.3-2], which is based on applicable regulations

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and regulatory guides, describes the radiation protection program for the facility and contains procedures for implementation of this program. The information and procedures in the Radiation Protection manual, from which all facility operating procedures relate to radiological safety are derived, ensure that external exposure will be kept ALARA during facility operation and maintenance. These facility operating procedures, which are either developed or reviewed by the facilities Radiation protection team, utilize specific reduction techniques outlined in Regulatory Guide 8.8. Access to, and duration of occupancy in RCAs of the facility are carefully controlled and a radiation work permit system is utilized to limit external radiation exposure during operation and maintenance work. Implementation of the Radiation Protection program and effective use of the area radioactivity monitoring system, ensures proper surveillance and control of personnel external exposure. In addition, operation and maintenance work is planned, reviewed and scheduled to minimize exposures. Provision is made for special temporary shielding as needed. Preliminary and periodic reviews of facility design, procedures, and dose records are conducted by Radiation Protection supervision and management, to ensure that exposures are ALARA.

Radiation Protection management personnel review total dose, and doses relating to specific work groups and job functions, to determine locations where most exposures are being received, what work groups are receiving the highest exposures, and how personnel exposures can be reduced. Formal audits on the radiation control program are conducted periodically, to ensure that the ALARA policy is being implemented.

Procedures and practices for achieving ALARA exposures are reviewed, and the radiation worker's job performance is also reviewed to ensure that the workers are responsible, conscientious, and qualified to perform their work efficiently and safely. Post operational debriefings are conducted to improve job performance. Permanent and/or removable shielding is designed to minimize radiation exposure. Mock-up training is conducted for high-exposure jobs. The development of special tools and remote-handling equipment is encouraged to reduce external exposures (new and better ways to perform all radiological work with less exposure are diligently pursued).

Routine radiological monitoring to detect radiation, radioactive contamination, and airborne radioactivity will be performed throughout the facility on periodic schedules. Monitoring frequencies will be determined by the facility Radiation Protection Manager based upon the actual or potential radiological conditions. Schedules will be changed as plant conditions change. Radiological surveys are also performed as a backup to routine monitoring when conditions warrant. All survey and routine monitoring data is recorded and filed in the radiation protection files.

#### **7.2.3.1 Radiation Surveys**

Radiation surveys are conducted, according to the methods and frequencies discussed below, to ensure that occupational exposures are maintained ALARA during these surveys. [The radiation survey methods and frequencies are summarized in Table 7.2.3.1-1 [INN 7.2.3.1-1].]

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**7.2.3.2 Radiation Work Permits**

All work on systems or in locations where radioactive contamination or external radiation is present requires a specific radiation work permit for non-routine operations, or a standing radiation work permit for routine operations [INN 7.2.3.2-1] prepared and approved under the direction of the facility Radiation Protection Manager before work can begin. The radiological hazards associated with the job are determined and evaluated prior to issuing the permit.

Keeping exposures ALARA is a major consideration in the preparation of the radiation work permits. A radiation work permit lists the precautions to be taken, including as appropriate, work time limits (for external and internal exposure), protective clothing to be worn, and any radiation monitoring that may be required during the performance of the work. The permit is issued to the people who perform the work, and a working copy is maintained by the Radiation Protection group.

All persons working under a permit are required to read the instructions on the permit and to fill out the information necessary on their Daily Exposure Time Record Card [INN 7.2.3.2-2] before entering and after leaving the Radiation Control Zone. The information from the permit and the card serves, in part, as a personnel monitoring record for the individuals involved.

In order to protect personnel from radiation and radioactive materials, the RCA of the facility is divided into areas of increasingly controlled access depending on radiation levels. Protection of personnel from radiation areas and high radiation areas that exist temporarily or permanently as a result of facility operations and maintenance is by means of appropriate radiation warning signs, barricades, locked doors, audible and visual indicators and alarms, etc., as required by 10 CFR 20.

Procedures involving radiological conditions are written such that keeping exposures ALARA is a major consideration. Regulatory Guides 8.2, 8.8, and 8.10 are utilized in formulating the radiological protection program and are used in the preparation and review of operating procedures. The knowledge and experience gained from the nuclear industry are also factored into the program.

**7.2.3.3 Personnel Dosimetry and Exposure Records**

[A personnel dosimetry program was developed to aid in operational planning as part of maintaining occupational radiation exposures ALARA. The methods and plans for personnel dosimetry, including recording and reporting requirements, and criteria for whole body and lung counting, and bioassays are discussed below. Table 7.2.3.3-1 [INN 7.2.3.3-1] describes the personnel dosimetry reporting requirements. Whole body counting and bioassay requirements are presented in Table 7.2.3.3-2 [INN 7.2.3.3-2].]

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All persons entering the RCA of the facility must wear the personal monitoring equipment (TLD and/or film badges, dosimeters, etc.) prescribed by the facility [Radiation Protection Manager] in accordance with NRC regulations and must comply with applicable radiation work permits.

Personal monitoring equipment consisting of TLDs and self-reading pocket dosimeters are assigned by the facility Radiation Protection staff and worn by all personnel (employees and visitors) whose jobs involve radiation exposure as defined in 10 CFR 20. Additional personal dosimetry equipment such as high-range self-reading pocket dosimeters and extremity TLDs, are assigned as needed depending on the radiological conditions encountered.

Personnel whose jobs require them to frequently enter the Restricted Area of the facility are ordinarily assigned a permanent personal monitoring badge and a dosimeter. Personnel working under a specific radiation work permit in a job situation where a sizeable fraction of the quarterly allowable dose may be received in a relatively short period of time may additionally be assigned a high-range self-reading dosimeter and/or extremity monitoring equipment, depending on job conditions. Extremity monitoring equipment is issued for jobs or situations where extremity dose is expected to be limiting or controlling or in excess of the whole body dose. The use of additional personal monitoring equipment beyond that routinely used depends on the job and on existing radiological conditions as evaluated and determined by facility Radiation Protection staff. High-range dosimeters are issued for jobs where the dose received in a short period of time is expected to be greater than the range of the usual dosimeters. In other words, the additional required personal monitoring equipment, beyond that routinely used, is job coupled and depends on radiological conditions as evaluated and determined by the facility Radiation Protection Manager.

Records of radiation exposure history and current occupational exposure are maintained by the Radiation Protection staff for each individual for whom personnel monitoring is required. The external radiation dose to personnel is determined on a daily basis by means of self reading pocket dosimeters. Individual Occupational Radiation Exposure records are filed and retained for each individual in accordance with the recommendations of Regulatory Guide 8.7. Personnel exposure and monitoring reports will be submitted in accordance with the Technical License Conditions and Regulatory Guide 1.16. Personal monitoring badges (TLDs) are normally processed monthly but may be processed more frequently if necessary. The TLD processing lab is accredited under the \_\_\_\_\_ Accreditation program [INN 7.2.3.3-3].

The facility exposure control computer program provides useful information needed to efficiently and effectively maintain daily personnel dose records. The radiation exposure control computer program maintains personnel dose information equivalent to the information required on an NRC-5 form. This program also provides a report listing those cases where poor correlation is encountered between TLD badge results and pocket dosimeter totals reported for the same time period. The job exposure control computer program categorizes dose according to work group and job function. These computer programs are designed for

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conformance with Regulatory Guide 1.16 and facilitate conformance with Regulatory Guides 8.2, 8.8, 8.10 and the MGDS facility ALARA program.

A body burden analyzer system for routine screening of personnel to determine internal exposure, is available on site. Outside services for radio-bioassay and whole body counting may be used as required for backup and support of the program. The station equipment is sufficiently sensitive to detect in the thyroid, lungs, or whole body, a small fraction of the permissible body burden for those gamma emitting radionuclides expected.

MGDS employees and contract service employees issued a personnel monitoring badge are given a body-burden analysis when the badge is initially issued and when employment is terminated or alternatively, when the person is transferred to a non-radiological assignment. Visitors are generally given a body-burden analysis each time a monitoring badge is issued and at the termination of the facility visit. In addition, badged facility personnel and other appropriate MGDS system personnel participate in a routine body-burden analysis program. The facility [Radiation Protection Manager] may waive the requirement for any analysis on a case-by-case basis if in their judgement, the analysis is inappropriate or impracticable.

Body-burdens exceeding a small fraction of the appropriate Annual Limit on Intake can be referred to a more definitive measurement facility to quantify the activity and to calculate the resulting dose commitment more accurately. The bioassay program at the MGDS was developed following the guidelines of Regulatory Guide 8.9.

Anyone on-site, whether badged or not, who was involved in a radiological accident where internal exposure was likely, would be given a body burden analysis as soon as practicable. If radioactive material uptake had occurred, proper action would be taken as stated in the facility Radiation Protection Manual.

Potential airborne radioactivity concentrations are kept to a minimum by process and engineering controls, proper preventive measures and good housekeeping techniques in conformance with Regulatory Guide 1.39. The frequency of routine surveys at selected areas for the assessment of radiation-field, radioactive contamination, and airborne radioactivity levels, will be determined by the facility Radiation Protection Manager and will be based upon the actual or potential hazard, facility status, tasks to be performed, and occupancy factors to ensure ALARA exposures within 10 CFR 20 limits. The frequency of routine measurements for airborne radioactivity may be weekly, monthly, or continuously depending upon the location, operating conditions, and actual or potential hazard. All survey results are recorded, filed, and may be posted locally to ensure adequate radiological controls. Caution placards will be posted locally to comply with 10 CFR 20.1902 requirements.

Personal monitoring badges (TLD) are supplied by a central in house service which is responsible for the calibration and maintenance of all TLD and TLD readout equipment. Self-reading pocket dosimeters are calibrated and leak tested at the facility as part of the facility instrument maintenance QA program.

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**7.2.3.4 Decontamination of Surface Facilities**

[Procedures are established for decontamination of the GROA facilities. These procedures support assessment of individual and collective exposures for repository workers as well as the public. The operating features and limitations of the systems used for decontamination of personnel are discussed, and plans are presented for the safe disposal of residual radioactive material after decontamination efforts are completed [INN 7.2.3.4-1]. Table 7.2.3.4-1 summarizes the features and limitations of the decontamination systems.]

**7.2.3.5 Radioactive Material Handling**

The following radiation-safety requirements are provided to ensure that adequate safeguards are used for handling and storing sealed and unsealed source, special nuclear, and byproduct materials. The facility Radiation Protection Manager is notified prior to ordering radioactive sources and other such materials so that the necessary arrangements for adequate protective measures and ALARA considerations can be made. Upon receipt of radioactive material at the site, Radiation Protection is immediately notified. Radiation Protection then properly monitors, records, delivers, opens, labels or posts, and assigns a custodian, before the source is stored or used. The custodian is responsible for the safekeeping, proper use, storage, and handling of all radioactive materials assigned to him/her. They also account for the material at regular intervals whenever an inventory check is made by Radiation Protection.

All radioactive material is stored in appropriate locations in the RCA designated by the facility Radiation Protection Manager and is posted or labeled in accordance with 10 CFR 20 regulations. Sealed sources containing more than license-exempt quantities of activity are leak-tested once every six months. This testing is performed by Radiation Protection personnel. The facility Radiation Protection Manager is informed of any change in storage locations or change in custodian.

The facility Radiation Protection Manager is notified prior to shipment of radioactive material from the facility. All shipments are monitored to ensure proper packaging and labeling, and to complete the shipment-record forms and logs, in accordance with Department of Transportation and NRC regulations and other requirements.

All contaminated material and equipment to be removed from the RCA or transferred to another location within the RCA for storage, repair, or use, are first monitored and tagged by Radiation Protection. Handling and control of contaminated material and equipment is affected by the use of tags and labels. In addition, contaminated material and equipment are properly packaged to prevent the spread of contamination.

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### 7.2.3.6 Respiratory Protection

The primary objective of the Respiratory Protection Program is to limit the intake of airborne radioactive materials by personnel. The preferred method for achieving this objective is the application of engineering controls (process containment, ventilation systems, and local exhaust equipment). When additional engineering controls are impractical or cannot be applied, respiratory-protection equipment is provided and used.

Control of airborne radioactivity levels are ensured through the use of the facility's HVAC systems and portable air movers and filters. At times when airborne radioactivity problems exist, prompt assessment of the airborne activity levels is required. Radiological analyses of gaseous samples and/or particulate samples are performed. Radiation Protection personnel are knowledgeable in the appropriate facility procedures and are trained in the equipment required to determine airborne concentrations in the plant under all conditions. To be used as a final alternative, respiratory protection equipment is available for use in those situations where airborne radioactivity hazards exist and other control measures are inadequate at the location and time. Section 7.2.5.3 provides information on the on-site radiation monitoring systems.

Written procedures for implementing the requirements of the respiratory program are utilized by the facility in conformance with Regulatory Guide 1.33. These detailed procedures include: (1) selection and supervision of personnel who are to be qualified in the use of respiratory equipment, (2) training of personnel by qualified and knowledgeable instructors, (3) methods for ensuring an adequate fit, (4) a maintenance program that includes decontaminating, cleaning, disinfecting, inspection, repair, and storage, and (5) the administrative controls for the issuance, usage, and handling after usage.

Personnel are screened by a physician to ensure that they are medically able to use respiratory equipment. Personnel passing the screening test are then given a test fitting.

Qualified and knowledgeable personnel are used for training personnel and their supervisors in the proper use of respiratory-protection equipment following the guidance of applicable [Federal/State/TBD] regulations. Retraining is conducted to ensure a high proficiency in the use of respiratory-protection equipment (see Section 7.6).

Personnel permitted unescorted access to the Restricted Area will be given health physics training and a written test and will be re-evaluated annually and retrained as necessary, in accordance with Section 19.12 of 10 CFR 19, *Notices, Instructions, and Reports to Workers: Inspections and Investigations*, and Regulatory Guides 8.13, 8.27, and 1.33. (see Section 7.6)

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**7.2.3.7 ALARA Procedures**

[Procedures are established to ensure that occupational radiation exposures are ALARA and residual contamination levels for all systems that contain, collect, store, or transport radioactive solids and liquids are also ALARA (including radioactive waste treatment, handling, and storage systems) [INN 7.2.3.7-1]. The target contamination limits are presented in Table 7.2.3.7-1.]

MGDS facility management is firmly committed to the "ALARA" philosophy. This commitment is stated in the facility ALARA manuals [INN 7.2-2 and INN 7.2-3]. A formal ALARA program has been established in order to convey and enforce management's commitment to ALARA.

**7.2.3.7.1 Design Considerations**

Consideration is given to such factors as projected component dose rates, space, mobility, accessibility, etc., during the initial design and construction phases of the facility. There is a large degree of component separation between higher and lower radiation areas.

ALARA exposures receive further attention through the training of designers and in equipment selection. Designers attend training sessions where topics, such as methods of minimizing crud buildup in piping, or equipment separation criteria are covered.

These sessions provide designers with a working knowledge of radiation protection. Closely working with equipment vendors results in the purchase of low maintenance equipment.

**7.2.3.7.2 ALARA Operational Considerations**

Consistent with MGDS management's overall commitment to preserve occupational radiation exposures ALARA, specific plans and procedures are followed by station personnel to ensure that ALARA goals are achieved. Operational ALARA policy statements are formulated at the facility upper management level through the issuance of the Radiation Protection Manual and the Operational ALARA manual which is implemented by means of procedures. These statements and procedures are consistent with the intent of Regulatory Guides 8.8 and 8.10. Personnel and job exposure trends are reviewed by management at the facility and appropriate action is taken. Summary reports of occupational exposure are provided. These reports describe problem areas where high radiation doses are encountered and identify which work group is accumulating the highest doses. Recommendations are then made for changes in operating, maintenance, and inspection procedures or for modifications to the facility as appropriate to reduce doses.

Maintenance activities that could involve significant radiation exposure of personnel are carefully planned. They utilize any previous operating experience, and are carried out using well-trained personnel and proper equipment. Traditional work permits for non-routine

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operations, or standing radiation work permits for routine operations are issued for each job, listing radiation protection requirements that will be followed by all personnel working in the RCA. Where applicable, specific radiation exposure reduction techniques, such as those set out in Regulatory Guide 8.8, are evaluated and used. Procedures for such radiation exposure related operations as maintenance, in-service inspection, and radwaste handling, are well planned and developed by cognizant groups, and are reviewed by the station Radiation Protection staff to ensure that exposures will be ALARA. Careful personnel radiation and contamination monitoring are integral parts of such maintenance activities. During and upon completion of major maintenance jobs, personnel radiation exposures are evaluated and assessed relative to estimated exposures so that appropriate changes can be made in techniques or procedures as soon as practicable for future jobs. The Radiation Protection staff also conducts reviews of radiation exposure related activities to ensure that procedures are adequate, that they are being followed properly, and that deficiencies are corrected as soon as practicable to ensure that exposures will be ALARA.

The facility's ALARA committee carefully reviews operations and maintenance activities involving the major facility systems to further ensure that occupational exposures are kept ALARA.

Information from these ongoing ALARA reviews is evaluated with regard to its relevance for the design of modifications, particularly those features and components dealing with radiation exposure and control. When problems are identified that are generic in nature, such as shielding penetration leakage, requests are initiated so that appropriate changes can be made in the facility.

#### **7.2.4 Effluent Monitoring Programs**

The Effluent Monitoring Program provides for measurement, analysis, and control of airborne and liquid effluents, as well as movement of solid wastes from all GROA facilities during normal, off-normal, and emergency conditions. [This section also describes the program and analytical approaches to monitor the radioactive material content of effluent streams from the GROA facilities [INN 7.2.4-1]. Descriptions of the systems and subsystems are given, including appropriate process flow diagrams. Instrumentation used to maintain control over all releases, in accordance with applicable requirements and limits, are also described. The effluent monitoring programs described in this section provide assurance that all radioactive effluents from the GROA facility are effectively monitored, measured, and controlled during all operational conditions [INN 7.2.4-2].]

##### **7.2.4.1 Gaseous and Particulate Monitoring System**

[The systems and subsystems comprising the gaseous and particulate monitoring system are described in this subsection. Selection of systems and major instruments are discussed and justified where appropriate. The major features of the system (e.g., expected reliability and sensitivity) are presented in Table 7.2.4.1-1 [INN 7.2.4.1-1]. The sampling frequency and

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action limits are described in Table 7.2.4.1-2 [INN 7.2.4.1-2]. The process flow diagram of the gaseous and particulate monitoring system, including sampling locations, is presented in Figure 7.2.4.1-1 [INN 7.2.4.1-3].]

#### **7.2.4.2 Liquid Effluent Monitoring System**

[The systems and subsystems comprising the liquid waste monitoring system are described in this subsection. Selection of systems and major instruments are discussed and justified where appropriate. The major features of the system (e.g., expected reliability and sensitivity) are presented in Table 7.2.4.2-1 [INN 7.2.4.2-1]. The sampling frequency and action limits are given in Table 7.2.4.2-2 [INN 7.2.4.2-2]. The process flow diagram of the liquid waste monitoring system, including sampling locations, is presented in Figure 7.2.4.2-1 [INN 7.2.4.2-3].]

#### **7.2.4.3 Solid Waste Monitoring**

[The systems and subsystems comprising the solid waste monitoring system are described in this subsection. Selection of systems and major instruments are discussed and justified where appropriate. The major features of the system (e.g., expected reliability and sensitivity) are presented in Table 7.2.4.3-1 [INN 7.2.4.3-1]. The sampling frequency and action limits are given in Table 7.2.4.3-2 [INN 7.2.4.3-2]. The process flow diagram of the solid waste monitoring system, including sampling locations, are given in Figure 7.2.4.3-1 [INN 7.2.4.3-3].]

#### **7.2.4.4 Plans for Maintaining Continuing Analysis Integrity**

The integrity of analyses relevant to the Effluent Monitoring Program is dependent on the following elements of the program:

- a. Use of controlled radiation monitoring equipment with known calibrations.
- b. Use of qualified procedures to monitor and calculate the magnitude of activity levels.
- c. Use of qualified technical personnel to perform equipment calibrations, complete procedures, and perform calculations related to the program.

Each specific type of radiation monitoring instrument is initially calibrated with isotopic sources traceable to the National Bureau of Standards. A secondary source will then be applied to the detectors after the isotopic calibration and its response are recorded. The secondary sources will then be applied to all other identical instruments in a fixed repeatable geometry in order to ensure equivalent response to the instrument initially calibrated to the National Bureau of Standards source.

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[Procedures are developed to ensure that monitoring activities are performed in a consistent, repeatable manner with calibrated instruments.] Therefore, results from monitoring activities performed during any given period may be directly compared to results obtained during another period so that trends can be monitored and corrective actions initiated if necessary.

Personnel authorized to complete procedures and perform calculations relevant to the waste monitoring activities are qualified by a combination of education and training for the specific tasks in accordance with the training program described in **Section 7.6**.

### **7.2.5 Environmental Monitoring Program**

[The Environmental Monitoring Program is designed to ensure that the GROA complies with the performance objectives of 10 CFR 60.111 until permanent closure, and to reasonably ensure that the engineered barriers are functioning as anticipated.] During repository operations, small amounts of radioactive materials may be released into the environment from releases of low-level gaseous and liquid wastes in accordance with NRC regulations and the license specifications. The design and operation of the radioactive waste systems maintain the quantities of any such releases ALARA. The Environmental Monitoring Program is used to document existing radiation levels and to ensure that releases from repository operations remain within acceptable limits.

#### **7.2.5.1 Critical Pathways**

[The possible critical exposure pathways to the public are evaluated in accordance with Regulatory Guide 1.109 to estimate the dose to the hypothetical maximum exposed individual and to establish the sampling requirements for the Environmental Monitoring Program.] These critical pathways are [INN 7.2.5.1-1].

#### **7.2.5.2 Pre-Operational Radiological Monitoring Program**

Background radiation and radioactivity levels from natural and manmade sources vary considerably from place to place throughout the country. This variation occurs since the terrestrial component of natural background depends on the local geology, including the various mixtures of naturally occurring radionuclides. The cosmic ray component is dependent on altitude above sea level and also varies with latitude. Local meteorological conditions can influence background levels to various degrees from time to time.

[The pre-operational phase of the Environmental Monitoring Program provides data on the existing environmental radioactivity levels for the GROA and vicinity. These data form the basis for evaluating radioactivity levels subsequent to the beginning of GROA operations, to determine if any increases in radioactivity levels in the vicinity of the GROA are attributable to the GROA.] The pre-operational phase of the Environmental Monitoring Program observed background levels over a period of [INN 7.2.5.2-1]. [The locations monitored and the average background results are presented in Table 7.2.5.2-1 [INN 7.2.5.2-2].]

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**7.2.5.3 Operational Radiological Monitoring Program**

The Operational Radiological Monitoring Program will provide surveillance and backup support to the effluent monitoring as discussed in Subsection 7.2.4. This support will be necessary to evaluate individual and population exposures, and the ecological significance of any contributions to the existing radioactivity levels from GROA operations. This program will provide surveillance of all appropriate critical exposure pathways to man, and satisfies legitimate interests of the public and state and federal agencies. [The Operational Radiological Monitoring Program will be described in the GROA license specifications and the Offsite Dose Calculation Manual [INN 7.2.5.3-1]. Table 7.2.5.3-1 will show the type, number, location, collection frequency, and analysis frequency of environmental samples collected under this program. Sampling locations will be depicted in Figure 7.2.5.3-1.]

**7.2.5.4 Expected GROA Contributions to Radioactivity Levels**

[Anticipated releases of radioactive material from GROA operations will be used to estimate the expected contribution of the GROA to environmental radioactivity levels. The natural background levels and expected contribution from GROA operations will be presented in Table 7.2.5.4-1 [INN 7.2.5.4-1].]

**7.2.5.5 Operational Meteorological Data Collection**

Meteorological conditions can affect off-site doses from GROA releases and will be monitored in a continuing program to assess the impact of any meteorological changes on previous estimates of doses. [The locations of meteorological monitoring stations will be given in Figure 7.2.5.5-1. The collection frequency and analysis frequency will be given in Table 7.2.5.5-1 [INN 7.2.5.5-1].]

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**REFERENCES**

[Latest revisions of Regulatory Guides: 8.4, 8.8, 8.9, 8.10, 8.15.

- Regulatory Guide 8.4, Direct-Reading and Indirect-Reading Pocket Dosimeters
- Regulatory Guide 8.8, Radiation Protection Facilities, Instrumentation, and Equipment
- Regulatory Guide 8.9, Acceptable concepts, Models, Equations, and Assumptions for a Bioassay Program, and Regulatory Position 4
- Regulatory Guide 8.10, Occupational radiation exposures are ALARA (such as those pertinent procedures in Regulatory Position 4 of Regulatory 8.8)
- Regulatory Guide 8.15, Acceptable Programs for Respiratory Protection.

Draft Regulatory Guide OP-032-5. (Final, when available.) Test and Calibration of Radiation Protection Instrumentation.

Latest revisions of 10 CFR 20, 10 CFR 60.

NRC document stating requirements for Offsite Dose Calculational Program.

Copy Off-site Dose Calculational Manual for the Catawba Nuclear Station - Duke Power Co.

Design report for GROA descriptions of engineered systems, structures, and components.

Design report containing preliminary description of site, proposed buildings, facilities, and activities to be conducted.

Preliminary description of administrative organization for operation of the repository.

Latest revision of Duke Power Co - Health Physics Manual.

Latest revision of Duke Power Co - ALARA Manual.

Latest edition of Duke Power Co. Training Manual sections concerning (1) General Employee Health Physics Training), and (2) Health Physics Technical Training Programs.

Latest revision of NRC Branch Technical Position 4.8 concerning environmental radioactivity monitoring.

Latest edition of Duke Power Co. Respiratory Protective Equipment fitting and training program description.

**REFERENCES (continued)**

Design report containing information concerning all planned radioactive waste collection, treatment, handling, and storage systems.

Design report containing information concerning all planned radioactive effluent streams from the GROA facilities - gases and particulates.

Meteorological data report containing collection and evaluation for the repository.]

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**TABLE TITLES**

Table 7.2.1-1	Personnel Qualifications and Experience [INN 7.2.1-2]
Table 7.2.1.2-1	Expected qualifications of personnel with Key Radiation Protection Jobs [INN 7.2.1.2-1]
Table 7.2.2.2.3-1	Specifications for the Personnel Radiation Protection Equipment [INN 7.2.2.2.3-2]
Table 7.2.3.1-1	Radiation Survey Methods and Frequencies [7.2.3, INN 7.2.3.1-1]
Table 7.2.3.3-1	Personnel Dosimetry Reporting Requirements [INN 7.2.3.3-1]
Table 7.2.3.3-2	Whole Body Counting and Bioassay Criteria [INN 7.2.3.3-2]
Table 7.2.3.4-1	Decontamination System Features [INN 7.2.3.4-1]
Table 7.2.3.7-1	Target Contamination Limits [INN 7.2.3.7-1]
Table 7.2.4.1-1	Gaseous and Particulate Monitoring System Features [INN 7.2.4.1-1]
Table 7.2.4.1-2	Gaseous and Particulate Monitoring Sampling Frequency and Action Limits [INN 7.2.4.1-2]
Table 7.2.4.2-1	Liquid Waste Monitoring System Features [INN 7.2.4.2-1]
Table 7.2.4.2-2	Liquid Waste Monitoring Sampling Frequency and Action Limits [INN 7.2.4.2-2]
Table 7.2.4.3-1	Solid Waste Monitoring System Features [INN 7.2.4.3-1]
Table 7.2.4.3-2	Solid Waste Monitoring Sampling Frequency and Action Limits [INN 7.2.4.3-2]
Table 7.2.5.2-1	Pre-Operational Monitoring Locations and Results [INN 7.2.5.2-1]
Table 7.2.5.3-1	Environmental Sampling Information [INN 7.2.5.3-1]
Table 7.2.5.4-1	Expected Radioactivity Levels [INN 7.2.5.4-1]
Table 7.2.5.5-1	Meteorological Data Collection [INN 7.2.5.5-1]

**FIGURE CAPTIONS**

- Figure 7.2.1-1 Geologic Repository Operation Area Radiation Protection Organization Chart [INN 7.2.1-3]
- Figure 7.2.2-1 Facility Layout Drawing on Instrumentation and Sampling Points for On-Site Monitoring (Normal and Off-Normal) [INN 7.2.2-1]
- Figure 7.2.2.1.1-1(n) Facility Layout Drawing(s) Identifying the RCAs [INN 7.2.2.1.1-2]
- Figure 7.2.4.1-1 Gaseous and Particulate Monitoring System Process Flow Diagram [INN 7.2.4.1-3]
- Figure 7.2.4.2-1 Liquid Waste Monitoring System Process Flow Diagram [INN 7.2.4.2-3]
- Figure 7.2.4.3-1 Solid Waste Monitoring System Process Flow Diagram [INN 7.2.4.3-3]
- Figure 7.2.5.3-1 Operational Radiological Monitoring Program Sampling Locations [INN 7.2.5.3-1]
- Figure 7.2.5.5-1 Operational Meteorological Monitoring Station Locations [INN 7.2.5.5-1]

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	A formal Radiation Protection Program needs to be developed in a document separate from the SAR. The name of this document needs to be available for reference in the SAR.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Mostly likely source of the Information:</b>	
<b>Information Source Description:</b>	Sample Health Physics Plan and ALARA manuals from Duke
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	The development of a Design ALARA Manual and Training
<b>Information will be used to support:</b>	The commitment to the ALARA principle as identified in 10 CFR 60
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	ALARA Manual
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	The development of an Operations ALARA Manual and Training program
<b>Information will be used to support:</b>	The commitment to the ALARA principle as identified in 10 CFR 60 and CFR 20
<b>The Information is needed by/for (date or event):</b>	Prior to the 2008 LA submittal
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	An ALARA manual and training program
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	GROA organization chart needs to be defined and located with Subsection 7.3 for reference in this section.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.1-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.1-1
<b>Explicit description of the needed information:</b>	A description of the necessary personnel qualifications and experience levels for key jobs.
<b>Information will be used to support:</b>	The selection and development of the radiation protection organization.
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	Regulatory Guidance and existing Nuclear Power plan Safety Analysis Reports
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.1-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.1-1
<b>Explicit description of the needed information:</b>	The development of a GROA organization chart
<b>Information will be used to support:</b>	The development of Section 7.2.1 of the License Application
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	GROA Management
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.1.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.1.2-1
<b>Explicit description of the needed information:</b>	The identification of applicable personnel qualifications for the radiation protection staff.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.2-1
<b>Explicit description of the needed information:</b>	Facility layout drawings showing instrumentation and sampling points for on-site monitoring for normal and off-normal events.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Identification of the radiation protection and chemistry laboratories locations.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	Facility layout drawing
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification of laboratory facilities, what they are called, their function and where they are located.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification of the location and function of the change rooms.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Determination of the boundaries of the RCA
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1.1-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figures 7.2.2.1.1-1 through (n)
<b>Explicit description of the needed information:</b>	Provide a series of figures that show the normal operation radiation zones in the facility (cross reference Section 4.1 of the License Application).
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1.1-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.2.1.1-1(n)
<b>Explicit description of the needed information:</b>	Provide the layout drawings showing the restricted in/free out access doors in the RCA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1.1-4
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.2.1.1-1(n)
<b>Explicit description of the needed information:</b>	Provide layout drawings showing the contaminated checkpoints in each building.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.1.1-5
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification of the use of a single point access process into the RCA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Identification of the portable and laboratory instruments used in the radiation protection program.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.2.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification of the use and type of isotopic detectors providing contamination information. Provide descriptive information of monitors to use in the text of the License Application Section 7.2.2.2.1.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.2.3-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Provide a discussion on the use of regulatory guides 8.4 and 8.9 for personnel monitoring equipment.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.2.2.3-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.2.2.3-1
<b>Explicit description of the needed information:</b>	Provide the specifications for personnel radiation protection equipment.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Cost/Benefit method use during procedure development needs to be established in light of existing regulatory guidance.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	NRC Regulatory Guide 10.110 which has kind of dated values.
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Provide a general radiation protection manual suitable for reference in the license application.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.3.1-1
<b>Explicit description of the needed information:</b>	Radiation Survey methods and frequencies need to be identified.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification that a radiation work permit/standing radiation work permit process will be used.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.2-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification of the use and title of the individual dose card process.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.3-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.3.3-1
<b>Explicit description of the needed information:</b>	Personnel dosimetry plans need to be established including whole body criteria, etc.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.3-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.3.3-2
<b>Explicit description of the needed information:</b>	Provide Bioassay and Whole Body Counting Criteria
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.3-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	
<b>Explicit description of the needed information:</b>	Verification of the TLD processing laboratory accreditation program
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.4-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.3.4-1
<b>Explicit description of the needed information:</b>	Features of personnel decontamination systems.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.3.7-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.3.7-1
<b>Explicit description of the needed information:</b>	Target contamination limits for systems that contain, collect, store, or transport radioactive solids and liquids.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	An environmental monitoring program must be developed and may be summarized in portions of the SAR.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Description of: <ul style="list-style-type: none"> <li>• All radioactive materials processing and handling within GROA facilities, both qualitative and quantitative</li> <li>• Other in-plant area and process monitoring systems</li> <li>• Text, tabular data, schematics for effluent monitoring systems</li> </ul>
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.4.1-1
<b>Explicit description of the needed information:</b>	Provide details of the Gaseous and Particulate Monitoring System including major features, justification of systems and major instruments.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.1-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.4.1-2
<b>Explicit description of the needed information:</b>	Details of the Gaseous and Particulate Monitoring System sampling frequencies and action limits.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.1-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.4.1-1
<b>Explicit description of the needed information:</b>	Provide details of the Gaseous and Particulate Monitoring System process flow diagrams.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.4.2-1
<b>Explicit description of the needed information:</b>	Details of the Liquid Waste Monitoring System including major features, justification of systems and major instruments.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.2-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.4.2-2
<b>Explicit description of the needed information:</b>	Details of the Liquid Waste Monitoring System sampling frequencies and action limits.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.2-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.4.2-1
<b>Explicit description of the needed information:</b>	Details of the Liquid Waste Monitoring System process flow diagrams
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.3-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.4.3-1
<b>Explicit description of the needed information:</b>	Details of the Solid Waste Monitoring System including major features, justification of systems and major instruments.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.3-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.4.3-2
<b>Explicit description of the needed information:</b>	Details of the Solid Waste Monitoring System sampling frequencies and action limits.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.4.3-3
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.2.4.3-1
<b>Explicit description of the needed information:</b>	Details of the Solid Waste Monitoring System process flow diagrams.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.5.1-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Program for identifying and monitoring critical pathways relevant to the GROA needs to be identified and summarized. The critical pathways need to be identified.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	N/A
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.5.2-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.5.2-1
<b>Explicit description of the needed information:</b>	Need to identify the preparation program to acquire background radiation information for the GROA. Time frame over which study is conducted needs to be identified as well as the locations monitored and results observed.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.5.2-2
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	The locations monitored and results observed for the pre-operation program to acquire background radiation information for the GROA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.5.3-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.5.3-1 and Figure 7.2.5.3-1
<b>Explicit description of the needed information:</b>	Need to develop an Offsite Dose Calculation Manual to provide details of operational radiological monitoring program as a separate document from the SAR. Identify details of environmental samples collected and summarize parts of program that show compliance with 60.111 and provide assurance that SSCs are functioning properly.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	N/A
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.5.4-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.5.4-1
<b>Explicit description of the needed information:</b>	Need to summarize background levels of radiation and expected contribution from GROA activities.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.2.5.5-1
<b>Section Number and Title:</b>	7.2 RADIATION PROTECTION
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.2.5.5-1 and Figure 7.2.5.5-1
<b>Explicit description of the needed information:</b>	Details of operational meteorological program including collection and analysis frequencies and locations of monitoring stations.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	N/A

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the sQA ource document number is:</b>	

## **MGDS License Application Annotated Outline**

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### **Section 7.3 Organizational Structure, Management, and Administrative Controls**

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**LIST OF INFORMATION NEEDS**

- 7.3-1           OCRWM organization chart.
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- 7.3.1-2        Name of the operations group responsible for GROA operations.
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- 7.3.1.1-2      Organizational chart of the design group.
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- 7.3.1.3-2      Organization chart for the technical support group.
- 7.3.2.1-1      Identify the direct supervisor of the Repository Manager.
- 7.3.3-1        Identify any position qualification standards that may apply. A review of the Privacy Act requirements is also required to support the level of documentation of personnel qualifications.
- 7.3.3-2        Identify the minimum education and experience requirements for the various management positions at the repository.
- 7.3.3.1-1      Identify the name of the Repository Manager and summarize his resume of qualifications.
- 7.3.3.2-1      Identify the name of the Operations Manager and summarize his resume of qualifications.
- 7.3.3.3-1      Identify the name of the Radiation Protection Manager and summarize his resume of qualifications.

**LIST OF INFORMATION NEEDS (continued)**

- 7.3.3.4-1 Identify the name of the Performance Manager and summarize his resume of qualifications.
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### **7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS**

This section identifies and describes the structure, functions, qualifications, and responsibilities of the GROA organization. [The organizational structure, management, and administrative controls presented in this section must comply with requirements of 10 CFR 60.21(c)(15).]

The DOE is the Cabinet-level department responsible for the safe disposal of high-level nuclear waste from both civilian nuclear power programs and defense programs. Responsibility for the design, construction, and operation of the GROA is delegated within DOE to the Office of Civilian Radioactive Waste Management (OCRWM). [The OCRWM organization chart, showing direct reporting responsibility to the Secretary of Energy, will be shown in Figure 7.3-1 [INN 7.3-1].] Various divisions within OCRWM have responsibility for design, construction, QA, and operation of the GROA. DOE contracts with a Management and Operating Contractor (M&O) to manage the various aspects of constructing and operating this facility.

[The M&O contractor, as well as the M&O support contractors, will be shown together with their areas of responsibility in Figure 7.3-2 [INN 7.3-2]. Representatives from across the M&O are brought together to design, construct, and operate the GROA in an organization which reports directly to [INN 7.3-3] as will be depicted in Figure 7.3-3.]

#### **7.3.1 Organization**

The emphasis of the repository organization shifts during the course of licensing the facility. Initially, the [INN 7.3.1-1] is the focus as the facility progresses through the initial design and construction phase. Later, the [INN 7.3.1-2] is the major part of the organization as receipt of high-level waste and other operations become the focus of the GROA. The [INN 7.3.1-1] continues to provide support as the initial facility capacity is increased and other modifications to the facility need to be designed.

##### **7.3.1.1 Organization for Construction and Design**

The [INN 7.3.1.1-1] has overall responsibility for the design of the GROA as well as the specific responsibility for design of structures and systems, specification of materials and equipment and preparation of construction and installation drawings for the GROA. [The organizational structure of the [INN 7.3.1.1-2] will be shown in Figure 7.3.1.1-1.]

##### **7.3.1.2 Organization for Operations**

[The organization of the GROA operations staff will be designed with the philosophy that the onsite GROA staff is fully capable and equipped to handle all situations involving safety of the facility and the public.] The Repository Manager has the overall responsibility of the

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operation of the repository with respect to waste emplacement operations, radiation protection, and maintenance. [The organizational structure of the [INN 7.3.1.2-1] will be shown in Figure 7.3.1.2-1.]

### **7.3.1.3 Organization for Technical Support**

The [INN 7.3.1.3-1] provides support to the design and construction organization and the operations organization in the areas of QA, safety assurance, regulatory and licensing support, training, and computer resources. [The organizational structure of the [INN 7.3.1.3-2] will be shown in Figure 7.3.1.3-1.]

## **7.3.2 Personnel Functions, Responsibilities, and Authorities**

The functions and responsibilities of the onsite repository management staff are described in this subsection. The delegations of authority, including succession to responsibility for facility operations is also defined.

### **7.3.2.1 Repository Manager**

The Repository Manager reports to [INN 7.3.2.1-1] and has direct responsibility for operating the GROA in a safe, reliable, and efficient manner. The Repository Manager is also responsible for protection of the station staff and the general public from radiation exposure and/or any other consequences of an accident at the repository, as well as being responsible for compliance with the facility license and its conditions.

### **7.3.2.2 Operations Manager**

The Operations Manager has the responsibility for directing the actual day-to-day waste emplacement and cask handling operations, and reports directly to the Repository Manager. The Operations Manager may assume the responsibilities and authority of the Repository Manager, if so designated, during the absence or incapacitation of the Repository Manager.

### **7.3.2.3 Radiation Protection Manager**

The Radiation Protection Manager has the responsibility for conducting the Radiation Protection Program, with duties including the training of personnel in use of equipment, control of radiation exposure of personnel, continuous determination of the radiological status of the GROA, surveillance of radioactive waste disposal operations, conducting the environmental monitoring program and maintaining all required records. The Radiation Protection Manager reports directly to the Repository Manager, and may assume the responsibilities and authority of the Repository Manager, if so designated, during the absence or incapacitation of the Repository Manager.

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**7.3.2.4 Performance Manager**

The Performance Manager has the responsibility for directing the activities related to performance monitoring and testing, post-maintenance testing, and special system testing performed to show that the GROA systems are functioning as designed. The Performance Manager reports directly to the Repository Manager and may assume the responsibilities and authority of the Repository Manager, if so designated, during the absence or incapacitation of the Repository Manager.

**7.3.2.5 Compliance Manager**

The Compliance Manager has the responsibility for ensuring that GROA operations are conducted in accordance with the provisions of the facility license and its conditions. The Compliance Manager has responsibility for onsite QA functions and performs independent safety evaluations, as required. The Compliance Manager reports directly to the Repository Manager. However, due to the oversight nature of many of his responsibilities, may not assume the responsibilities and authority of the Repository Manager.

**7.3.2.6 Maintenance Manager**

The Maintenance Manager has the responsibility for directing activities associated with mechanical and electrical maintenance, and instrumentation and control. The Maintenance Manager reports directly to the Repository Manager, and may assume the responsibilities and authority of the Repository Manager, if so designated, during the absence or incapacitation of the Repository Manager.

**7.3.2.7 Repository Services Manager**

The Repository Services Manager has the responsibility for directing activities associated with repository support activities such as security, records management, human resources, fire protection, and industrial safety. The Repository Services Manager reports directly to the Repository Manager, and may assume the responsibilities and authority of the Repository Manager, if so designated, during the absence or incapacitation of the Repository Manager.

**7.3.3 Personnel Qualification Requirements**

The qualifications of personnel in the operating staff are defined in accordance with [INN 7.3.3-1]. Replacement personnel for all positions will be fully trained and qualified to fill their appointed positions. [The minimum education and experience requirements for the various management positions at the repository will be given in Table 7.3.3-1 [INN 7.3.3-2], and the resumes of the repository management staff demonstrating their qualifications will be presented in the following subsections.]

**7.3.3.1 Repository Manager**

[INN 7.3.3.1-1], the Repository Manager, ...

**7.3.3.2 Operations Manager**

[INN 7.3.3.2-1], the Operations Manager, ...

**7.3.3.3 Radiation Protection Manager**

[INN 7.3.3.3-1], the Radiation Protection Manager, ...

**7.3.3.4 Performance Manager**

[INN 7.3.3.4-1], the Performance Manager, ...

**7.3.3.5 Compliance Manager**

[INN 7.3.3.5-1], the Compliance Manager, ...

**7.3.3.6 Maintenance Manager**

[INN 7.3.3.6-1], the Maintenance Manager, ...

**7.3.3.7 Repository Services Manager**

[INN 7.3.3.7-1], the Repository Services Manager, ...

**REFERENCES**

ANSI/ANS-3.1-1978, American National Standard for Selection and Training of Nuclear Plant Personnel

Table 7.3.3-1 GROA Management Staff Minimum Qualifications <sup>ab</sup>

POSITION	EDUCATION REQUIREMENTS	YEARS OF APPLICABLE EXPERIENCE	PROFESSIONAL CERTIFICATIONS
REPOSITORY MANAGER			
OPERATIONS MANAGER			
RADIATION PROTECTION MANAGER			
PERFORMANCE MANAGER			
COMPLIANCE MANAGER			
MAINTENANCE MANAGER			
REPOSITORY SERVICES MANAGER			

[INN 7.3.3-2]

Material to consider for Table 7.3.3-1:

- a. ANS/ANS-3.1-1978. *American National Standard for Selection and Training of Nuclear Plant Personnel*, is used to provide bases for personnel qualifications except where clarified in Table 7.3.3-1.
- b. The following is required of a Radiation Protection Manager:
  - The Radiation Protection Manager is an experienced professional in applied radiation protection at nuclear facilities dealing with radiation protection problems and programs. The Radiation Project Manager is familiar with the design features of the GROA which affect the potential for exposures of persons to radiation. The Radiation Project Manager has the technical competence to establish radiation protection programs and the supervisory capability to direct the work of professionals, technicians, and journeymen required to implement the radiation protection programs. The Radiation Project Manager is an ABHP Certified Health Physicist.

**FIGURE CAPTIONS**

- Figure 7.3-1      OCRWM Organization Chart [INN 7.3-1]
- Figure 7.3-2      M&O Contractor Companies [INN 7.3-2]
- Figure 7.3-3      GROA Organization [INN 7.3-3]
- Figure 7.3.1.1-1    Organization for Construction and Design [INN 7.3.1.1-2]
- Figure 7.3.1.2-1    Organization for Operations [INN 7.3.1.2-1]
- Figure 7.3.1.3-1    Organization for Technical Support [INN 7.3.1.3-2]

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.3-1
<b>Explicit description of the needed information:</b>	OCRWM organizational chart
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3-2
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.3-2
<b>Explicit description of the needed information:</b>	M&O Contractors and areas of responsibility .
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3-3
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.3-3
<b>Explicit description of the needed information:</b>	M&O organization assembled to manage design, construction, and operation of the GROA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Name of the design engineering group responsible for design and construction.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1-2
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Name of the operations group responsible for GROA operations.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1.1-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the management position responsible for the design and construction of the GROA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1.1-2
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7-3.1.1-1
<b>Explicit description of the needed information:</b>	Organizational chart of the design group.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1.2-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.3.1.2-1
<b>Explicit description of the needed information:</b>	Organizational chart of the onsite GROA organization responsible for repository operations.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1.3-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the position responsible for technical support activities in support of the GROA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.1.3-2
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.3.1.3-1
<b>Explicit description of the needed information:</b>	Organizational chart for the technical support group.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.2.1-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the direct supervisor of the Repository Manager.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify any position qualification standards that may apply. A review of the Privacy Act requirements is also required to support the level of documentation of personnel qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3-2
<b>Section Number and Title:</b>	7.3.3 PERSONNEL QUALIFICATION REQUIREMENTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.3.3-1
<b>Explicit description of the needed information:</b>	Identify the minimum education and experience requirements for the various management positions at the repository.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.1-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Repository Manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.2-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Operations Manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.3-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Radiation Protection Manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.4-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Performance Manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.5-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Compliance Manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.6-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Maintenance manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.3.3.7-1
<b>Section Number and Title:</b>	7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the name of the Repository Services Manager and summarize his qualifications.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

## **MGDS License Application Annotated Outline**

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### **Section 7.4 Procedure Development**

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- 7.4.2-1            Verify/Identify the surface facility operating procedures for each building.
- 7.4.2.1-1        Provide a matrix between normal operating procedures and each surface facility.
- 7.4.2.2-1        Provide a matrix between the emergency procedures and each surface facility.
- 7.4.2.3-1        Provide a matrix between the startup procedures and each surface facility.
- 7.4.2.4-1        Provide a matrix between the performance confirmation procedures and each surface facility.
- 7.4.2.5-1        Provide a matrix between the retrieval and alternate storage procedures and each surface facility.

**7.4 PROCEDURE DEVELOPMENT**

**7.4.0 Introduction**

**7.4.1 Program For Development Of GROA Operations Procedures**

**7.4.1.1 Program Introduction**

**7.4.1.2 Guidelines for Procedure Preparation**

**7.4.1.3 Procedure Review, Validation/Verification and Approval**

**7.4.1.4 Procedure Amendment Process**

**7.4.2 GROA Surface Facilities Operations Procedures**

Table 7.4.2-1 is an illustration of the GROA surface facilities matrixed to the system procedures.

[INN 7.4.2-1: More complete information will be available as follows:

- ACD - A better understanding of the actual facilities and their related systems should allow an enhancement of Table 7.4.2.1-1 upon completion of the ACD.
- Preliminary Design - Clear understanding of the systems, subsystems, and major components should allow the development of outline operating sequences and control criteria.
- Final Design - Detailed procedures are developed only after completion of final design.]

**7.4.2.1 Normal Operating Procedures**

Table 7.4.2.1-1 is an illustration of the GROA surface facilities matrixed to the systems that will require normal operating procedures.

[INN 7.4.2.1-1: to be provided by Surface Design departments]

**7.4.2.2 Emergency Procedures**

Table 7.4.2.2-1 is an illustration of the GROA surface facilities matrixed to the systems that will require emergency procedures.

[INN 7.4.2.2-1: to be provided by Surface Design departments]

**7.4.2.3 Startup Procedures**

Table 7.4.2.3-1 is an illustration of the GROA surface facilities matrixed to the systems that will require startup procedures.

[INN 7.4.2.3-1: to be provided by Surface Design departments]

**7.4.2.4 Performance Confirmation Procedures**

Table 7.4.2.4-1 is an illustration of the GROA surface facilities matrixed to the systems that will require performance confirmation procedures.

[INN 7.4.2.4-1: to be provided by Surface Design departments]

**7.4.2.5 Retrieval and Alternate Storage Procedures**

Table 7.4.2.5-1 is an illustration of the GROA surface facilities matrixed to the systems that will require normal operating procedures.

[INN 7.4.2.5-1: to be provided by Surface Design departments]

**7.4.3 GROA Shaft and Ramps Facilities Operations Procedures**

**7.4.3.1 Normal Operating Procedures**

**7.4.3.2 Emergency Procedures**

**7.4.3.3 Startup Procedures**

**7.4.3.4 Performance Confirmation Procedures**

**7.4.3.5 Retrieval and Alternate Storage Procedures**

**7.4.4 GROA SubSurface Facilities Operations Procedures**

**7.4.4.1 Normal Operating Procedures**

**7.4.4.2 Emergency Procedures**

**7.4.4.3 Startup Procedures**

**7.4.4.4 Performance Confirmation Procedures**

**7.4.4.5 Retrieval and Alternate Storage Procedures**

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**REFERENCES**

Table 7.4.2-1 GROA Surface Facilities Systems Operations Procedures [INN 7.4.2-1]

SURFACE FACILITIES	Waste Handling Building	Cask Maintenance Building	Lag Storage Building	Decon. Facility	Ancillary support Facilities	Waste Treatment
PROCEDURES/Table No.						
NORMAL OPERATING/ 7.4.2.1-1	X	X	X	X	X	X
EMERGENCY/ 7.4.2.2-1	X	X	X	X	X	X
STARTUP/ 7.4.2.3-1	X	X	X	X	X	X
PERFORMANCE CONFIRMATION/ 7.4.2.4-1	X	X	X	X	X	X
RETRIEVAL/ 7.4.2.5-1	X	X	X	X	X	X

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Table 7.4.2.1-1 GROA Surface Facilities Operating Procedures [INN 7.4.2.1-1]

<b>SURFACE FACILITIES</b>	<b>Waste Handling Building</b>	<b>Cask Maintenance Building</b>	<b>Lag Storage Building</b>	<b>Decon. Facility</b>	<b>Ancillary support Facilities</b>	<b>Waste Treatment</b>
<b>SYSTEMS/Operating</b>						
Container Handling and Loading	X	X	X	X		
Cutting and Welding	X	X				
Cleaning and Decon.		X		X		
Process Liquid Piping						X
Containment Boundary						
HVAC	X	X	X	X		X
Shielding						
Safety and Environmental Monitoring and Alarms	X	X	X	X	X	X
Fire Suppression	X	X	X	X	X	X
Controls and Instrumentation	X	X	X	X	X	X
Fire Barriers						
Electrical Systems	X	X	X	X	X	X
Cooling	X		X		X	
Water Supply		X		X	X	
Compressed Air	X	X	X	X	X	X
Material Handling	X					X
Mixing and Pumping						X
Packaging or Containerizing						X
Storage		X	X			X
Emergency Egress						
Security and Safeguards	X		X		X	
Transportation					X	
Waste Transfer	X	X	X	X	X	X
Inert Gas						

Table 7.4.2.2-1 GROA Surface Facilities Emergency Procedures [INN 7.4.2.2-1]

SURFACE FACILITIES	Waste Handling Building	Cask Maintenance Building	Lag Storage Building	Decon. Facility	Ancillary support Facilities	Waste Treatment
SYSTEMS/Emergency						
Container Handling and Loading	X	X	X	X		
Cutting and Welding						
Cleaning and Decon.						
Process Liquid Piping						X
Containment Boundary						
HVAC	X	X	X	X		X
Shielding						
Safety and Environmental Monitoring and Alarms	X	X	X	X	X	X
Fire Suppression	X	X	X	X	X	X
Controls and Instrumentation	X	X	X	X	X	X
Fire Barriers	X	X	X	X	X	X
Electrical Systems	X	X	X	X	X	X
Cooling	X		X		X	
Water Supply		X		X	X	
Compressed Air	X	X	X	X	X	X
Material Handling	X					X
Mixing and Pumping						
Packaging or Containerizing						
Storage		X	X			X
Emergency Egress	X	X	X	X	X	X
Security and Safeguards	X		X		X	
Transportation					X	
Waste Transfer	X	X	X	X	X	X
Inert Gas						

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Table 7.4.2.3-1 GROA Surface Facilities Startup Procedures [INN 7.4.2.3-1]

<b>SURFACE FACILITIES</b>	<b>Waste Handling Building</b>	<b>Cask Maintenance Building</b>	<b>Lag Storage Building</b>	<b>Decon. Facility</b>	<b>Ancillary support Facilities</b>	<b>Waste Treatment</b>
<b>SYSTEMS/Startup</b>						
Container Handling and Loading	X	X	X	X		
Cutting and Welding	X	X				
Cleaning and Decon.		X		X		
Process Liquid Piping						X
Containment Boundary						
HVAC	X	X	X	X		X
Shielding						
Safety and Environmental Monitoring and Alarms	X	X	X	X	X	X
Fire Suppression						
Controls and Instrumentation	X	X	X	X	X	X
Fire Barriers						
Electrical Systems	X	X	X	X	X	X
Cooling	X		X		X	
Water Supply		X		X	X	
Compressed Air	X	X	X	X	X	X
Material Handling	X					X
Mixing and Pumping						X
Packaging or Containerizing						X
Storage		X	X			X
Emergency Egress						
Security and Safeguards	X		X		X	
Transportation					X	
Waste Transfer	X	X	X	X	X	X
Inert Gas						

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Table 7.4.2.4-1 GROA Surface Facilities Performance Confirmation [INN 7.4.2.4-1]

<b>SURFACE FACILITIES</b>	<b>Waste Handling Building</b>	<b>Cask Maintenance Building</b>	<b>Lag Storage Building</b>	<b>Decon. Facility</b>	<b>Ancillary support Facilities</b>	<b>Waste Treatment</b>
<b>SYSTEMS/Confirmation</b>						
Container Handling and Loading	X	X	X	X		
Cutting and Welding	X	X				
Cleaning and Decon.		X		X		
Process Liquid Piping						X
Containment Boundary	X	X	X	X		
HVAC	X	X	X	X		X
Shielding	X	X	X	X		X
Safety and Environmental Monitoring and Alarms	X	X	X	X	X	X
Fire Suppression	X	X	X	X	X	X
Controls and Instrumentation	X	X	X	X	X	X
Fire Barriers						
Electrical Systems	X	X	X	X	X	X
Cooling	X		X		X	
Water Supply		X		X	X	
Compressed Air	X	X	X	X	X	X
Material Handling	X					X
Mixing and Pumping						X
Packaging or Containerizing						X
Storage		X	X			X
Emergency Egress						
Security and Safeguards	X		X		X	
Transportation					X	
Waste Transfer	X	X	X	X	X	X
Inert Gas						

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Table 7.4.2.5-1 GROA Surface Facilities Retrieval Procedures [INN 7.4.2.5-1]

SURFACE FACILITIES	Waste Handling Building	Cask Maintenance Building	Lag Storage Building	Decon. Facility	Ancillary support Facilities	Waste Treatment
SYSTEMS/Retrieval						
Container Handling and Loading	X	X	X	X		
Cutting and Welding	X	X				
Cleaning and Decon.		X		X		
Process Liquid Piping						X
Containment Boundary						
HVAC						
Shielding						
Safety and Environmental Monitoring and Alarms	X	X	X	X	X	X
Fire Suppression						
Controls and Instrumentation	X	X	X	X	X	X
Fire Barriers						
Electrical Systems	X	X	X	X	X	X
Cooling	X		X		X	
Water Supply		X		X	X	
Compressed Air	X	X	X	X	X	X
Material Handling	X					X
Mixing and Pumping						
Packaging or Containerizing						
Storage		X	X	X		
Emergency Egress						
Security and Safeguards	X		X		X	
Transportation					X	
Waste Transfer						
Inert Gas						

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.4.2-1
<b>Section Number and Title:</b>	7.4 PROCEDURE DEVELOPMENT
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.4.2-1
<b>Explicit description of the needed information:</b>	Verify/Identify the surface facility operating procedures for each building.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.4.2.1-1
<b>Section Number and Title:</b>	7.4 PROCEDURE DEVELOPMENT
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.4.2.1-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the relationship between the normal operating procedures and each surface facility.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.4.2.2-1
<b>Section Number and Title:</b>	7.4 PROCEDURE DEVELOPMENT
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.4.2.2-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the relationship between the emergency procedures and each surface facility.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.4.2.3-1
<b>Section Number and Title:</b>	7.4 PROCEDURE DEVELOPMENT
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.4.2.3-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the relationship between the startup procedures and each surface facility.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.4.2.4-1
<b>Section Number and Title:</b>	7.4 PROCEDURE DEVELOPMENT
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.4.2.4-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the relationship between the performance confirmation procedures and each surface facility.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.4.2.5-1
<b>Section Number and Title:</b>	7.4 PROCEDURE DEVELOPMENT
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.4.2.5-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the relationship between the retrieval and alternate storage procedures and each surface facility.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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## **MGDS License Application Annotated Outline**

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### **Section 7.5 Records and Reports**

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- 7.5.1-1 Identify project managers responsible for records submittal to the Records Management System.
- 7.5.1-2 Identify records storage and protection requirements document hierarchy.
- 7.5.1.1-1 Identify whether the master file system will be a part of the Licensing Support System or vice versa.
- 7.5.1.2-1 Identify sources of guidance relative to protection and security of records.
- 7.5.1.2-2 Identify records protection requirements against natural and man-made phenomena.
- 7.5.1.2-3 Identify personnel access restrictions.
- 7.5.2.3-1 Identify specific information for radioactive waste test records to be maintained.
- 7.5.2.4-1 Identify the information needed in inspection records, using guidance in the QARD and any other sources available.
- 7.5.2.5-1 Identify waste acceptance records in addition to 10 CFR 961, based upon the waste source and form, to be maintained for permanent storage.
- 7.5.2.6-1 Identify locations for permanent records storage based upon likelihood of human intruders to consult land records systems.
- 7.5.2.7-1 Identify types of performance confirmation records to be maintained.
- 7.5.3-1 Identify all types of records and retention requirements that must be retained by DOE for the repository.

## **7.5 RECORDS AND REPORTS**

This section identifies and describes the program and procedures for GROA recordkeeping activities, and outlines the reporting requirements for the facility. The records management system [satisfies] the requirements of 10 CFR 60 Subpart D and 10 CFR 50 Appendix B and [follows] the guidance presented in NRC Regulatory Guide 10.1.

### **7.5.1 Records Management System**

The GROA records [are maintained and controlled] in a systematic manner to adequately document repository operations. The Repository Manager [has] ultimate responsibility for the proper management of GROA records. Various managers [are] responsible to the Repository Manager for assuring records within their purview are properly managed [Identify these managers. INN 7.5.1-1].

The Records Management System operation [follows] an NRC-approved QA program. Requirements flowdown [is] through the Quality Assurance Requirements Document, to Quality Administrative Procedures, and to Implementing Line Procedures [Identify document hierarchy for these requirements.][INN 7.5.1-2]. Quality assured records and non-quality assured records may be stored within the Records Management System.

The records management procedures [specify] records package formats; roles and responsibilities of project management, records package originators and authenticators, and records management system personnel; identification scheme; storage methods, conditions, and appropriate preservation forms; and access to records.

#### **7.5.1.1 Master File System**

Records packages [receive] unique identifiers upon submittal to the Records Management System. GROA records [are] organized into a record hierarchy and filed with cross references to subjects and key words to facilitate retrieval at future times during GROA operations. Ultimately, this file system [enables] the appropriate GROA records to be consolidated for long-term retention in a form useable to future generations after permanent closure of the repository. [Identify whether this master file system will be a part of the Licensing Support System or vice versa. INN 7.5.1.1-1]

#### **7.5.1.2 Records Protection and Security**

During the life of the GROA, records important to the construction and operation of the facility, as well as those that pertain to the handling and disposition of radioactive waste, [are stored and protected] in accordance with the guidance provided in [INN 7.5.1.2-1]. Security and protection of the records [are] provided to ensure their availability and completeness at the time of permanent closure so that they may be retained, for the long-term, in a form useable to future generations.

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The Records Management System [safeguards] records from tampering and loss. Records [are stored] at the Records Processing Center to ensure that records are safeguarded against conditions that may deteriorate the quality of the records packages (i.e., contact with fire and excessive heat, water, excess humidity, light, etc. [INN 7.5.1.2-2]). During GROA construction and operation periods, on-site storage and off-site preservation storage [are provided].

Direct access to the submitted physical records packages and electronic databases [is limited] to Records Management System personnel and other authorized project personnel [INN 7.5.1.2-3]. Records retrieval [is] available to other project personnel as needed under supervision of the Records Management System organization.

## **7.5.2 Records Requirements**

Records of licensed activities at the GROA [are maintained] as appropriate. Records requirements for acceptable record forms and conditions [include] originals, reproduced hard copies, microform (film or fiche), and electronic file form. Reproduced and microform copies [are authenticated] under the NRC-approved, NQA-1-based QA records management system. Microfilm [is] the current form for final Records Processing Center records storage. All record types must be retrievable and legible or capable of producing legible, accurate, and complete records. Records such as letters, drawings, and specifications must bear stamps, initials, and signatures, as appropriate.

Generally, QA records [include] operating logs; results of reviews, inspections, tests, audits, monitoring of work performance, and materials analyses; qualifications of personnel, procedures, and equipment; and inspection and test records.

In addition to the listed QA records, the following subsections discuss specific records to be maintained by the Records Management System organization. The records listed are required by 10 CFR 60 and 10 CFR 50, Appendix B.

### **7.5.2.1 Construction Records**

Records that pertain to construction of the safety related structures, systems, and components of the GROA, including as-built documentation, [are retained] for the life of the repository so that these records may be used by future generations. The construction records [include] the following documentation:

- a. Surveys of the underground facility excavations, shafts, and boreholes referenced to readily identifiable surface features or monuments;
- b. A description of the materials encountered during construction and excavation;
- c. Geologic maps and geologic cross sections;

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- d. Location and amount of seepage;
- e. Details of equipment, methods, progress, and sequence of work;
- f. Construction problems encountered and solutions applied;
- g. Anomalous conditions encountered;
- h. Instrument locations, readings, and analysis;
- i. Location and description of structural support systems;
- j. Details, methods of emplacement, and location of seals used.

#### **7.5.2.2 Site Deficiency Records**

Reports of deficiencies made by DOE to the NRC, as required by 10 CFR 60.73, [are maintained]. These reports [address] deficiencies in the characteristics of the site or design and construction of the GROA. If uncorrected, these deficiencies could be a substantial safety hazard, represent a significant deviation from the design criteria and design bases stated in this license application, or represent a deviation from the conditions stated in the terms of construction authorization or the license, including the license specifications. As a minimum, the records [contain] the complete report required under 10 CFR 60.73, subsequent corrections for the deficiencies, and any additional data that may be obtained during the performance confirmation period.

#### **7.5.2.3 Records of Tests Conducted Using Radioactive Waste**

Records of any tests conducted with radioactive waste during construction or waste emplacement [are maintained] for the life of the GROA. Records must contain, at a minimum, the names of investigators and test coordinators, test dates, observations, results, acceptability of test results, and actions taken. [INN 7.5.2.3-1]

#### **7.5.2.4 Inspection Records**

Safety-related inspections, such as equipment in-service inspections, cleanliness inspections, and procedure compliance inspections, will be documented in such a manner as to allow identification of the individual(s) performing the inspection, when the inspection was performed, the type and purpose of the inspection, results of the inspection, acceptability of results, and actions taken. [INN 7.5.2.4-1]

#### **7.5.2.5 Radioactive Waste Receipt, Handling, Storage and Disposition Records**

Records of radioactive waste receipt, handling, storage, and disposition, including final emplacement, [are maintained] in sufficient detail to provide a complete history of the

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movement of waste from the shipper through all phases of storage and disposal. These records [are maintained] for the life of the GROA so that they may be used by future generations. Waste acceptance records generated per 10 CFR 961 and [other regulations depending on the waste source and form][INN 7.5.2.5-1] [are maintained] on every movement between facilities, on-site at facilities [if material balance documentation is produced], and to the subsurface for disposal.

#### **7.5.2.6 Permanent Closure Records**

Records related to permanent closure include all records retained for the life of the GROA, records describing the permanent markers and their locations, and details of sealing methods used for permanent closure. These records [are] consolidated, duplicated, distributed to various locations [INN 7.5.2.6-1]likely to be consulted by future generations, and retained in accordance with state-of-the-art methods at the time application is made for an amendment to the license allowing permanent closure of the repository.

#### **7.5.2.7 Performance Confirmation Records**

Performance confirmation records obtained during construction, operation, and pre-closure periods [are maintained] for the life of the GROA for use by future generations. [Identify types of performance confirmation records.] [INN 7.5.2.7-1]

#### **7.5.3 Other Records**

[A tabulation of other records to be retained during GROA operations, including retention requirements, is presented in Table 7.5.3-1. This table also presents a summary of the records described in the preceding sections.] [INN 7.5.3-1]

**REFERENCES**

10 CFR 50, Domestic Licensing of Production and Utilization Facilities

10 CFR 60, Disposal of High-Level Radioactive Wastes in Geologic Repositories

10 CFR 961, General Guidelines for the Recommendation of Sites for Nuclear Waste  
Repositories

NRC Regulatory Guide 10.1

DOE/RW-0333P, Quality Assurance Requirements and Description (QARD)

Table 7.5.3-1 Record and Retention Requirements [INN 7-5.3-1]

RECORD TYPE	NONPERMANENT RETENTION	LIFETIME RETENTION	PERMANENT CLOSURE RETENTION
Deficiency Report		X	X
Inspection	X		
Tests with radioactive wastes during construction and emplacement		X	X
Location of GROA		X	X
The nature and hazard of the waste [Receipt, handling, disposition]		X	X
Site data prior to and from SCPB experiments and <i>in situ</i> tests		X	X
Construction records		X	X
Performance confirmation		X	X
Permanent closure (backfill, seals, etc.)		X	X
other records [INN 7.5.3-1]			

Based on content and format of NRC Regulatory Guide 10.1, Appendix A and the QARD

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.1-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify project managers responsible for records submittal to the Records Management System.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	Yes

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.1-2
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify records storage and protection requirements document hierarchy.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	Yes

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.1.1-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify whether the master file system will be part of the Licensing Support System or vice versa.
<b>Information will be used to support:</b>	Development of Section 7.5.1.1 Master File System
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	TBD
<b>Does the supporting data need to be QA?</b>	No

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.1.2-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify sources of guidance relative to protection and security of records.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.1.2-2
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify records protection requirements against natural and man-made phenomena.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.1.2-3
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify personnel access restrictions.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	Yes

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.2.3-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify specific information for radioactive waste test records to be maintained. The QARD should be reviewed for minimum information to be contained in a record.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	The QARD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	Yes

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.2.4-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the information needed in inspection records, using guidance in the QARD and any other sources available.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	The QARD
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.2.5-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify waste acceptance records in addition to 10 CFR 961, based upon the waste source and form, to be maintained for permanent storage.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	Yes

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.2.6-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify locations for permanent records storage based upon likelihood of human intruders to consult land records systems.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.2.7-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify types of performance confirmation records to be maintained.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.5.3-1
<b>Section Number and Title:</b>	7.5 RECORDS AND REPORTS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665/Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.5.3-1
<b>Explicit description of the needed information:</b>	Identify all types of records and retention requirements that must be retained for the repository by DOE.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

## **MGDS License Application Annotated Outline**

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### **Section 7.6 Training Programs**

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**LIST OF INFORMATION NEEDS**

- 7.6-1 A Training and Qualification Program must be developed for the GROA personnel.
- 7.6-2 Identify all regulations and accreditation standards pertinent to a training program at the GROA.
- 7.6-3 Identify the management position within the technical support organization that is responsible for training.
- 7.6-4 Identify all specific training to be completed by key repository personnel prior to receipt of the first high level waste for emplacement.
- 7.6.2-1 Identify GROA positions and job descriptions requiring requalification training and the required frequencies.
- 7.6.4-1 Employee records in training and qualification.

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## **7.6 TRAINING PROGRAMS**

The principal objective of the GROA Training and Qualification Program [INN 7.6-1] is to ensure job proficiency of all repository personnel involved in work that is important to safety and waste isolation. [The program will be designed to accommodate future growth and comply with applicable regulations and accreditation standards [INN 7.6-2].]

Employee qualification will be established by successfully completing prescribed training, demonstrating the ability to correctly perform tasks, and maintaining current professional certification or licenses where required by specific job description.

The [INN 7.6-3] will have overall responsibility for the administration of the Training and Qualification Program. The Repository Manager will be responsible for the quality of work performed by individuals at the GROA. The Support Services Manager will be assigned responsibility for ensuring the timely and effective development of GROA personnel.

Training will be designed, developed, and implemented using a systematic approach. Employees will be provided with training to supplement any formal education already required to establish the required knowledge foundation. On-the-job training is used to develop work performance skills. Continuing training will be provided, as required, to provide further employee development. The program will be designed to prepare initial and replacement GROA personnel for safe, reliable, and efficient operation of the repository.

Appropriate training for personnel will be provided for personnel from all backgrounds. The level at which an employee initially enters the Training and Qualification Program will be determined by an evaluation of past experience, and demonstration of ability by examination, where appropriate. [Specific training that will be required for key repository positions prior to commencement of waste emplacement operations is shown in Table 7.6-1 [INN 7.6-4].]

### **7.6.1 Program Approach**

GROA personnel will be trained and qualified through participation in prescribed parts of the Training and Qualification Program that is comprised of General Employee Training (GET), technical training, and employee development and management training.

#### **7.6.1.1 General Employee Training**

GET encompasses the general administrative, safety, emergency, and administrative procedures established by repository management and applicable regulations. A general description of GROA systems and equipment is provided. All persons under the supervision of repository management must participate in GET; however, certain repository support personnel, depending on their normal work assignment, may not participate in all topics. Certain portions of GET may be included in an employee orientation program. Temporary maintenance and service personnel shall receive GET to the extent necessary to ensure safe execution of their duties.

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All persons regularly employed at the GROA and under the supervision of repository management will receive training in the following areas, commensurate with their job duties:

- a. General administrative control and QA policies and procedures;
- b. GROA systems and equipment;
- c. Radiological safety, including:
  - the nature and sources of radiation,
  - methods of controlling contamination,
  - interactions of radiation with matter,
  - biological effects of radiation,
  - use of monitoring equipment,
  - use of protective clothing and equipment,
  - principles of criticality hazards control;
- d. Industrial health, safety, and first aid;
- e. Emergency plan and procedures;
- f. GROA security program and procedures;
- g. Fire protection program and procedures;
- h. Using procedures and performing independent verification;
- i. New employee orientation, including a tour of the GROA and the various work groups;
- j. Communications training.

#### **7.6.1.2 Technical Training**

Technical training will be designed to assist GROA employees in gaining an understanding of applicable fundamentals, procedures, and practices in order to perform assigned tasks in a competent manner. The development of necessary manipulative skills is included where appropriate to the job function. As a minimum, technical training will be developed to support personnel proficiency in the following areas of GROA activities:

- a. Design;
- b. Construction;
- c. Waste emplacement operations;

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- d. Instrumentation and control;
- e. Ventilation system operation and maintenance;
- f. Methods of dealing with operating malfunctions;
- g. Decontamination procedures;
- h. Emergency procedures;
- i. Underground tunneling practices and safety;
- j. Radiation protection.

### **7.6.1.3 Development and Management Training**

Specialized training will be developed for special skills or to develop the management effectiveness of repository staff, as needed. This training may be conducted using in-house resources or by hiring consultants with specific expertise, as appropriate.

### **7.6.2 Continuing and Refresher Training**

Continuing training is any training not provided as initial training and includes requalification training and other training designed to expand or improve job-related knowledge and skills. Requalification training will be specifically required for specialized operations skills necessary to ensure the safe, reliable, and efficient operation of the repository. [Table 7.6.2-1 will present a description of the skills requiring requalification training and their required frequency [INN 7.6.2-1].]

### **7.6.3 Training Program Evaluation**

Training and qualification activities will be monitored by the Technical Support organization. The QA organization will audit the repository Training and Qualification Program to ensure compliance with stated objectives and requirements. Trainees will be solicited for input regarding program effectiveness through the use of surveys, questionnaires, performance appraisals, staff evaluations, etc. Classes that will be conducted frequently will be evaluated on a periodic basis to ensure the continued applicability of training material and methods to present job functions.

### **7.6.4 Training and Qualification Program Records**

Records of employee participation in the Training and Qualification Program, course outlines, and course descriptions are maintained as [INN 7.6.4-1].

**REFERENCES**

**Table 7.6-1 Initial Training Requirements for Key Repository Positions [INN 7.6-4]**

MONTHS PRIOR TO WASTE EMPLACEMENT	36	33	30	27	24	21	18	15	12	9	6	3
REPOSITORY MANAGER												
OPERATIONS MANAGER												
RADIATION PROTECTION MANAGER												
PERFORMANCE MANAGER												
COMPLIANCE MANAGER												
MAINTENANCE MANAGER												
SUPPORT SERVICES MANAGER												
fill in other generic positions...												

NOTES: Need to add a description of training type with a letter designation within each block to indicate required training and timeframe.

**Table 7.6.2-1 Positions Requiring Requalification Training [INN 7.6.2-1]**

<b>REQUALIFICATION FREQUENCY</b>	<b>EVERY QUARTER</b>	<b>SEMI-ANNUALLY</b>	<b>ANNUALLY</b>
REPOSITORY MANAGER			
OPERATIONS MANAGER			
RADIATION PROTECTION MANAGER			
PERFORMANCE MANAGER			
COMPLIANCE MANAGER			
MAINTENANCE MANAGER			
SUPPORT SERVICES MANAGER			
add other positions...			

NOTE: Need to add a description of training type with a letter designation within each block to indicate required training and frequency.

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.6-1
<b>Section Number and Title:</b>	7.6 TRAINING PROGRAMS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	A training and Qualification Program must be developed for the GROA personnel.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.6-2
<b>Section Number and Title:</b>	7.6 TRAINING PROGRAMS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify all regulations and accreditation standards pertinent to a training program at the GROA.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.6-3
<b>Section Number and Title:</b>	7.6 TRAINING PROGRAMS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify the management position within the technical support organization that is responsible for training.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.6-4
<b>Section Number and Title:</b>	7.6 TRAINING PROGRAMS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.6-1
<b>Explicit description of the needed information:</b>	Identify all specific training to be completed by key repository personnel prior to receipt of the first high-level waste for emplacement.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.6.2-1
<b>Section Number and Title:</b>	7.6 TRAINING PROGRAMS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.6.2-1
<b>Explicit description of the needed information:</b>	Identify GROA positions and job descriptions requiring requalification training and the required training frequencies.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.6.4-1
<b>Section Number and Title:</b>	7.6 TRAINING PROGRAMS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Training and Qualification Program participation records for each employee.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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Date: 03/31/95

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## **MGDS License Application Annotated Outline**

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### **Section 7.7 Schedules**

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- 7.7.1-1 Verify the rate of emplacement in the MGDS.
- 7.7.2-1 Provide the overall repository schedule.
- 7.7.3-1 Provide a schedule of waste shipments to the repository.
- 7.7.4-1 Provide a schedule of the repository design phases.
- 7.7.5-1 Provide a schedule for the construction of the repository.
- 7.7.6-1 Provide a schedule of major procurements at the repository.
- 7.7.7-1 Provide a schedule of major maintenance efforts at the repository.
- 7.7.8-1 Provide a performance evaluation and testing schedule.
- 7.7.9-1 Identify the critical paths and milestones in the schedules presented in the preceding subsections.

Date: 03/31/95

## **7.7 SCHEDULES**

### **7.7.1 Introduction and Overview of Repository Schedules**

This section covers activities and repository operations following the submission of the license application to NRC in late FY 2001. Schedules of waste delivery, design, construction, operations, maintenance and performance assessment/testing are provided. The general program schedules are covered in Section 1.3 of this License Application.

Important repository related milestones preceding the license application include:

- (a) Completion of the site characterization effort, including construction of the Exploratory Studies Facility [7.8 kilometer] tunnel loop.
- (b) Site suitability determination in late FY 1998.
- (c) Completion of the preliminary repository design in late FY 1999.
- (d) Fabrication and testing of Waste Package Prototype in early FY 2000.
- (e) Submission of the MGDS FEIS in late FY 2000.
- (f) Submission of the Record of Decision (ROD) and Site Recommendation Report (SRR) to the NRC in late FY 2001.

It is expected that the NRC will issue the construction authorization in late FY 2004. After sufficient surface and subsurface construction have been completed to support the start of repository operations the Updated License Application will be submitted, in late FY 2008. The NRC issuance of the license to receive and possess waste is expected in late FY 2010. At that point DOE may start accepting waste and begin repository waste emplacement operations. It is planned to complete the emplacement of waste in FY 2033 in accordance with Table 7.7.1-1 [INN 7.7.1-1]. The repository will operate in a caretaker mode beginning in FY 2010 for a period of \_\_\_\_\_ years. Subsequently decommissioning and closure operations will be initiated.

### **7.7.2 Repository Overall Schedule**

Figure 7.7.2-1 shows repository activity schedule to completion of construction in late FY 2010.

### **7.7.3 Waste Delivery Schedule**

Table 7.7.3-1 shows the schedule of waste shipments to the repository based on the requirement of Table 7.7.1-1.

### **7.7.4 Design Schedule**

Figure 7.7.4-1 shows the schedule of the repository design phases.

**7.7.5 Construction Schedule**

[INN 7.7.5-1 Figure 7.7.5-1 shows the repository construction schedule].

**7.7.6 Procurement Schedule**

[INN 7.7.6-1 Figure 7.7.6-1 shows the procurement schedule for the repository].

**7.7.7 Maintenance Schedule**

[INN 7.7.7-1 Figure 7.7.7-1 shows a schedule of the major maintenance efforts at the repository].

**7.7.8 Performance Evaluation and Testing Schedule**

[INN 7.7.8-1 Figure 7.7.8-1 shows the performance evaluation and testing schedule].

**7.7.9 Critical Paths and Milestones**

[INN 7.7.9-1 Figure 7.7.9-1 identifies the critical paths and milestones in the schedules presented in the preceding subsections].

**REFERENCES**

Table 7.7.1-1 Waste Package Emplacement Scenario [INN 7.7.1-1]

WP Content	MPC					Uncanistered Fuel Assemblies		HLW Canister	Total Waste Packages per Year
	B-LG	P-LG	B-SM	P-SM	B-IN-P	B-LWT	P-LWT	HLW	
Max Waste Form Units per WP	1	1	1	1	1	40	21	4	
Year	Number of Waste Packages								
2010	23	12	11	5	0	0	1	0	52
2011	21	20	43	26	2	0	5	0	117
2012	28	61	80	22	1	0	12	0	204
2013	62	116	88	31	2	0	10	0	309
2014	115	163	99	34	4	0	14	0	429
2015	85	180	112	45	3	0	10	198	633
2016	100	190	77	36	3	0	13	202	621
2017	119	180	88	34	2	1	10	200	634
2018	100	211	59	28	4	0	8	200	610
2019	99	196	45	38	1	0	10	198	587
2020	100	204	53	48	2	0	5	202	614
2021	88	209	67	26	2	0	7	198	597
2022	106	199	48	39	2	0	8	202	604
2023	113	191	64	34	3	0	6	200	611
2024	107	217	52	17	2	0	5	198	598
2025	106	203	56	38	1	0	10	200	614
2026	117	203	48	27	8	0	4	200	607
2027	101	214	50	37	0	0	7	200	609
2028	111	204	51	32	0	0	9	200	607
2029	95	212	88	30	0	0	4	202	631
2030	105	211	49	42	0	0	6	92	505
2031	149	186	38	36	0	0	4	91	504
2032	90	189	93	41	0	0	15	73	501
2033	69	131	52	13	0	0	4	0	269
<b>Total WPs</b>	<b>2209</b>	<b>4102</b>	<b>1511</b>	<b>759</b>	<b>42</b>	<b>1</b>	<b>187</b>	<b>3256</b>	<b>12067</b>

NOTE: Base Case Waste Stream, No MRS, 2010 MGDS, OFF with Deferred Dry Storage, Derated Canisters, 4 Truck Sites

**Table 7.7.1-1 Waste Package Emplacement Scenario [INN 7.7.1-1] (continued)**

**Legend:**

**B-LG - Waste Package that holds a Large BWR MPC containing a maximum of 40 assemblies**

**P-LG - Waste Package that holds a Large PWR MPC containing a maximum of 21 assemblies**

**B-SM - Waste Package that holds a Small BWR MPC containing a maximum of 24 assemblies**

**P-SM - Waste Package that holds a Small PWR MPC containing a maximum of 12 assemblies**

**B-IN-P - Waste Package that holds a Small PWR MPC containing a maximum of 12 Big Rock Point assemblies**

**B-LWT - UCF Waste Package that holds a maximum of 40 BWR assemblies**

**P-LWT - UCF Waste Package that holds a maximum of 21 PWR assemblies**

**HLW - Waste Package that holds a maximum of 4 Defense or Commercial HLW canisters**

Table 7.7.3-1 Transportation Cask Arrival Scenario [INN 7.7.3-1]

Cask Contents	MPC					Uncanistered Fuel Assemblies		HLW Canister	Total Casks per Year
	B-LG	P-LG	B-SM	P-SM	B-IN-P	B-LWT	P-LWT	HLW	
Years	Number of Transportation Casks								
2010	23	12	11	5	0	1	9	0	61
2011	21	20	43	26	2	0	25	0	137
2012	28	61	80	22	1	1	64	0	257
2013	62	116	88	31	2	0	52	0	351
2014	115	163	99	34	4	0	72	0	487
2015	85	180	112	45	3	1	54	159	639
2016	100	190	77	36	3	0	69	161	636
2017	119	180	88	34	2	0	54	160	637
2018	100	211	59	28	4	0	43	160	605
2019	99	196	45	38	1	0	48	159	586
2020	100	204	53	48	2	0	30	161	598
2021	88	209	67	26	2	0	33	159	584
2022	106	199	48	39	2	0	44	161	599
2023	113	191	64	34	3	0	33	160	598
2024	107	217	52	17	2	0	26	159	580
2025	106	203	56	38	1	0	57	160	621
2026	117	203	48	27	8	0	29	160	592
2027	101	214	50	37	0	0	36	160	598
2028	111	204	51	32	0	0	61	160	619
2029	95	212	88	30	0	0	32	161	618
2030	105	211	49	42	0	0	34	74	515
2031	149	186	38	36	0	0	27	73	509
2032	90	189	93	41	0	0	90	60	563
2033	69	131	52	13	0	0	16	0	281
<b>Total Casks</b>	<b>2209</b>	<b>4102</b>	<b>1511</b>	<b>759</b>	<b>42</b>	<b>3</b>	<b>1038</b>	<b>2607</b>	<b>12271</b>

NOTE: Base Case Waste Stream, No MRS, 2010 MGDS, OFF with Deferred Dry Storage, Derated Canisters, 4 Truck Sites

Date: 03/31/95

**Table 7.7.3-1 Transportation Cask Arrival Scenario [INN 7.7.3-1] (continued)**

**Legend:**

**B-LG - Transportation Cask that holds a Large BWR MPC containing a maximum of 40 assemblies**

**P-LG - Transportation Cask that holds a Large BWR MPC containing a maximum of 40 assemblies**

**B-SM - Transportation Cask that holds a Large BWR MPC containing a maximum of 40 assemblies**

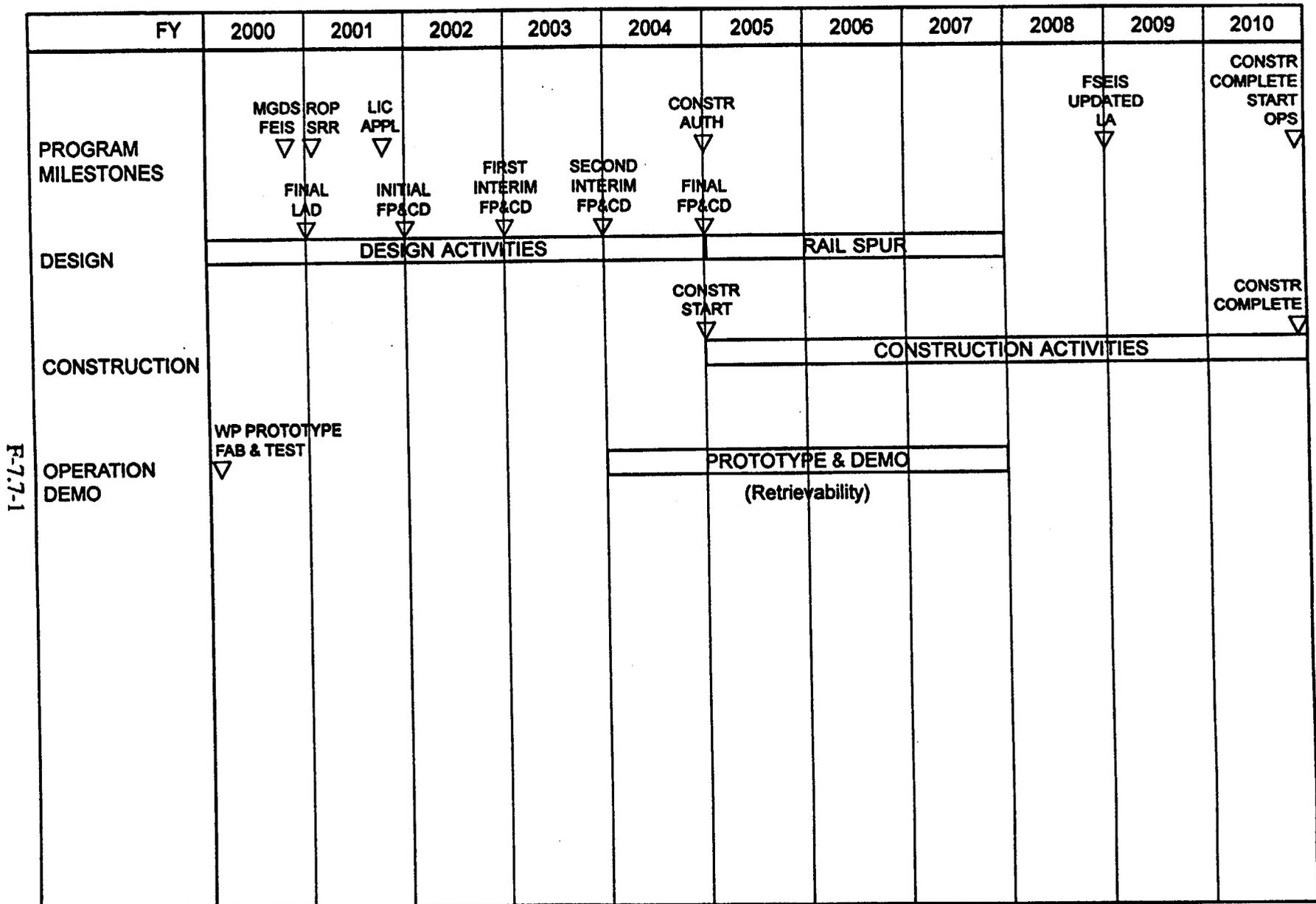
**P-SM - Transportation Cask that holds a Small PWR MPC containing a maximum of 12 assemblies**

**B-IN-P - Transportation Cask that holds a Small PWR MPC containing a maximum of 12 Big Rock Point assemblies**

**B-LWT - Transportation Cask that holds a Small PWR MPC containing a maximum of 12 Big Rock Point assemblies**

**P-LWT - GA-4 Transportation Cask that holds a maximum of 4 PWR assemblies**

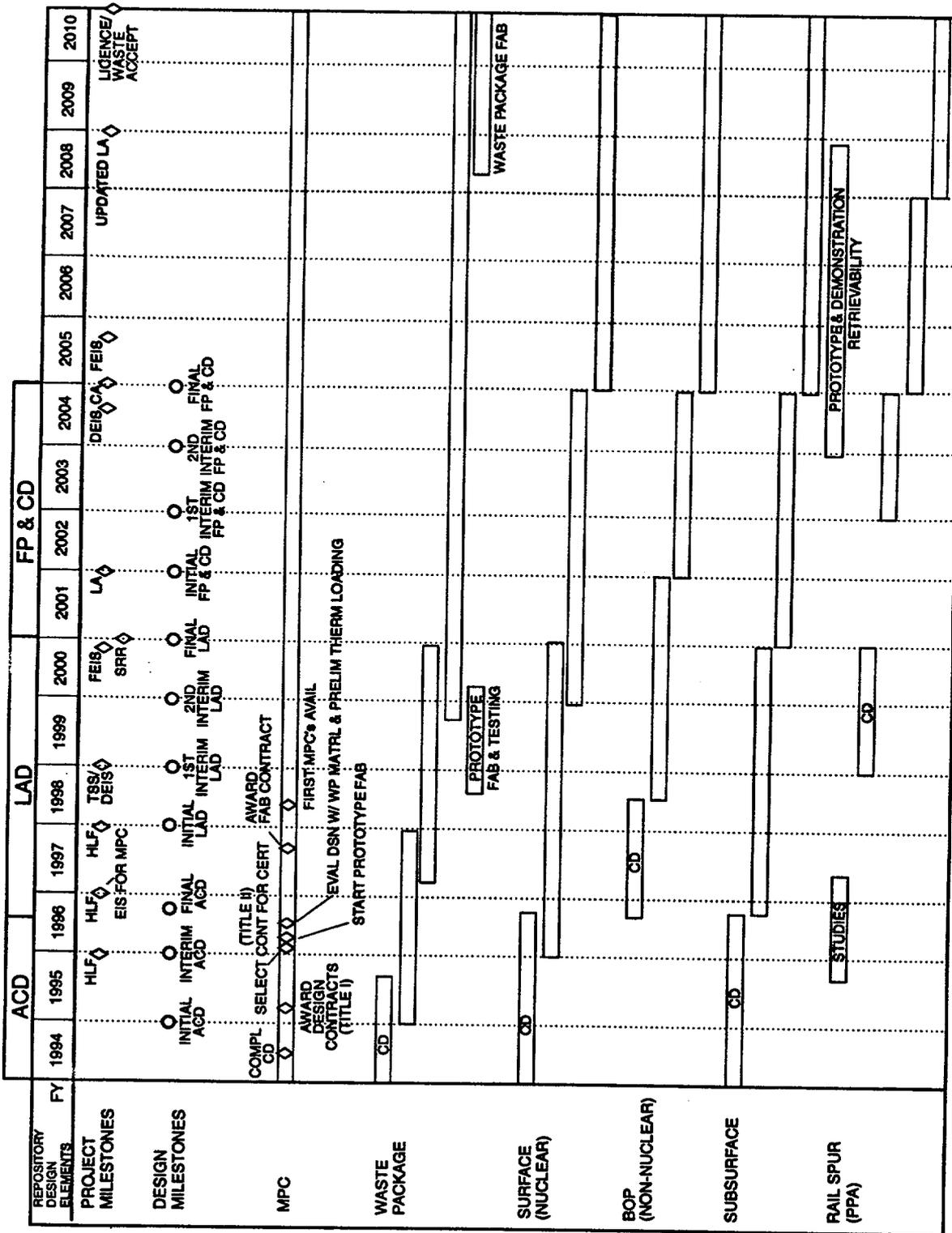
**HLW - Transportation Cask that holds a maximum of 5 Defense or Commercial HLW canisters**



F-7.7-1

Figure 7.7.2-1 Overall Project Schedule [INN 7.7.2-1]

# DESIGN PHASES



DSGNPHAS.141/1-19-95

Figure 7.7.4-1 Repository Design Schedule [INN 7.7.4-1]

**FIGURE CAPTIONS**

Figure 7.7.5-1. Construction Schedule [INN 7.7.5-1]

Figure 7.7.6-1. Procurement Schedule [INN 7.7.6.-1]

Figure 7.7.7-1 Maintenance Schedule [INN 7.7.7-1]

Figure 7.7.8-1 Performance Evaluation and Testing Schedule [INN 7.7.8-1]

Figure 7.7.9-1 Critical Path and Milestone Schedule [INN 7.7.9-1]

**Date: 03/31/95**

**MGDS LA Annotated Outline Form A: Information Need**

<b>Information Need Number:</b>	INN 7.7.1-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.7.1-1
<b>Explicit description of the needed information:</b>	Verify the rate of emplacement in the MGDS.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.2-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.2-1
<b>Explicit description of the needed information:</b>	Provide the overall repository schedule
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.3-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.7.3-1
<b>Explicit description of the needed information:</b>	Provide a schedule of waste shipments to the repository.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

Date: 03/31/95

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.4-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.4-1
<b>Explicit description of the needed information:</b>	Provide a schedule of repository design phases.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.5-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.5-1
<b>Explicit description of the needed information:</b>	Provide a schedule for the construction of the repository
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.6-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.6-1
<b>Explicit description of the needed information:</b>	Provide a schedule of major procurements at the repository.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.7-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.7-1
<b>Explicit description of the needed information:</b>	Provide a schedule of major maintenance efforts at the repository.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.8-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.8
<b>Explicit description of the needed information:</b>	Provide a performance evaluation and testing schedule.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.7.9-1
<b>Section Number and Title:</b>	7.7 SCHEDULES
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.7.9
<b>Explicit description of the needed information:</b>	Identify the critical paths and milestones in the schedules presented in the preceding subsections.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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Date: 03/31/95

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7.8.2 Shafts and Ramps Facilities Operating Control Limits .....	7.8-1
7.8.3 Subsurface Facilities Operating Control Limits .....	7.8-1
<b>REFERENCES</b> .....	7.8-3

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- 7.8.2-1 Shafts and Ramps Operating Control Limits [INN 7.8.2-1]
- 7.8.3-1 Subsurface Facilities Operating Control Limits [INN 7.8.3-1]

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**LIST OF INFORMATION NEEDS**

- 7.8.1-1 Matrix of surface facilities and systems requiring operating control limits.
- 7.8.2-1 Matrix of shafts and ramps versus systems requiring operating control limits.
- 7.8.3-1 Matrix of subsurface facilities and systems requiring operating control limits.

Date: 03/31/95

**7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS****7.8.0 Introduction****7.8.1 Surface Facilities Operating Control Limits**

Table 7.8.1-1 is an illustration of the GROA surface facilities matrixed to the systems that will require operating control limits.

[INN 7.8.1-1: More complete information will be available as follows:

- ACD - A better understanding of the actual facilities and their related systems should allow an enhancement of Table 7.8.1-1 upon completion of the ACD.
- Preliminary Design - Clear understanding of the systems, subsystems, and major components should allow the development of outline operating sequences and control limit criteria.
- Final Design - Detailed procedures with defined control limits will be developed only after completion of final design.]

**7.8.2 Shafts and Ramps Facilities Operating Control Limits**

Table 7.8.2-1 is an illustration of the GROA subsurface facilities matrixed to the systems that will require operating control limits procedures.

[INN 7.8.2-1: more complete information will be available as follows:

- ACD - A better understanding of the actual facilities and their related systems should allow an enhancement of Table 7.8.2-1 upon completion of the ACD.
- Preliminary Design - Clear understanding of the systems, subsystems, and major components should allow the development of outline operating sequences and control limit criteria.
- Final Design - Detailed procedures with defined control limits will be developed only after completion of final design.]

**7.8.3 Subsurface Facilities Operating Control Limits**

Table 7.8.3-1 is an illustration of the GROA subsurface facilities matrixed to the systems that will require operating control limits procedures.

[INN 7.8.3-1: more complete information will be available as follows:

- ACD - A better understanding of the actual facilities and their related systems should allow an enhancement of Table 7.8.3-1 upon completion of the ACD.
- Preliminary Design - Clear understanding of the systems, subsystems, and major components should allow the development of outline operating sequences and control limit criteria.
- Final Design - Detailed procedures with defined control limits will be developed only after completion of final design.]

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**REFERENCES**

Table 7.8.1-1 GROA Surface Facilities Operating Control Limits [INN 7.8.1-1]

<b>SURFACE FACILITIES</b>	<b>Waste Handling Building</b>	<b>Cask Maintenance Building</b>	<b>Lag Storage Building</b>	<b>Decon. Facility</b>	<b>Ancillary support Facilities</b>	<b>Waste Treatment</b>
<b>SYSTEMS/Operating Control Limits</b>						
<b>Container Handling and Loading</b>	X	X	X	X		
<b>Cutting and Welding</b>	X	X				
<b>Cleaning and Decon.</b>		X		X		
<b>Process Liquid Piping</b>						X
<b>Containment Boundary</b>						
<b>HVAC</b>	X	X	X	X		X
<b>Shielding</b>						
<b>Safety and Environmental Monitoring and Alarms</b>	X	X	X	X	X	X
<b>Fire Suppression</b>	X	X	X	X	X	X
<b>Controls and Instrumentation</b>	X	X	X	X	X	X
<b>Fire Barriers</b>						
<b>Electrical Systems</b>	X	X	X	X	X	X
<b>Cooling</b>	X		X		X	
<b>Water Supply</b>		X		X	X	
<b>Compressed Air</b>	X	X	X	X	X	X
<b>Material Handling</b>	X					X
<b>Mixing and Pumping</b>						X
<b>Packaging or Containerizing</b>						X
<b>Storage</b>		X	X			X
<b>Emergency Egress</b>						
<b>Security and Safeguards</b>	X		X		X	
<b>Transportation</b>					X	
<b>Waste Transfer</b>	X	X	X	X	X	X
<b>Inert Gas</b>						

**TABLE TITLES**

Table 7.8.2-1 Shafts and Ramps Operating Control Limits [INN 7.8.2-1]

Table 7.8.3-1 Subsurface Facilities Operating Control Limits [INN 7.8.3-1]

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.8.1-1
<b>Section Number and Title:</b>	7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.8.1-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the GROA surface facilities versus the systems that will require operating control limits
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.8.2-1
<b>Section Number and Title:</b>	7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.8.2-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the GROA shaft and ramp facilities versus the systems that will require operating control limits
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.8.3-1
<b>Section Number and Title:</b>	7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.8.3-1
<b>Explicit description of the needed information:</b>	Provide a matrix showing the GROA subsurface facilities versus the systems that will require operating control limits
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	
<b>Most likely source of the Information:</b>	
<b>Information Source Description:</b>	
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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### **Section 7.9 Preservation of Records**

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[INN 7.9.3-1]

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- 7.9.2-1 Identify preservation method.
- 7.9.2-2 Identify targeted preservation time period.
- 7.9.3-1 Identify specific archive and land record system locations.

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**7.9 PRESERVATION OF RECORDS**

In addition to the records management system [See Section 7.5] utilized for record storage and maintenance during the licensed lifetime of the GROA, 10 CFR 60.51(a)(2)(ii) requires that certain records be preserved permanently "to regulate or prevent activities that could impair the long-term isolation of emplaced waste within the [GROA] and to assure that relevant information will be preserved for the use of future generations."

The application for a license amendment for permanent closure of the GROA will contain a detailed permanent record system description, dependent upon regulations and preservation options available at that time. Upon NRC approval of the license amendment for permanent closure, records of the form acceptable for permanent storage will be entered into archives and land record systems, as specified in the license amendment application, of local, State, and Federal governments and in international archive systems. The selected archives and land record systems [are] those likely to be consulted by potential human intruders. Records for permanent storage and preservation [include] those that identify the location of the geologic repository operations area, including the underground facility, boreholes and shafts, the boundaries of the controlled area, and the nature and hazard of the waste.

The permanent record system presented in this section is a generalization of the eventual system to be developed, based upon current requirements for a permanent records system. At time of license amendment application submittal for permanent closure, specific information on preservation of records will be presented.

**7.9.1 Records Identified for Archival**

Records requiring permanent preservation (as identified in 10 CFR 60 and the NRC Draft Regulatory Guide D-3003 Format and Content for the License Application for the High-Level Waste Repository) [are placed] in archives and land record systems of local, State, and Federal governments, and in international archive systems for use by future generations. These records [contain], at a minimum:

- a. Location of the GROA, including the underground facility, boreholes and shafts, and boundaries of the controlled area; noted site deficiencies;
- b. The nature and hazard of the waste including waste information such as waste type and form; irradiation history, where applicable; [general isotopic information, projected for varying decay periods with associated radiation level and types];
- c. Site data obtained prior to the Site Characterization Program Baseline, YMP/CM-0011, and from Site Characterization Program Baseline experiments and in situ tests;
- d. Construction records;

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- e. Performance confirmation records;
- f. [Identify other types of permanent records [INN 7.9.1-1].]

**7.9.2 Record Preservation Method**

Records [are preserved] by [Identify preservation method. INN 7.9.2-1] to ensure record preservation for [Identify targeted preservation time period. INN 7.9.2-2]. Records must be legible, accurate, and complete for use by future generations.

**7.9.3 Probable Archive Locations**

Permanent records must be included in local, State, Federal, and identified international archives and land record systems. These locations [are listed] in Table 7.9.3-1 [Identify specific archives and land record system locations [INN 7.9.3-1].]

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**REFERENCES**

YMP/CM-0011, Site Characterization Program Baseline

Table 7.9.3-1 Archives and Land Record Systems for Permanent Records Preservation  
[INN 7.9.3-1]

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.9.1-1
<b>Section Number and Title:</b>	7.9 PRESERVATION OF RECORDS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665 Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify other types of permanent records.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.9.2-1
<b>Section Number and Title:</b>	7.9 PRESERVATION OF RECORDS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 784-7665 Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify preservation method.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.9.2-2
<b>Section Number and Title:</b>	7.9 PRESERVATION OF RECORDS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (792) 794-7665 Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	Identify targeted preservation time period.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified.
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.9.3-1
<b>Section Number and Title:</b>	7.9 PRESERVATION OF RECORDS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665 Nancy J. Chappell (702) 794-1928
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Table 7.9.3-1
<b>Explicit description of the needed information:</b>	Identify specific archive and land record system locations.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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- 7.10.2-2      Locations of Permanent Site Markers [INN 7.10.2-1]

**LIST OF INFORMATION NEEDS**

- INN 7.10.2-1 A physical description of the permanent site markers is required including a drawing(s) of the marker demonstrating its design(s), and a figure showing a map of the marker locations relative to the Geologic Repository Operations Area and the controlled area.

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**7.10 SITE MARKERS**

[This section will describe the design and construction of site markers or monuments for the period following repository permanent closure. The GROA, controlled area, and monuments will be identified and located. Compliance with 10 CFR 60.21 (c) (8), 10 CFR 60.51 (a) (2) (i), and 40 CFR 191.14 (c) requirements must be shown. The controlled area and GROA will be identified by monuments which have been designed, fabricated, and emplaced to be as permanent as practicable.]

**7.10.1 Site Marker Design Basis**

[Site markers will be designed to be as permanent as practicable as part of a program to permanently identify the repository location for future generations.] The design basis for the site markers is to provide a local indication that the site presents unique hazards, and that the area should not be disturbed. The form and characteristics of government and civilization are difficult to project over the length of time the repository must safely contain the spent fuel and High-Level Waste. Therefore, the site markers are also intended to indicate that further research is necessary before disturbing the site in the case where the marker warnings themselves are not understood.

**7.10.2 Site Marker Description**

[INN 7.10.2-1]

[Refer to Section 4.1 and Figures 7.10.2-1, and 7.10.2-2 for controlled area and GROA identification.]

**7.10.3 Compliance of Site Markers with Regulations**

[The GROA site monuments will be designed to be as permanent as practicable. It will be shown that these monuments, in conjunction with the provisions for record preservation of Section 7.9, will satisfy the regulatory requirements to minimize the potential for intrusion into the repository by human intruders and will restrict access and avoid disturbances that could breach the barrier system for at least 1,000 years.]

**REFERENCES**

10 CFR 60, Disposal of High-Level Radioactive Wastes in Geologic Repositories

40 CFR 191, Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes

YMP/CM-0023, Repository Design Requirements Document

Applicable code/standard for monument design

**FIGURE CAPTIONS**

Figure 7.10.2-1 Site Marker Used After Permanent Closure [INN 7.10.2-1]

Figure 7.10.2-2 Locations of Permanent Site Markers [INN 7.10.2-1]

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 7.10.2-1
<b>Section Number and Title:</b>	7.10 SITE MARKERS
<b>Lead Author/Support Author and Phone:</b>	Ken Ashe (702) 794-7665
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	Figure 7.10.2-1 and 7.10.2-2
<b>Explicit description of the needed information:</b>	A physical description of the permanent site markers is required including a drawing(s) of the marker demonstrating its design, and a figure(s) showing a map of the marker locations relative to the Geologic Repository Operations Area and the controlled area. A conceptual design for the markers is required. A discussion of the design and construction of the markers is required. It must be demonstrated that the proposed markers are as permanent as practicable and along with other institutional barriers will restrict access and avoid disturbances that could breach the barrier system for at least 1,000 years. The markers are required to indicate the dangers of the waste and their location.
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	TBD
<b>Most likely source of the Information:</b>	MGDS Design Organization
<b>Information Source Description:</b>	None identified
<b>Does the supporting data need to be QA?</b>	

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<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	

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### **Chapter 8.0 Performance Confirmation Program**

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8.0-1 Plan for the Performance Confirmation Program.

## 8.0 PERFORMANCE CONFIRMATION PROGRAM

The Performance Confirmation Program is organized as two major phases, the baseline phase and the confirmation phase. The baseline phase consists of information acquired and developed during site characterization. The submittal of the License Application (LA) marks the division between phases of testing; that is, the division between the baseline and confirmation phases of the Performance Confirmation Program (Figure 8.0-1). Some testing initiated during site characterization will be ongoing at the time of submission of the LA; however, much of the confirmation phase testing will remain to be conducted during construction and operation of the repository. The confirmation phase, which begins with submittal of the LA and ends with the approval of the license amendment for permanent closure, is divided into three periods:

- The interim period which ends with issuance of the construction authorization;
- The construction period which ends with the issuance of the license to accept waste; and
- The operational period which ends with the license amendment for permanent closure.

The Performance Confirmation Program consists of the testing, analysis, and monitoring activities required to confirm assumptions regarding the actual subsurface conditions at the site, and the functioning of the engineered and natural systems and components required for repository operation as predicted by the performance assessment calculations presented in the LA.

At the time of LA submittal for construction authorization, sufficient information must be provided to allow the Nuclear Regulatory Commission to determine, with reasonable assurance, that the types and amounts of radioactive materials described in the LA can be received, maintained, and disposed of in a geologic repository of the design proposed, and will not pose unreasonable risk to the health and safety of the public.

Understanding of the site and engineered barriers will increase as the Performance Confirmation Program progresses. The purpose of the Performance Confirmation Program is to supply added confidence, beyond that supplied in the LA, that the actual subsurface conditions are within the limits assumed for the geotechnical and design parameters, and that the engineered and natural systems of the repository are functioning as anticipated to meet the long-term performance objectives for containment and isolation.

The objectives of the Performance Confirmation Program are as follows:

- **Develop baseline information:** Develop information on subsurface conditions and natural systems important to the performance assessment to be provided in the LA and those aspects of design integral to the assessment (10 CFR 60, *Disposal of High-Level*

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*Radioactive Wastes in Geologic Repositories*, Section 140 (d)(2)); monitor and analyze changes in this baseline information as a result of site characterization, and predict changes resulting from construction and operation (10 CFR 60.140(d)(3)); begin collection of such information during site characterization (10 CFR 60.140(b)).

- **Confirm baseline information:** Confirm, to the extent practicable, that actual subsurface conditions and the changes in those conditions resulting from construction and operation are within the limits assumed in the LA (10 CFR 60.140(a)(1) and (d)(3); 10 CFR 60.141).
- **Confirm barrier and seal performance:** Confirm, to the extent practicable, that natural and engineered systems and components that are designated or assumed to operate as barriers after permanent closure are functioning as intended and anticipated within the limits described in the LA (10 CFR 60.140(a)(2); 10 CFR 60.142, 60.143).

The objectives of the Performance Confirmation Program are shown schematically in Figure 8.0-1. It should be noted that site characterization began in 1977 considerably before completion of the Exploratory Studies Facility (ESF). Testing in the ESF marks the beginning of the baseline phase of the Performance Confirmation Program. The confirmation phase begins with submission of the LA and extends through the operational period, until repository closure (Figure 8.0-1). The operational period is required to extend at least fifty years after initiation of waste emplacement and may extend as much as 100 years after waste emplacement (DOE, 1994). The plans for the confirmation program will mature as site characterization proceeds in the ESF and will be described in the LA [INN 8.0-1].

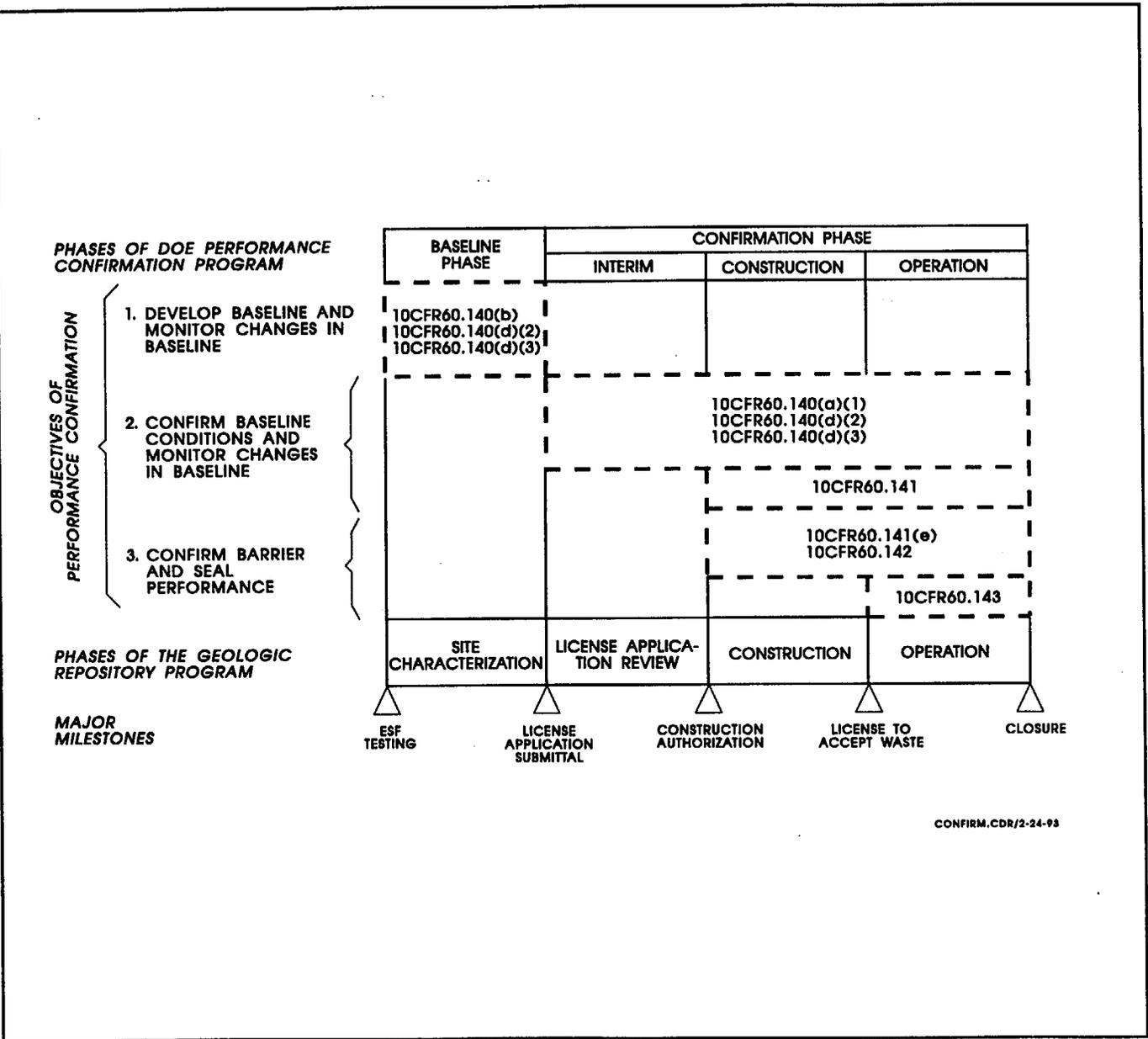
**REFERENCES**

U. S. Department of Energy (DOE), 1994. "Yucca Mountain Site Characterization Project Five Year Plan, Fiscal Years 1996-2000", October 12, 1994, Predecisional Draft.

10 CFR 60, Disposal of High-Level Radioactive Wastes in Geologic Repositories; Subpart F, Performance Confirmation Program; Section 140, General requirements; Section 142, Design testing; and Section 143, Monitoring and testing waste packages.

**ACRONYMS AND ABBREVIATIONS**

<b>EBS</b>	<b>Engineered Barrier System</b>
<b>ESF</b>	<b>Exploratory Studies Facility</b>
<b>LA</b>	<b>License Application</b>
<b>MGDS</b>	<b>Mined Geologic Disposal System</b>
<b>TBD</b>	<b>To Be Determined</b>



CONFIRM.CDR/2-24-93

Figure 8.0-1. Correlation Between the Phases and Objectives of the Performance Confirmation Program.

F-8.0-1

The above Annotated Outline text is guidance that may be used for the future development of an MGRS facility License Application.

<b>MGDS LA Annotated Outline Form A: Information Need</b>	
<b>Information Need Number:</b>	INN 8.0-1
<b>Section Number and Title:</b>	8.0 PERFORMANCE CONFIRMATION PROGRAM
<b>Lead Author/Support Author and Phone:</b>	Jim Duguid (703) 204-8851
<b>Primary LA AO Table or Figure INN supports (if applicable):</b>	N/A
<b>Explicit description of the needed information:</b>	<p>Plan for the Performance Confirmation Program.</p> <p>Plan that describes the required testing during the baseline and confirmation phases of the Performance Confirmation Program. This plan should describe in detail the tests that will be conducted to confirm the natural system; the structures, systems, and components of the repository operations area; and the engineer barrier system. It should summarize how the data gained during the testing will be used to confirm repository behavior and to make the ultimate decision to apply for a license amendment for repository closure.</p>
<b>Information will be used to support:</b>	
<b>The Information is needed by/for (date or event):</b>	1998
<b>Most likely source of the Information:</b>	TBD
<b>Information Source Description:</b>	TBD
<b>Does the supporting data need to be QA?</b>	N/A

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<b>INTEGRATOR (PMO):</b>	
<b>Date information will be available:</b>	
<b>Deliverable providing information:</b>	
<b>If the data needed is QA, then the QA source document number is:</b>	