Chapter 7.0 Conduct of Repository Operations

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7.0 CONDUCT OF REPOSITORY OPERATIONS

This chapter presents information describing the conduct of repository operations and the associated procedures, including planned activities and processes, security and safeguards, maintenance, radiation protection, plant organizational plan, personnel, procedure generation package, inspection and testing, and records and reports. [This chapter must fulfill the regulatory requirements pertaining to a description of the conduct of repository operations (10 CFR 60.21(c)(15) and 10 CFR 60.111).]

NOTE: The reference to security and safeguards information should be deleted if the FCRG is modified as recommended in the FCRG comment. **[TCG-50]**

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7 CONDUCT OF REPOSITORY OPERATIONS**
7.0 INTRODUCTION

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

Second Phase Planning Package Due: 10/18/91

First Phase Skeleton Draft Due: 12/30/91

Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
(Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

This chapter presents information describing the conduct of repository operations and the associated procedures, including planned activities and processes, security and safeguards, maintenance, radiation protection, plant organizational plan, personnel, procedure generation package, inspection and testing, and records and reports.

6. Opening Statement:

This chapter presents information describing the conduct of repository operations and the associated procedures, including planned activities and processes, maintenance, radiation protection, plant organizational plan, personnel, procedure generation package, inspection and testing, and records and reports.

7. Main Body Outline:

See attached.

8. Conclusion:

This section fulfills regulatory requirements pertaining to a description of the conduct of repository operations [10 CFR 60.21(c)(15) and 10 CFR 60.111].

9. Support Authors & Their Assignments:

7. Main Body Outline (Continued)

7.0 Introduction. Note: It is inappropriate to request safeguards and security information in this section since details cannot be presented and an overview/certification is already requested in Sections 1.4 and 1.5. An FCRG comment form will be generated for this item.

Inspection and testing will be addressed in a new section, 7.11, not outlined in the FCRG. This section will present information describing inspection and testing activities during repository operation, including processes and procedures. An FCRG comment form will be generated for this item.

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

A. Figure/Table No.

Caption/Title:

Content:

B. Figure No.

Caption:

Content:

C. Figure No.

Caption:

Content:

D. Figure No.

Caption:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **7 CONDUCT OF REPOSITORY OPERATIONS**
7.0 INTRODUCTION

Lead Author & Phone No. Tom Geer, 702/794-7868

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-50**

2. Section no. & title: **7 CONDUCT OF REPOSITORY OPERATIONS**
7.0 INTRODUCTION

3. Lead author & phone no: **Tom Geer (702) 794-7868, placeholder for TBD.**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

A non-compromising summary of safeguards and security plans pursuant to Section 1.4 and 1.5 of the MGDS License Application FCRG. Also include information describing the planned activites, processes and procedures as requested in the introduction to Section 7 of the MGDS Safety Analysis Sections FCRG.

Note: This will not be needed for this seciton if FCRG comment is adopted.

7. What is the information needed for?

Safety Analysis Section 7, Introduction. This information would not be expected to be submitted within the Safety Analysis Sections.

8. What group is the probable information supplier?

9. When is the information needed?

TBD.

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date: 1/31/92

Lead Author: Tom Geer

Log No.	Section	Date Issued	Date Response Received
TCG-01	7.2	12/15/91	
TCG-02	7.2	12/15/91	
TCG-03	7.2	12/15/91	
TCG-04	7.2	12/15/91	
TCG-05	7.2	12/15/91	
TCG-06	7.2	12/15/91	
TCG-07	7.2	12/15/91	
TCG-08	7.2	12/15/91	
TCG-09	7.2	12/15/91	
TCG-10	7.2	12/15/91	
TCG-11	7.2	12/15/91	
TCG-12	7.2	12/15/91	
TCG-13	7.2	12/15/91	
TCG-14	7.2	12/15/91	
TCG-15	7.2	12/15/91	
TCG-16	7.2	12/15/91	
TCG-17	7.2	12/15/91	
TCG-18	7.2	12/15/91	
TCG-19	7.2	12/15/91	
TCG-20	7.2	12/15/91	
TCG-21	7.3	12/15/91	
TCG-22	7.3	12/15/91	
TCG-23	7.3	12/15/91	
TCG-24	7.3	12/15/91	
TCG-25	7.3	12/15/91	
TCG-26	7.3	12/15/91	
TCG-27	7.3	12/15/91	
TCG-28	7.3	12/15/91	
TCG-29	7.3	12/15/91	

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date: 1/31/92

Lead Author: Tom Geer

Log No.	Section	Date Issued	Date Response Received
TCG-30	7.3	12/15/91	
TCG-31	7.3	12/15/91	
TCG-32	7.3	12/15/91	
TCG-33	7.3	12/15/91	
TCG-34	7.3	12/15/91	
TCG-35	7.3	12/15/91	
TCG-36	7.3	12/15/91	
TCG-37	7.3	12/15/91	
TCG-38	7.3	12/15/91	
TCG-39	7.3	12/15/91	
TCG-40	7.5	12/15/91	
TCG-41	7.5	12/15/91	
TCG-42	7.6	12/15/91	
TCG-43	7.6	12/15/91	
TCG-44	7.6	12/15/91	
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TCG-48	7.2	1/29/92	
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TCG-51	7.6	3/23/92	

Section 7.1 Maintenance

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7.1 MAINTENANCE

Skeleton Text Has Not Been Developed For This Section

Table 7.1A. Surface Facilities Maintenance

Table 7.1B. Shaft and Ramp Maintenance

Table 7.1C. Underground Facility Maintenance

Table 7.1D. Underground Opening Maintenance

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7.1 MAINTENANCE**

2. Lead Author & Phone No.: Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section identifies and describes the plans, schedules, and operational procedures for maintenance of structures, systems, and components important to safety, retrievability, and waste isolation at the GROA, both surface and underground, including shafts and ramps.

6. Opening Statement: (See summary.)

7. Main Body Outline:

8. Conclusion:

   The maintenance plans, schedules, and operating procedures identified above ensure operation of structures, systems, and components important to safety, retrievability, and waste isolation.

9. Support Authors & Their Assignments:

7. Main Body Outline (Continued)

7.1.1 Surface Facilities

Identify and describe plans, schedules, and operating procedures for maintenance of all GROA surface facilities identified in Section 4.1.1. Highlight structures, systems, and components important to safety and retrievability. Use Table 7.1A.

7.1.2 Shafts And Ramps

Identify and describe plans, schedules, and operating procedures for maintenance of GROA shafts and ramps identified in Section 4.1.2. Highlight structures, systems, and components important to safety, retrievability, and waste isolation. Use Table 7.1B.

7.1.3 Underground Facilities

Identify and describe plans, schedules, and operating procedures for maintenance of the underground facility identified in Section 4.1.3. Highlight structures, systems, and components important to safety, retrievability, and waste isolation. Use Table 7.1C.

7.1.4 Underground Openings

Identify and describe plans, schedules, and operating procedures for maintenance of the underground openings. Highlight structures, systems, and components important to safety, retrievability, and waste isolation. Use Table 7.1D.

Section No. & Title: **7.1 MAINTENANCE**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Table No. **7.1A**

Title: **Surface Facilities Maintenance**

Content:

- Itemize surface facility components having maintenance plans.
- Indicate maintenance schedule for each component.
- Indicate maintenance procedure or type for each component.

B. Table No. **7.1B**

Title: **Shaft and Ramp Maintenance**

Content: Same data as for Table 7.1A.

C. Table No. **7.1C**

Title: **Underground Facility Maintenance**

Content: Same data as for Table 7.1A.

D. Table No. **7.1D**

Title: **Underground Opening Maintenance**

Content: Same data as for Table 7.1A.

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:
2. Section no. & title: **7.1 MAINTENANCE**
3. Lead author & phone no: **Tom Geer (702) 794-7868**
4. Information request date: **2/21/92**
5. Work location:
6. Type of information needed:
7. What is the information needed for?
8. What group is the probable information supplier?
9. When is the information needed?
10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.2 Radiation Protection

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7.2 RADIATION PROTECTION

This section describes the Radiation Protection Program at the Geologic Repository Operations Area (GROA). An overview of the organizational responsibilities relevant to radiation protection at the GROA is 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 Part 20 and Part 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 [TCG-01] is to maintain radiation exposures as low as reasonably achievable (ALARA) by maintaining the annual dose to individual GROA personnel ALARA, and keeping the annual collective dose to GROA personnel (i.e., the sum of annual doses to all GROA personnel) ALARA. In order to satisfy this goal, the facility management is committed to maintaining exposures ALARA, and the personnel responsible for implementing the program proactively search for ways to reduce exposures.

7.2.1 Organization

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 [TCG-02].

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 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 reports 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 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 have appropriate qualifications 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 of 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

Skeleton text has not been developed for this section.

7.2.3 Procedures

This section describes the procedures to be used in the Radiation Protection Program to ensure contamination levels and radiation exposures will be ALARA. Procedures are established for radiation surveys, personnel dosimetry, decontamination of surface facilities, and ALARA practices. Where appropriate, cost-benefit analyses are discussed to justify the development of procedures [TCG-06].

7.2.3.1 Radiation Surveys

Radiation surveys will be conducted, according to the methods and frequencies discussed below to ensure that occupational exposures will be maintained ALARA during these surveys [TCG-07]. The radiation survey methods and frequencies are summarized in Table 7.2A.

Table 7.2A. Radiation Survey Methods and Frequencies

7.2.3.2 Personnel Dosimetry

A personnel dosimetry program has been 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 [TCG-08]. Table 7.2B describes the personnel dosimetry reporting requirements. Whole body counting and bioassay requirements are presented in Table 7.2C.

7.2.3.3 Decontamination of Surface Facilities

Procedures have been 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 [TCG-10]. Table 7.2E summarizes the features and limitations of the decontamination systems.

7.2.3.4 ALARA Procedures

Procedures have been established to ensure that occupational radiation exposures are ALARA and residual contamination levels for all systems that contain, collect, store, or transport radioactive

Table 7.2B. Personnel Dosimetry Reporting Requirements

Table 7.2C. Whole Body Counting and Bioassay Criteria

Table 7.2E. Decontamination System Features

solids and liquids are also ALARA (including radioactive waste treatment, handling, and storage systems) [TCG-11]. The target contamination limits are presented in Table 7.2F.

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 describes the program and the analytical approaches to monitor the radioactive material content of effluent streams from the GROA facilities [TCG-12]. 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, is 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. [TCG-49]

Table 7.2-F. Target Contamination Limits

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 is discussed and justified where appropriate. The major features of the system (e.g., expected reliability and sensitivity) are presented in Table 7.2G. The sampling frequency and action limits are described in Table 7.2H. The process flow diagram of the gaseous and particulate monitoring system, including sampling locations, is given in Figure 7.2B. [TCG-13]

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 is discussed and justified where appropriate. The major features of the system (e.g., expected reliability and sensitivity) are presented in Table 7.2I. The sampling frequency and action limits are given in Table 7.2J. The process flow diagram of the liquid waste monitoring system, including sampling locations, is given in Figure 7.2C. [TCG-14]

Table 7.2G. Gaseous and Particulate Monitoring System Features

Table 7.2H. Gaseous and Particulate Monitoring Sampling Frequency and Action Limits

Figure 7.2B. Gaseous and Particulate Monitoring System Process Flow Diagram

Table 7.2I. Liquid Waste Monitoring System Features

Table 7.2J. Liquid Waste Monitoring Sampling Frequency and Action Limits

Figure 7.2C. Liquid Waste Monitoring System Process Flow Diagram

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 is discussed and justified where appropriate. The major features of the system (e.g., expected reliability and sensitivity) are presented in Table 7.2K. The sampling frequency and action limits are given in Table 7.2L. The process flow diagram of the solid waste monitoring system, including sampling locations, is given in Figure 7.2D. [TCG-15]

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.

Table 7.2K. Solid Waste Monitoring System Features

Table 7.2L. Solid Waste Monitoring Sampling Frequency and Action Limits

Figure 7.2D. Solid Waste Monitoring System Process Flow Diagram

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

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 provide reasonable assurance 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 man have been evaluated in accordance with Regulatory Guide 1.109 in order 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 [TCG-16].

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. This data forms the basis for evaluating radioactivity levels subsequent to the beginning of GROA operations in order 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 [TCG-17]. The locations monitored and the average background results are presented in Table 7.2M. [TCG-48]

7.2.5.3 Operational Radiological Monitoring Program

The Operational Radiological Monitoring Program provides surveillance and backup support to the effluent monitoring is discussed in section 7.2.4. This support is necessary to evaluate individual and population exposures, and the ecological significance of any contributions to the existing radioactivity levels from GROA operations. This program provides 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 is described in the GROA license specifications and the Offsite Dose Calculation Manual. [TCG-18] Table 7.2N shows the type, number, location, collection frequency, and analysis frequency of environmental samples collected under this program. Sampling locations are depicted in Figure 7.2E.

Table 7.2M. Pre-Operational Monitoring Locations and Results

Table 7.2N. Environmental Sampling Information

Figure 7.2E. Operational Radiological Monitoring Program Sampling Locations

7.2.5.4 Expected GROA Contributions to Radioactivity Levels

Anticipated releases of radioactive material from GROA operations are used to estimate the expected contribution of the GROA to environmental radioactivity levels. The natural background levels and expected contribution from GROA operations are presented in Table 7.2O. [TCG-19]

7.2.5.5 Operational Meteorological Data Collection

Meteorological conditions can affect offsite doses from GROA releases and are monitored in a continuing program to assess the impact of any meteorological changes on previous estimates of doses. The locations of meteorological monitoring stations are given in Figure 7.2F. The collection frequency and analysis frequency are given in Table 7.2P. [TCG-20]

Table 7.2O. Expected Radioactivity Levels

Figure 7.2F. Operational Meteorological Monitoring Station Locations

Table 7.2P. Meteorological Data Collection

REFERENCES

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7.2 RADIATION PROTECTION**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section describes the Radiation Protection Program at the repository. It describes 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 Part 20 and Part 60.

6. Opening Statement:

   This section describes the Radiation Protection Program at the Geologic Repository Operations Area (GROA). An overview of the organizational responsibilities relevant to radiation protection at the GROA is 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 Part 20 and Part 60 are also presented.

7. Main Body Outline:

   See attached.

8. Conclusion:

   The Radiation Protection Program at the repository is designed to comply with all regulatory requirements. It will be conducted in such a manner as to provide assurance that the exposure of all persons will be maintained ALARA within regulatory limits.

9. Support Authors & Their Assignments:

7. Main Body Outline (Continued)

7.2 Introduction

7.2.1 Organization

7.2.2 Facilities, Instrumentation, and Equipment

7.2.3 Procedures

7.2.4 Effluent Monitoring Programs

7.2.5 Environmental Monitoring Program

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Table No. **7.2A**

Title: **Radiation Survey Methods and Frequencies**

Content: (Reference 7.2.3)

B. Table No. **7.2B**

Title: **Personnel Dosimetry Reporting Requirements**

Content: (Reference 7.2.3)

C. Table No. **7.2C**

Title: **Whole Body Counting and Bioassay Criteria**

Content: (Reference 7.2.3)

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

D. Table No. **7.2D DELETED**

Title:

Content: (Reference 7.2.3)

E. Table No. **7.2E**

Title: **Decontamination System Features**

Content: (Reference 7.2.3)

F. Table No. **7.2.F**

Title: **Target Contamination Limits**

Content: (Reference 7.2.3)

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

G. Table No. **7.2G**

Title: **Gaseous and Particulate Monitoring System Features**

Content: (Reference 7.2.4)

H. Table No. **7.2H**

Title: **Gaseous and Particulate Monitoring Sampling Frequency and Action Limits**

Content: (Reference 7.2.4)

I. Table No. **7.2I**

Title: **Liquid Waste Monitoring System Features**

Content: (Reference 7.2.4)

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

J. Table No. **7.2J**

Title: **Liquid Waste Monitoring Sampling Frequency and Action Limits**

Content: (Reference 7.2.4)

K. Table No. **7.2K**

Title: **Solid Waste Monitoring System Features**

Content: (Reference 7.2.4)

L. Table No. **7.2L**

Title: **Solid Waste Monitoring Sampling Frequency and Action Limits**

Content: (Reference 7.2.4)

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

M. Table No. **7.2M**

Title: **Pre-Operational Monitoring Locations and Results**

Content: (Reference 7.2.5)

N. Table No. **7.2N**

Title: **Environmental Sampling Information**

Content: (Reference 7.2.5)

O. Table No. **7.2O**

Title: **Expected Radioactivity Levels**

Content: (Reference 7.2.5)

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

P. Table No. **7.2P**

Title: **Meteorological Data Collection**

Content: (Reference 7.2.5)

Q. Table No. **7.2Q**

Title:

Content:

R. Table No. **7.2R**

Title:

Content:

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Figure No. **7.2A** **DELETED**

Caption:

Content: **DELETED**

B. Figure No. **7.2.B**

Caption: **Gaseous and Particulate Monitoring System Process Flow Diagram**

Content: (Reference 7.2.4)

C. Figure No. **7.2C**

Caption: **Liquid Waste Monitoring System Process Flow Diagram**

Content: (Reference 7.2.4)

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702/794-7868

D. Figure No. **7.2D**

Caption: **Solid Waste Monitoring System Process Flow Diagram**

Content: (Reference 7.2.4)

E. Figure No. **7.2E**

Caption: **Operational Radiological Monitoring Program Sampling Locations**

Content: (Reference 7.2.5)

F. Figure No. **7.2F**

Caption: **Operational Meteorological Monitoring Station Locations**

Content: (Reference 7.2.5)

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **7.2 RADIATION PROTECTION**

Lead Author & Phone No. Tom Geer, 702-794-7868

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1. 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.

2. Draft Regulatory Guide OP-032-5. (Final, if available.)

   Test and Calibration of Radiation Protection Instrumentation.

3. Latest revisions of 10 CFR 20, 10 CFR 60.

4. NRC document stating requirements for Offsite Dose Calculational Program.

5. Copy of Offsite Dose Calculational Manual for the Catawba Nuclear Station - Duke Power Co.

6. Design report containing descriptions of engineered systems, structures, and components in the GROA.

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

8. Report containing preliminary description of administrative organization for operation of the repository.

9. Latest revision of Duke Power Co - Health Physics Manual.

10. Latest revision of Duke Power Co - ALARA Manual.

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

12. Latest revision of NRC BTP 4.8 concerning environmental radioactivity monitoring.

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

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

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

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

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-1**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   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. What is the information needed for?

   SAR Section 7.2.

8. What group is the probable information supplier?

   MGDS Radiation Protection Group when established.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    Sample Health Physics Plan and ALARA manuals from Duke.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-2**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   GROA organization chart needs to be defined and located within Section 7.3 for reference in this section.

7. What is the information needed for?

   SAR Section 7.2.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-6**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Cost/Benefit method use during procedure development needs to be established in light of existing regulatory guidance.

7. What is the information needed for?

   SAR Section 7.2.3.

8. What group is the probable information supplier?

   MGDS Radiation Protection Group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    NRC Regulatory Guide 10.110 which has kind of dated values.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-7**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Radiation Survey methods and frequencies need to be identified.

7. What is the information needed for?

   SAR Table 7.2A.

8. What group is the probable information supplier?

   MGDS Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-8**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Personnel dosimetry plans need to be established including whole body criteria, etc.

7. What is the information needed for?

   SAR Section 7.2.3.2 and Tables 7.2B and 7.2C.

8. What group is the probable information supplier?

   MGDS Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-10**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Features of personnel decontamination systems.

7. What is the information needed for?

   SAR Section 7.2.3.4 and Table 7.2E.

8. What group is the probable information supplier?

   MGDS Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-11**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Target contamination limits for systems that contain, collect, store, or transport radioactive solids and liquids.

7. What is the information needed for?

   SAR Section 7.2.3.5 and Table 7.2F.

8. What group is the probable information supplier?

   MGDS Design Organization and Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-12**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   An environmental monitoring program must be developed and may be summarized in portions of the SAR.

7. What is the information needed for?

   SAR Section 7.2.4.

8. What group is the probable information supplier?

   MGDS Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-13**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Details of the Gaseous and Particulate Monitoring System including major features, justification of systems and major instruments, sampling frequencies and action limits, and process flow diagrams.

7. What is the information needed for?

   SAR Section 7.2.4.1, and Tables 7.2G and 7.2H, and Figure 7.2B.

8. What group is the probable information supplier?

   MGDS Design Organization and Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-14**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Details of the Liquid Waste Monitoring System including major features, justification of systems and major instruments, sampling frequencies and action limits, and process flow diagrams.

7. What is the information needed for?

   SAR Section 7.2.4.2, and Tables 7.2I and 7.2J, and Figure 7.2C.

8. What group is the probable information supplier?

   MGDS Design Organization and Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-15**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Details of the Solid Waste Monitoring System including major features, justification of systems and major instruments, sampling frequencies and action limits, and process flow diagrams.

7. What is the information needed for?

   SAR Section 7.2.4.3, Tables 7.2K and 7.2L, and Figure 7.2D.

8. What group is the probable information supplier?

   MGDS Design Organization and Radiation Protection group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-16**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   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. What is the information needed for?

   SAR Section 7.2.5.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-17**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Need to identify the preoperation program to acquire background radiation information for the GROA. Timeframe over which study is conducted needs to be identified as well as the locations monitored and results observed.

7. What is the information needed for?

   SAR Section 7.2.5.2 and Table 7.2M.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-18**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   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.

7. What is the information needed for?

   SAR Section 7.2.5.3, Table 7.2N, and Figure 7.2E.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-19**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Need to summarize background levels of radiation and expected contribution form GROA activities.

7. What is the information needed for?

   SAR Section 7.2.5.4 and Table 7.2O.

8. What group is the probable information supplier?

   MGDS design organization.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-20**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Details of operational meteorological program including collection and analysis frequencies and locations of monitoring stations.

7. What is the information needed for?

   SAR Section 7.2.5.5, Table 7.2P and Figure 7.2F.

8. What group is the probable information supplier?

   MGDS meteorological group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-48**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Information concerning radioactive waste disposal measures followed by other activities presently located near the repository site, (e.g., at the Nevada test site).

7. What is the information needed for?

   SAR Section 7.2.5.2.

8. What group is the probable information supplier?

   MGDS meteorological group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-49**

2. Section no. & title: **7.2 RADIATION PROTECTION**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   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. What is the information needed for?

   SAR Section 7.2.4.

8. What group is the probable information supplier?

   MGDS meteorological group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.3 Organizational Structure, Management, and Administrative Controls

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LIST OF FIGURES

7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS

This section identifies and describes the structure, functions, qualifications, and responsibilities of the Geologic Repository Operations Area (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 Department of Energy (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, is shown in Figure 7.3A [TCG-21]. Various divisions within OCRWM have responsibility for design, construction, quality assurance, and operation of the GROA. DOE contracts with a Management and Operating (M&O) contractor to manage the various aspects of constructing and operating this facility.

The M&O contractor, as well as the M&O support contractors, are shown together with their areas of responsibility in Figure 7.3B [TCG-22]. Representatives from across the M&O are brought together to design, construct, and operate the GROA in an organization which reports directly to [TCG-23] as depicted in Figure 7.3C.

Figure 7.3A. OCRWM Organization Chart

Figure 7.3B. M&O Contractor Companies

Figure 7.3C. GROA Organization

7.3.1 Organization

The emphasis of the repository organization shifts during the course of licensing the facility. Initially, the [TCG-24] is the focus as the facility progresses through the initial design and construction phase. Later, the [TCG-25] is the major part of the organization as receipt of high-level waste and other operations become the focus of the GROA. The [TCG-24] 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 [TCG-26] 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 [TCG-27] is shown in Figure 7.3D.

7.3.1.2 Organization for Operations

The organization of the GROA operations staff is 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 overall responsibility of the operation of the repository with respect to waste emplacement operations, radiation protection, and maintenance.

Figure 7.3D. Organization for Construction and Design

The organizational structure of the [TCG-28] is shown in Figure 7.3E.

7.3.1.3 Organization for Technical Support

The [TCG-29] provides support to the design and construction organization and the operations organization in the areas of quality assurance (QA), safety assurance, regulatory and licensing support, training, and computer resources. The organizational structure of the [TCG-30] is shown in Figure 7.3F.

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 [TCG-31] 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

Figure 7.3E. Organization for Operations

Figure 7.3F. Organization for Technical Support

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.

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 Manger 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 [TCG-32]. Replacement personnel for all positions are fully trained and qualified to fill their appointed positions. The minimum education and experience requirements for the various management positions at the repository are given in Table 7.3A, and the resumes of the repository management staff demonstrating their qualifications are presented in the following subsections.

Table 7.3A. GROA Management Staff Minimum Qualifications

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

7.3.3.1 Repository Manager

[TCG-33], the Repository Manager, ...

7.3.3.2 Operations Manager

[TCG-34], the Operations Manager, ...

7.3.3.3 Radiation Protection Manager

[TCG-35], the Radiation Protection Manager, ...

7.3.3.4 Performance Manager

[TCG-36], the Performance Manager, ...

7.3.3.5 Compliance Manager

[TCG-37], the Compliance Manager, ...

7.3.3.6 Maintenance Manager

[TCG-38], the Maintenance Manager, ...

7.3.3.7 Station Services Manager

[TCG-39], the Station Services Manager, ...

MGDS Annotated Outline Planning Package Date: 4/17/92
Form 1: Text

1. Section No. & Title: **7.3** **ORGANIZATIONAL STRUCTURE, MANAGEMENT, AND ADMINISTRATIVE CONTROLS**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words): See Section 7.3.0.

6. Opening Statement: Not applicable.

7. Main Body Outline:

7.3 ORGANIZATION

7.3 Introduction

This section identifies and describes the structure, functions, qualifications and responsibilities of the operating organization.

7.3.1 Organization

7.3.2 Personnel Functions, Responsibilities, and Authorities

7.3.3 Personnel Qualification Requirements

8. Conclusion:

The organizational structure, management, and administrative controls presented in this section comply with requirements of 10 CFR 60.21(c)(15).

9. Support Authors & Their Assignments:

Section No. & Title: **7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT AND ADMINISTRATIVE CONTROLS**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Table No. **7.3A**

Title: **GROA Management Staff Minimum Qualifications**

Content: (Reference 7.3.3)

Material to consider for Table 7.3A:

A. ANSI/ANS-3.1-1978. "American National Standard for Selection and Training of Nuclear Plant Personnel", shall be used to provide bases for personnel qualifications except where clarified in Table 7.3A.

B. As one such clarifier, Reactor Operator (RO) licenses are not required for any staff occupation.

C. The following should be required of a Radiation Protection Manager (RPM):

- The Radiation Protection Manager (RPM) should be an experienced professional in applied radiation protection at nuclear facilities dealing with radiation protection problems and programs similar to those at nuclear power stations. The RPM should be familiar with the design features of the GROA which affect the potential for exposures of persons to radiation. The RPM should have 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 RPM should be an ABHP Certified Health Physicist.

D. Some generic staff positions are:

- Repository Manager
- Operations Manager
- Radiation Protection Manager
- Performance Manager
- Compliance Manager
- Maintenance Manager
- Station Services Manager

Section No. & Title: **7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT AND ADMINISTRATIVE CONTROLS**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Figure No. **7.3A**

Caption: **OCRWM Organization Chart**

Content: (Reference 7.3)

B. Figure No. **7.3B**

Caption: **M&O Contractor Companies**

Content: (Reference 7.3)

C. Figure/Table No. **7.3C**

Caption: **GROA Organization**

Content: (Reference 7.3)

Section No. & Title: **7.3 ORGANIZATIONAL STRUCTURE, MANAGEMENT AND ADMINISTRATIVE CONTROLS**

Lead Author & Phone No. Tom Geer, 702/794-7868

D. Figure No. **7.3D**

Caption: **Organization for Construction and Design**

Content: (Reference 7.3.1)

E. Figure No. **7.3E**

Caption: **Organization for Operations**

Content: (Reference 7.3.1)

F. Figure/Table No. **7.3F**

Caption: **Organization for Technical Support**

Content: (Reference 7.3.1)

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-21**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   OCRWM organization chart.

7. What is the information needed for?

   SAR Section 7.3 and Figure 7.3A.

8. What group is the probable information supplier?

   YMPO.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-22**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   M&O Contractors and areas of responsibility.

7. What is the information needed for?

   SAR Section 7.3 and Figure 7.3B.

8. What group is the probable information supplier?

   Regulatory and Licensing.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-23**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   M&O organization assembled to manage design, construction, and operation of the GROA.

7. What is the information needed for?

   SAR Section 7.3 and Figure 7.3C.

8. What group is the probable information supplier?

   Regulatory and Licensing.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-24**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Name of the design engineering group responsible for design and construction.

7. What is the information needed for?

   SAR Section 7.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-25**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Name of the operations group responsible for GROA operations.

7. What is the information needed for?

   SAR Section 7.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-26**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the management position responsible for the design and construction of the GROA.

7. What is the information needed for?

   SAR Section 7.3.1.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-27**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Organizational chart of the design group.

7. What is the information needed for?

   SAR Section 7.3.1.1 and Figure 7.3D.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-28**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Organizational chart of the onsite GROA organization responsibile for repository operations.

7. What is the information needed for?

   SAR Section 7.3.1.2.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-29**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the position responsible for technical support activities in support of the GROA.

7. What is the information needed for?

   SAR Section 7.3.1.3.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-30**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Organization chart for the technical support group.

7. What is the information needed for?

   SAR Section 7.3.1.3.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-31**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the direct supervisor of the Repository Manager.

7. What is the information needed for?

   SAR Section 7.3.2.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-32**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   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. What is the information needed for?

   SAR Section 7.3.3 and Table 7.3A.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-33**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Repository Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-34**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Operations Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-35**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Radiation Protection Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-36**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Performance Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-37**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Compliance Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-38**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Maintenance Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-39**

2. Section no. & title: **7.3 ORGANIZATIONAL STRUCTURE**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the name of the Repository Services Manager and summarize his resume of qualifications.

7. What is the information needed for?

   SAR Section 7.3.3.1.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.4 Procedure Development

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7.4 PROCEDURE DEVELOPMENT

Skelton Text Has Not Been Developed For This Section

1. Section No. & Title: **7.4 PROCEDURE DEVELOPMENT**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section identifies and describes the various procedures needed for the Geologic Repository Operations Areas (GROA) operations. Also, the program that will be used for generating additional procedures is presented. The various procedures included in this section are general operating procedures, emergency procedures, start-up and testing procedures, performance confirmation procedures, etc.

6. Opening Statement:

   Same as summary.

7. Main Body Outline:

7.4 PROCEDURE DEVELOPMENT

7.4 Introduction

7.4.1 Program For Development Of GROA Operations Porcedures

7.4.1.1 Program Introduction

Purpose - To provide consistency amongst facility procedures and to implement guidance directly based on human factors principles of information exchange.

- Human Factors Considerations and principles:

7. Main Body Outline: (Continued)

- Training and experience of personnel performing procedures
- Level of comprehension of personnel performing procedures
- Environment procedures will be performed in
- Paths of communication.

7.4.1.2 Guidelines for Procedure Preparation

- Task analysis

  - Training and Experience required for procedure tasks
  - Task Frequency
  - Task Complexity
  - Time Factor to complete task
  - Task Criticality - the consequences of errors of omission.

- Procedure Format

  1.0 Purpose
  2.0 References
  3.0 Time and Personnel Required
  4.0 Prerequisite Tests
  5.0 Test Equipment Required
  6.0 Limits and Precautions
  7.0 Prerequisite System Conditions
  8.0 Test Method Described
  9.0 Data Required
  10.0 Acceptance Criteria
  11.0 Procedure Signoff Steps
  12.0 Restoration of equipment and system
  13.0 Enclosures.

7.4.1.3 Procedure Review, Validation/Verification and Approval

- Review

  - Reviewer Qualifications
  - Review Process, 10 CFR 50.59 (or equivalent regulation).

7. Main Body Outline (Continued)

- Validation/Verification
  - Validator/Verifier Qualifications
  - Validation/Verification Process.
- Approval
  - Approver Qualifications
  - Approval Process.

7.4.1.4 Procedure Amendment Process

- Procedure Change Preparation
- 10 CFR 60.44 Review (or equivalent regulation)
- Cross Disciplinary Review
- Management Approval.

7.4.2 GROA Operations Procedures

7.4.2.1 Operating Procedures

This subsection lists and describes the various procedures which address normal operations of the GROA.

7.4.2.2 Emergency Procedures

This subsection lists and describes the various procedures which address abnormal or emergency conditions such as fire, explosion, earthquake, etc.

7.4.2.3 Startup Procedures

This subsection lists and describes the various procedures which address startup and startup testing activities.

7.4.2.4 Performance Confirmation Procedures

This subsection lists and describes the various procedures which address performance confirmation activities.

7. Main Body Outline (Continued)

7.4.2.5 Retrieval and Alternate Storage Procedures

This subsection lists and describes the various procedures which address retrieval and alternate storage of HLW in the event the repository is deemed unsuitable after emplacement begins.

8. Conclusion:

The procedures developed and described in this section comply with the requirements of 10 CFR 60.21(c)(9), (12), and (15) and 10 CFR 60, Subpart F.

9. Support Authors & Their Assignments:

Paul Childress: Waste Package Procedures
Paul McKie: subsurface procedures
Mark Ceraldi (DE & S)

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

A. Figure/Table No.

Caption/Title:

Content:

B. Figure No.

Caption:

Content:

C. Figure No.

Caption:

Content:

D. Figure No.

Caption:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:
2. Section no. & title: **7.4 PROCEDURE DEVELOPMENT**
3. Lead author & phone no: **Tom Geer (702) 794-7868**
4. Information request date: **2/21/92**
5. Work location: **M&O - Las Vegas**
6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.5 Records and Reports

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7.5 RECORDS AND REPORTS

This section identifies and describes the program and procedures for Geologic Repository Operations Area (GROA) recordkeeping activities, and outlines the reporting requirements for the facility. The records management system satisfies the requirements of 10 CFR 60 Subpart D, 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 in order to adequately document repository operations. The Repository Manager has final responsibility for the proper management of GROA records. Various repository managers are responsible to the Repository Manager for assuring records within their purview are properly managed.

7.5.1.1 Master File System

GROA records are organized into a record hierarchy and filed with cross references to subjects and keywords to facilitate retrieval at future times during GROA operations. Ultimately, this file system will enable the appropriate GROA records to be consolidated for long term retention in a form useable to future generations after permanent closure of the repository.

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 [TCG-40]. The security and protection of the records is provided to ensure their availability at the time of permanent closure so that they may be retained, for the long-term, in a form useable to future generations.

7.5.2 Records Requirements

Records of licensed activities at the GROA are maintained as appropriate. The following subsections discuss the specific records that are maintained.

7.5.2.1 Construction Records

Records that pertain to the 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

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 which, if uncorrected, 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.

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.

7.5.2.4 Inspection Records

Safety-related inspections, such as equipment in-service inspections, cleanliness inspections, and procedure compliance inspections are 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, and the results of the inspection. These records are retained for a minimum of six years.

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 so as to provide a complete history of the 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.

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 will be consolidated, duplicated, distributed to various locations 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.

7.5.3 Other Records

A tabulation of other records to be retained during GROA operations, including retention requirements, is presented in Table 7.5A. This table also presents a summary of the records described in the preceding sections. [TCG-41]

Table 7.5A. Record and Retention Requirements

RECORD TYPE	6 YR RETENTION	LIFETIME RETENTION	PERMANENT RETENTION
Deficiency Report		X	X
Inspection	X		

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7.5 RECORDS AND REPORTS**

2. Lead Author & Phone No.: Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section identifies and describes the program for keeping records of activities at the Geological Repository Operations Area (GROA), including maintaining records of the licensed activity with a complete history of receipt, handling, storage, and disposition of radioactive waste; construction records; reports of deficiencies of the site; records of permanent closure; records of tests using radioactive waste that are conducted during construction or emplacement; and records of inspections.

6. Opening Statement: This section identifies and describes the program and procedures for GROA record keeping activities, and it outlines the reporting requirements for the facility.

7. Main Body Outline: See attached.

8. Conclusion:

   The records management system described above satisfies the requirements of 10 CFR 60 Subpart D.

9. Support Authors & Their Assignments:

7. Main Body Outline (Continued)

7.5 RECORDS AND REPORTS

7.5.1 Records Management System

7.5.1.1 Master File System

7.5.1.2 Records Protection and Security

7.5.2 Records Requirements

7.5.2.1 Construction Records

7.5.2.2 Site Deficiency Records

7.5.2.3 Records of Tests Conducted Using Radioactive Waste

7.5.2.4 Inspection Records

7.5.2.5 Radioactive Waste Receipt, Handling, Storage and Disposition Records

7.5.2.6 Permanent Closure Records

7.5.3 Other Records

Section No. & Title: **7.5 RECORDS AND REPORTS**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Table No. **7.5A**

Title: **Record and Retention Requirements**

Content: Based on content and format of NRC Regulatory Guide 10.1, Appendix A.

B. Figure/Table No.

Caption/Title:

Content:

C. Figure/Table No.

Caption/Title:

Content:

Section No. & Title:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.:

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-40**

2. Section no. & title: **7.5 RECORDS AND REPORTS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify sources of guidance relative to protection and security of records.

7. What is the information needed for?

   SAR Section 7.5.1.2.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-41**

2. Section no. & title: **7.5 RECORDS AND REPORTS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify all types of records, and retention requirements, that must be retained by DOE for the repository.

7. What is the information needed for?

   SAR Section 7.5.3 and Table 7.5A.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.6 Training Programs

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7.6 TRAINING PROGRAMS

The principal objective of the GROA Training and Qualification Program [TCG-42] is to ensure job proficiency of all repository personnel involved in work that is important to safety. The program is designed to accommodate future growth and comply with applicable regulations and accreditation standards [TCG-43].

Employee qualification is 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 [TCG-44] has overall responsibility for the administration of the Training and Qualification Program. The Repository Manager is responsible for the quality of work performed by individuals at the GROA. The Station Services Manager is assigned responsibility for ensuring the timely and effective development of GROA personnel.

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

Appropriate training for personnel of various training and experience backgrounds is provided. The level at which an employee initially enters the Training and Qualification Program is determined by an evaluation of past experience, and demonstration of ability by examination, where appropriate. Specific training which is required for key repository positions prior to commencement of waste emplacement operations is given in Table 7.6A [TCG-45].

7.6.1 Program Approach

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

7.6.1.1 General Employee Training

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.

Table 7.6A. Initial Training Requirements for Key Repository Positions

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.

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

All persons regularly employed at the GROA and under the supervision of repository management 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, and 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 is 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. At a minimum, technical training is developed to support personnel proficiency in the following areas of GROA activities:

A. Design

B. Construction

C. Waste emplacement operations

D. Instrumentation and control

E. Ventilation system operation and maintenance

F. Methods of dealing with operating malfunctions

G. Decontamination procedures

H. Emergency procedures

I. Mining practices and safety

J. Radiation protection.

7.6.1.3 Development and Management Training

Specialized training is 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 is specifically required for specialized operations skills necessary to

ensure the safe, reliable, and efficient operation of the repository. Table 7.6B presents a description of the skills requiring requalification training and their required frequency [TCG-46].

7.6.3 Training Program Evaluation

Training and qualification activities are monitored by the Technical Support organization. The QA organization audits the repository Training and Qualification Program to ensure compliance with stated objectives and requirements. Trainees are solicited for input regarding program effectiveness through the use of surveys, questionnaires, performance appraisals, staff evaluations, etc. Classes that are conducted frequently are 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 [TCG-51].

Table 7.6B. Positions Requiring Requalification Training

REQUALIFICATION FREQUENCY	EVERY QUARTER	SEMI-ANNUALLY	ANNUALLY
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.

REFERENCES

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7.6 TRAINING PROGRAMS**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section describes the purpose, function, and operating philosophy of the GROA training program and how this training integrates into the repository program. The systematic approach to training doctrine is explained as well as how it applies to the required training.

6. Opening Statement:

   The principal objective of the GROA Training and Qualification Program is to ensure job proficiency of all repository personnel involved in safety-related work. The program is designed to accommodate future growth and comply with applicable regulations and accreditation standards.

7. Main Body Outline:

   See attached.

8. Conclusion:

   This training program adheres to the systematic approach to training and follows the guidelines of the DOE Training Accreditation Program. As required, it is performance-based, consistent with training practices delineated by the DOE, and in compliance with 10 CFR 60, Subpart H.

9. Support Authors & Their Assignments: TBD.

7. Main Body Outline (Continued)

7.6 TRAINING PROGRAMS

7.6.1 Program Approach

7.6.1.1 General Employee Training

7.6.1.2 Technical Training

7.6.1.3 Development and Management Training

7.6.2 Continuing and Refresher Training

7.6.3 Training Program Evaluation

7.6.4 Training and Qualification Program Records

Section No. & Title: **7.6 TRAINING PROGRAMS**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Table No. **7.6A**

Title: **Initial Training Requirements for Key Repository Positions**

Content: (Reference 7.6)

B. Table No. **7.6B**

Title: **Positions Requiring Requalification Training**

Content: (Reference 7.6.2)

C. Table No. **7.6C**

Title:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **7.6 TRAINING PROGRAMS**

Lead Author & Phone No. Tom Geer, 702/794-7868

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1. DOE Training Accreditation Manuals Volumes 1, 2, 3; Final, published.
2.
3.
4.
5.
6.
7.
8.

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-42**

2. Section no. & title: **7.6 TRAINING PROGRAMS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   A Training and Qualification Program must be developed for the GROA personnel.

7. What is the information needed for?

   SAR Section 7.6.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-43**

2. Section no. & title: **7.6 TRAINING PROGRAMS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify all regulations and accreditation standards pertinent to a training program at the GROA.

7. What is the information needed for?

   SAR Section 7.6.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-44**

2. Section no. & title: **7.6 TRAINING PROGRAMS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify the management position within the technical support organization that is responsible for training.

7. What is the information needed for?

   SAR Section 7.6.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-45**

2. Section no. & title: **7.6 TRAINING PROGRAMS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify all specific training to be completed by key repository personnel prior to receipt of the first high level waste for emplacement.

7. What is the information needed for?

   SAR Section 7.6 and Table 7.6A.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-46**

2. Section no. & title: **7.6 TRAINING PROGRAMS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Identify GROA positions and job descriptions requiring requalification training and the required frequencies.

7. What is the information needed for?

   SAR Section 7.6.2 and Table 7.6B.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-51**

2. Section no. & title: **7.6 TRAINING PROGRAMS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   A discussion of DOE System #80 procedures for training records.

7. What is the information needed for?

   SAR Section 7.6.4.

8. What group is the probable information supplier?

   TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.7 Schedules

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7.7 SCHEDULES

Skeleton Text Has Not Been Developed For This Section

REFERENCES

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7.7 SCHEDULES**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words)

   This section describes the various schedules, the major tasks, activities and durations for the design and construction of the HLW repository. Critical paths are shown and major milestones identified.

6. Opening Statement: See item 5, above. [Coordinate with Section 1.3 of the license application.]

7. Main Body Outline:

7.7 INTRODUCTION

7.8 OVERALL PROJECT SCHEDULE (Reference Figure 7.7A, Table 7.7A)

7.9 DESIGN ACTIVITIES (Reference Table 7.7B, C)

7.10 CONSTRUCTION ACTIVITIES (Reference Table 7.7D)

7.11 CRITICAL PATHS

7.12 MAJOR MILESTONES

8. Conclusion:

   TBD. Note: Must determine if schedule is in accordance with NWPA as amended.

9. Support Authors & Their Assignments:

Section No. & Title: **7.7 SCHEDULES**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Figure No. **7.7A**

Caption: **Project Schedule**

Content: (Reference Section 7.7.1)

Overall project schedule in bar graph form with separate bars for design, procurement and construction phases.

C. Table No. **7.7B**

Title: **Design Schedule**

Content: (Reference Section 7.7.2)

Major design functions.

Section No. & Title: **7.7 SCHEDULES**

Lead Author & Phone No. J. M. Taipale, 702-794-1831

A. Table No. **7.7C**

Title: **Procurement Schedule**

Content: (Reference Section 7.7.2)

Major equipment items; critical lead times

B. Table No. **7.7D**

Title: **Construction Schedule**

Content: (Reference Section 7.7.3)

Major excavations; site work; buildings; etc.

C. Figure No. **7.7B**

Caption: **Waste Emplacement Schedule and Retrievability Period**

Content:

Waste emplacement schedule up to closure; include retrievability period.

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1.

2.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:
2. Section no. & title: **7.7 SCHEDULES**
3. Lead author & phone no: **Tom Geer (702) 794-7868**
4. Information request date: **2/21/92**
5. Work location: **M&O - Las Vegas**
6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.8 Identification of Operating Controls and Limits

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7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS

Skeleton Text Has Not Been Developed For This Section

REFERENCES

MGDS Annotated Outline Planning Package Date: 4/17/92
Form 1: Text

1. Section No. & Title: **7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words): This section contains the operating controls and limits for the repository and includes all aspects of operation that are important to safety, retrievability, and isolation. Numerical control or limit values and other pertinent data are provided to the fullest extent possible. The systems or operations to which the control applies, and the reasons for the control or limit with the specific unsafe conditions it is intended to prevent, are fully defined. Actions to be taken if the control or limit is exceeded are described. Maintenance, tests, and surveillance activities to be performed and the basis for the frequency of these activities are given.

   This section contains all pertinent information and an explicit detailed assessment supporting the choice of the item and its specific value or characteristics. Included in the bases as appropriate for each item is a description of: technical analyses, computations, experiments, a description of safety related equipment and the means by which the variable is monitored and controlled, and a description of the roles of operating procedures and protective systems in guarding against exceeding a limit or condition.

6. Opening Statement: Operating controls and limits for the repository are established to prevent or mitigate the consequences of design basis accidents, facilitate retrievability and ensure waste isolation.

7. Main Body Outline: See attached. [Coordinate with Section 2.6.]

7. Main Body Outline (Continued)

7.8.0 Introduction

This section systematically reviews the operating controls and limits for the following GROA subsystems.

7.8.0.1 Regulatory Design Criteria and Performance Objectives

7.8.1 Surface Facilities

7.8.1.1 Hot Cell
7.8.1.2 On-Site Radioactive Waste Management System
7.8.1.3 Fire and Explosion Protection System
7.8.1.4 Emergency Systems
7.8.1.5 Communication Systems
7.8.1.6 Utility Systems
7.8.1.7 Instrumentation and Control Systems
7.8.1.8 On-Site Transportation Systems
7.8.1.9 Ventilation Systems
7.8.1.10 Operations Support Systems
7.8.1.11 Decommissioning System
7.8.1.12 Other Surface Systems

7.8.2 Shafts and Ramps

7.8.2.1 Waste Ramp
7.8.2.2 Muck Ramp
7.8.2.3 Ventilation Intake Shafts
7.8.2.4 Ventilation Exhaust Shafts
7.8.2.5 Personnel and Materials Shafts
7.8.2.6 Decommissioning System
7.8.2.7 Other Shaft or Ramp Systems

7.8.3 Underground Facility

7.8.3.1 Excavation and Ground Support Systems
7.8.3.2 Muck Handling System
7.8.3.3 Ventilation System
7.8.3.4 Waste Emplacement System
7.8.3.5 Waste Retrieval System
7.8.3.6 Emergency System
7.8.3.7 Communication System
7.8.3.8 Operations Support System

7. Main Body Outline (Continued)

7.8.3.9 Decommissioning System
7.8.3.10 Other Underground Systems

7.8.4 Radiation Protection

7.8.4.1 Radiological Areas and Facilities
7.8.4.2 ALARA Limits and Controls Considerations
7.8.4.3 Shielding Limits and Controls
7.8.4.4 Radiological Monitoring Instrumentation

7.8.5 Interface of Structures, Systems, and Components

8. Conclusion: Operating controls and limits for the repository are established to prevent or mitigate the consequences of design basis accidents, facilitate retrievability and ensure waste isolation. The health and safety of the public and operating personnel are protected during operations by adhering to these established limits.

9. Support Authors and Their Assignments:

7.8.1 Jerry Fredrickson
7.8.2 Paul McKie
7.8.3 Paul McKie
7.8.4 Tom Williamson (Duke)

Section No. & Title: **7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Table No. **7.8x [General Format]**

Title: **Operating Limit/Control for [Name of GROA subsystem]**

Content:

1. Title

2. Specification (limits)

3. Applicability: systems or operations to which the control or limit applies should be clearly defined.

4. Objective: The reasons for the control or limit and the specific unsafe conditions it is intended to prevent.

5. Action: What is to be done if the control or limit is exceeded. Clearly define specific actions.

6. Surveillance Requirements: What maintenance and tests are to be performed and when.

7. Bases: The SAR should contain all pertinent information and an explicit detailed analysis and assessment supporting the choice of the item and its specific value or characteristics. The bases for each control or limit should contain a summary of the information in sufficient depth to indicate the completeness and validity of the supporting information and to provide justification for the control or limits. The following subjects may be appropriate for discussion in the bases section:

    - Technical Basis. The technical basis is derived from technical knowledge of the process and its characteristics and should support the choice of the particular variable as well as the value of the variable. The results of computations, experiments, or judgments should be stated, and analysis and evaluation should be summarized. (Refer to the applicable Safety Analysis Section(s).)

- Equipment. A safety limit often is protected by or closely related to certain equipment. Such a relation- ship should be noted, and the means by which the variable is monitored and controlled should be stated. The function of the equipment and how and why the requirement is selected should be noted here. In addition, the means by which surveillance is accomplished should be noted. If periodic surveillance is required, the basis for frequency of required action should be given.

- Operation. The margins and the bases that relate to the safety limits and the normal operating zones should be stated. The roles of operating procedures and of protective systems in guarding against exceeding a limit or condition should be stated. Include a brief discussion of such factors as system responses, process or operational transients, malfunctions, and procedural errors. Reference to related controls or limits should be made.

B. Figure/Table No.

Caption/Title:

Content:

C. Figure/Table No.

Caption/Title:

Content:

Section No. & Title: **7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS**

Lead Author & Phone No.: Tom Geer, 702/794-7868

Instructions: List all books, articles, or other references which are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer' Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

	Document Identifier	Document Description
1.	29 USC 651 et.seq.	Occupational Safety and Health Act
2.	30 USC 801 et.seq.	Mine Safety and Health Act
3.	33 USC 1251 et.seq.	Clean Water Act
4.	42 USC 300f et.seq.	Safe Drinking Water Act
5.	NWPA-42 USC 10101 et.seq.	Nuclear Waste Policy Act of 1982
6.	10 CFR 60	Disposal of High-Level Radioactive Wastes in Geologic Repositories
7.	10 CFR 73	Physical Protection of Plants and Materials
8.	10 CFR 960	General Guidelines for the Recommendation of Sites for Nuclear Waste Repositories
9.	10 CFR 961	Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste
10.	40 CFR 191	Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes
11.	DOE/RW-0247	Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program
12.	DOE Order 3790.1A	Federal Employee Occupational Safety and Health Program

13.	DOE Order 5480.11	Radiation Protection for Occupational Workers
14.	MOA RW/DP	Memorandum of 7/14/86 on Policy for Shipping Defense High-Level Waste (DHLW) to a Civilian Radioactive Waste Repository

15. Physical System Requirements "Dispose of Waste" (Draft)

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:

2. Section no. & title: **7.8 IDENTIFICATION OF OPERATING CONTROLS AND LIMITS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.9 Preservation of Records

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7.9 PRESERVATION OF RECORDS

Skeleton Text Has Not Been Developed For This Section

REFERENCES

MGDS Annotated Outline Planning Package Date: 4/17/92
Form 1: Text

1. Section No. & Title: **7.9 PRESERVATION OF RECORDS**

2. Lead Author & Phone No.: Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section discusses the system and procedures that DOE uses for the permanent preservation of site records. Those records include site data prior to the SCP; data from the SCP experiments and in situ tests; design records, construction records and performance records.

6. Opening Statement: This section discusses the system and procedures used by DOE for the permanent preservation of site records.

7. Main Body Outline: (Record keeping activity is covered in Section 7.5. This Section 7.9 covers only the permanent preservation of those records. Consideration should be given to combining these two sections)

   Include a discussion on compliance with 10 CFR 60.51(a)(2)(ii). This paragraph states,

   > Placement of records in the archives and land record systems of local, State and Federal government agencies, and archives elsewhere in the world, that would likely to be consulted by potential human intruders--such records to identify the location of the geologic repository operations area, including the underground facility, boreholes and shafts, and the boundaries of the controlled area, and the nature and hazard of the waste.

   [10 CFR 60.51 applies to the license amendment submitted prior to permanent closure, therefore, the discussion need not be definitive at this time].

   7.9.1 Records to be archived
   7.9.2 Record preservation methods
   7.9.3 Probable archive locations

8. Conclusion:

   The information discussed above and in Section 7.5 provides assurance that the project will comply with requirements of 10 CFR 60, Subpart D and 10 CFR 60.51(a)(2)(ii) prior to permanent closure of the repository.

9. Support Authors & Their Assignments:

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

A. Figure/Table No.

Caption/Title:

Content:

B. Figure No.

Caption:

Content:

C. Figure No.

Caption:

Content:

D. Figure No.

Caption:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title:

Lead Author & Phone No.

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1.

2.

3.

4.

5.

6.

7.

8.

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:
2. Section no. & title: **7.9 PRESERVATION OF RECORDS**
3. Lead author & phone no: **Tom Geer (702) 794-7868**
4. Information request date: **2/21/92**
5. Work location: **M&O - Las Vegas**
6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

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5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

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Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Section 7.10 Site Markers

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7.10 SITE MARKERS

This section describes the design and construction of site markers or monuments for the period following repository permanent closure. The Geologic Repository Operations Area (GROA), controlled area, and monuments are 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. [Therefore, the site markers comply with regulatory requirements.]

7.10.1 Site Marker Design Basis

Site markers have been 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

[TCG-47]

7.10.3 Compliance of Site Markers with Regulations

The GROA site monuments are designed to be as permanent as practicable. These monuments, in conjunction with the provisions for record preservation of Section 7.9, satisfy the regulatory requirements to minimize the potential for intrusion into the repository by human intruders.

Figure 7.10A. Site Marker Used After Permanent Closure

Figure 7.10B. Locations of Permanent Site Markers

REFERENCES

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

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **7.10 SITE MARKERS**

2. Lead Author & Phone No. Tom Geer, 702/794-7868

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section describes the design and construction of site markers or monuments for the period following repository permanent closure. The GROA, controlled area, and monuments are identified and located. Compliance with 10CFR21 (C) (8) and 10CFR60.51 (a) (2) (1) requirements is shown.

6. Opening Statement:

   This section describes the design and construction of site markers or monuments for the period following repository permanent closure. The GROA, controlled area, and monuments are identified and located. Compliance with 10 CFR 21 (C) (8) and 10 CFR 60.51 (a) (2) (1) requirements is shown. This controlled area and geologic repository operations area are identified by monuments which have been designed, fabricated, and emplaced to be as permanent as practicable. Therefore, the site markers comply with regulatory requirements.

7. Main Body Outline:

   7.10 INTRODUCTION

   7.10.1 Site Marker Design Basis

   7.10.2 Site Marker Description [Refer to Section 4.1 for controlled area and GROA identification]

   7.10.3 Compliance Of Site Markers With Regulations

8. Conclusion:

This controlled area and geologic repository operations area are identified by monuments which have been designed, fabricated, and emplaced to be as permanent as practicable. Therefore, the site markers comply with regulatory requirements.

9. Support Authors & Their Assignments:

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title: **7.10 SITE MARKERS**

Lead Author & Phone No. Tom Geer, 702/794-7868

A. Figure No. **7.10A**

Caption: **Site Marker Used After Permanent Closure**

Content: (Reference 7.10.2)

B. Figure No. **7.10B**

Caption: **Locations of Permanent Site Markers**

Content: (Reference 7.10.2)

C. Figure No.

Caption:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **7.10 SITE MARKERS**

Lead Author & Phone No. Tom Geer, 702/794-7868

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1. 10 CFR 60
2. 10 CFR 21
3. Applicable code/standard for monument design
4.
5.
6.
7.
8.

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number: **TCG-47**

2. Section no. & title: **7.10 SITE MARKERS**

3. Lead author & phone no: **Tom Geer (702) 794-7868**

4. Information request date: **2/21/92**

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   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 repository site.

7. What is the information needed for?

   SAR Section 7.10.2 and Figures 7.10A and 7.10B

8. What group is the probable information supplier?

   MGDS Design Organization.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    None identified.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title:

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver (702) 794-1871

Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log No.	Section	Date Issued	Date Response Received

Chapter 8.0 Performance Confirmation Program

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8.0 PERFORMANCE CONFIRMATION PROGRAM

Skeleton Text Has Not Been Developed For This Section

1. Section No. & Title: **8.0 PERFORMANCE CONFIRMATION PROGRAM**

2. Lead Author & Phone No. **W.J. Leonard (Placeholder) 702-794-1861**

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This chapter describes the performance confirmation program, started during site characterization and continuing until permanent closure. This program provides data indicating whether subsurface conditions and changes during construction and waste emplacement operations are within limits assumed in the license review. The program demonstrates that natural and engineered systems and components required are functioning as intended. The program includes in sites monitoring, laboratory and field tests, and in sites experiments.

6. Opening Statement:

   This chapter describes the program for performance confirmation to demonstrate that initial subsurface conditions and changes thereto during construction and emplacement operations are within limits assumed in the license review.

7. Main Body Outline: See attached.

8. Conclusion:

   The performance confirmation program demonstrates that the natural and engineered systems and components required for repository operation, or those which are designed or assumed to operate as barriers after permanent closure, are functioning as intended and anticipated.

9. Support Authors & Their Assignments:

7. Main Body Outline (Continued)

8.0 INTRODUCTION

- Describe the performance confirmation program applicable to subsurface conditions and changes thereto during construction and emplacement.
- Describe any additional performance confirmation activities that need to be carried out as a result of sensitivity analysis and model validation described in Chapter 6.

8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING

- Refer to Planning Package for Section 8.1.

8.2 PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA (GROA)

- Refer to Planning Package for Section 8.2.

8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM (EBS)

- Refer to Planning Package for Section 8.3.

8.4 (PERFORMANCE CONFIRMATION FOR) RADIATION PROTECTION

- Refer to Planning Package for Section 8.4.

8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE

- Refer to Planning Package for Section 8.5.

8.6 UNRESOLVED SAFETY QUESTIONS

- Refer to Planning Package for Section 8.6.

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title: **8.0 PERFORMANCE CONFIRMATION PROGRAM**

Lead Author & Phone No. W.J. Leonard (Placeholder) 702-794-1861

A. Figure/Table No.

Caption/Title:

Content:

B. Figure/Table No.

Caption/Title:

Content:

C. Figure/Table No.

Caption/Title:

Content:

Section No. & Title: **8.0 PERFORMANCE CONFIRMATION PROGRAM**

Lead Author & Phone No. W.J. Leonard (Placeholder) 702-794-1861

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1. Title 10, code of Federal Regulations, Part 60, Subpart F, 60.140 (U.S. Nuclear Regulatory Commission).

2. Title 10, Code of Federal Regulations, Part 60, Subpart F, 60.141 (U.S. Nuclear Regulatory Commission).

3. Title 10, Code of Federal Regulations, Part 60, Subpart F, 60.142 (U.S. Nuclear Regulatory Commission).

4.

5.

6.

7.

8.

MGDS Annotated Outline Information Need Form Date: 4/17/92
Form A: Information Request

1. Log number:
2. Section no. & title: **8.0 PERFORMANCE CONFIRMATION PROGRAM**
3. Lead author & phone no: **W. J. Leonard (Placeholder) (702) 794-1861**
4. Information request date:
5. Work location:
6. Type of information needed:
7. What is the information needed for?
8. What group is the probable information supplier?
9. When is the information needed?
10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.0 PERFORMANCE CONFIRMATION PROGRAM**

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): W. J. Leonard (Placeholder) 702-794-1861

   Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log Number on this form should be identical to the Log Number of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log. No.	Section	Date Issued	Date Response Received

Section 8.1 Performance Confirmation for the Natural Systems of the Geologic Setting

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8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING

Skeleton Text Has Not Been Developed For This Section

1. Section No. & Title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

2. Lead Author & Phone No. Clem Goewert 702-794-1859

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section describes the performance confirmation program for the natural systems including the geologic, hydrologic, geochemical, climatological, and meteorological systems. Sufficient background information is supplied, to permit evaluation of the confirmation program for each of the natural systems.

6. Opening Statement:

   The performance confirmation program is used to evaluate each of the natural systems during site characterization, construction, and operation through permanent closure. These natural systems include the geologic, hydrologic, geochemical, climatological, and meteorological systems.

7. Main Body Outline:

8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SYSTEM

- Summary of the Performance Confirmation Program (See Table 8.1A and Figure 8.1A).

8.1.1 Geologic System

- Summary of the Performance Confirmation Program for the Geologic System

7. Main Body Outline (Continued)

- Summary of Geologic System presented in the Safety Analysis Section (located in Section 3.3.1) (See Table 8.1.1A) including:

  - Limits of subsurface conditions
  - Geotechnical and design parameters
  - Design basis and assumptions
  - Parameters of the geologic system that may be changed by site characterization, construction, and operation
  - Parameters that could affect the performance of the repository.

- Field studies and analyses should be summarized (See Table 8.1.1B) including:

  - Description and summary of results of in-situ monitoring, geologic mapping, laboratory and field testing, and in-situ experiments used to confirm design assumptions and parameters and to evaluate changes from the baseline conditions.

8.1.2 Hydrologic System

- Summary of the performance confirmation program for the hydrologic system
- Summary of hydrologic system presented in the Safety Analysis Sections (See Table 8.1.2A) including:

  - Limits of subsurface conditions
  - Geotechnical and design parameters
  - Design basis and assumptions
  - Parameters of the geologic system that may be changed by site characterization, construction, and operation
  - Parameters that could affect the performance of the repository.

- Field studies and analysis should be summarized (See Table 8.1.2B) including:

  Description and summary of results of in-situ monitoring, geologic mapping, laboratory and field testing, and in-situ experiments used to confirm design assumptions and parameters and to evaluate changes from the baseline conditions.

7. Main Body Outline (Continued)

8.1.3 Geochemical System

- Summary of the performance confirmation program for the geochemical system
- Summary of geochemical system presented in the Safety Analysis Sections (See Table 8.1.3A) including:
  - Limits of subsurface conditions
  - Geotechnical and design parameters
  - Design basis and assumptions
  - Parameters of the geologic system that may be changed by site characterization, construction, and operation
  - Parameters that could affect the performance of the repository.
- Field studies and analysis should be summarized (See Table 8.1.3B) including:
  - Description and summary of results of in-situ monitoring, geologic mapping, laboratory and field testing, and in-situ experiments used and plan to confirm design assumptions and parameters and to evaluate changes from the baseline conditions.

8.1.4. Climatological and Meteorological Systems

- Summary of the performance confirmation program for the climatological and meteorological systems
- Summary of climatological and meteorological system presented in the Safety Analysis Sections (See Table 8.1.4A) including:
  - Climatological and meteorological design parameters
  - Design basis and assumptions relevant to the meteorological and climatological systems
  - Parameters that could affect the performance of the repository
- Details of any monitoring, testing, and experiments planned to confirm design assumptions and parameters, or to monitor and evaluate changes from the baseline conditions (See Table 8.1.4B).

8. Conclusion:

The performance confirmation program has been used to evaluate each of the natural systems during site characterization and during construction and will be used through construction until permanent construction. The program will demonstrate the natural systems consisting of the geologic, hydrologic, geochemical, climatological, and meteorological systems, can function as intended.

9. Support Authors & Their Assignments:

Section 8.1.1 Bill Distell_____
Section 8.1.2 _____
Section 8.1.3 _____
Section 8.1.4 _____

Section No. & Title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

Lead Author & Phone No. Clem Goewert 702-794-1859

A. Table No. **8.1A**

Title: **Outline of the Performance Confirmation Program for the Geologic Setting**

Content:

This table presents a general summary of the performance confirmation program for the geologic systems.

B. Figure No. **8.1A**

Caption: **Logic Diagram of the Performance Confirmation Diagram**

Content:

This figure presents the flow diagram of the confirmation process for evaluating programs in the process.

C. Table No. **8.1.1A**

Title: **Summary Table of the Geologic System**

Content:

This table summarizes the geologic system and program activities.

Section No. & Title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

Lead Author & Phone No. Clem Goewert 702-794-1859

A. Table No. **8.1.1B**

Title: **Summary of Geologic Systems Programs**

Content:

This table summarizes the programs, field studies, design parameters, etc.

B. Table No. **8.1.2A**

Title: **Summary Table of the Hydrologic System**

Content:

This table summarizes the Hydrologic system and program activities.

C. Table No. **8.1.2B**

Title: **Summary Hydrologic Systems Programs**

Content:

This table summarizes the programs, field studies, design parameter, etc.

D. Table No. **8.1.3A**

Title: **Summary Table of the Geochemical System**

Content:

This table summarizes the Geochemical system and program activities.

Section No. & Title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

Lead Author & Phone No. Clem Goewert 702-794-1859

A. Figure No. **8.1.3B**

Caption: **Summary of Geochemical Systems Programs**

Content:

This table summarizes the programs, field studies, design parameters, etc.

B. Table No. **8.1.4A**

Title: **Summary Table of the Climatological and Meteorological System and Program Activities**

Content:

This table summarizes the climatological and meteorological system and program activities.

C. Table No. **8.1.4B**

Title: **Summary of Climatological and Meteorological Confirmation Programs**

Content:

This table summarizes the programs, field studies, design parameters, etc.

Section No. & Title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

Lead Author & Phone No. Clem Goewert 702-794-1859

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1.

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MGDS Annotated Outline Information Need Form Date: 4/17/92
Form A: Information Request

1. Log number:

2. Section no. & title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

3. Lead author & phone no: **Clem Geowert 702-794-1859**

4. Information request date:

5. Work location:

6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.1 PERFORMANCE CONFIRMATION FOR THE NATURAL SYSTEMS OF THE GEOLOGIC SETTING**

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Clem Goewert 702-794-1859

   Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log Number on this form should be identical to the Log Number of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log. No.	Section	Date Issued	Date Response Received

Section 8.2 Performance Confirmation for the Structures, Systems, and Components of the Geologic Repository Operations Area

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8.2 PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA

Skeleton Text Has Not Been Developed For This Section

1. Section No. & Title: **8.2 PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA**

2. Lead Author & Phone No. W.J. Leonard (Placeholder) 702-794-1861

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section describes the performance confirmation program, conducted on the Geologic Repository Operations Area (GROA) post-closure natural and engineered structures, systems, and components. It is applicable to those structures, systems, and components classified "important to isolation."

6. Opening Statement:

   GROA post-closure natural and engineered. The performance confirmation program applicable to structures, systems, and components classified "important to isolation" is described in the following sub-sections.

7. See Outline Attached

8. Conclusion:

   The performance confirmation program applies for GROA post-closure natural and engineered structures systems and components classified "important to isolation" provide sufficient confidence that the requirements of 10 CFR 60.140, 141, and 142 are met or exceeded.

9. Support Authors & Their Assignments:

7. Main Body Outline (Continued)

8.2.1 Surface Facilities

- Specific performance confirmation program for surface facilities is not needed
- Performance confirmation program for other parts of the program which could affect surface facilities design

8.2.2 Shafts and Ramps

- Description of performance confirmation testing for shafts and ramps through all phases of planning and implementation (see Table 8.2A)

  Phase 1 - Collection of baseline data for the penetrated strata and the shaft and ramp engineered components

  Phase 2 - Initial performance assessments for the shaft and ramp

  Phase 3 - Revision of performance confirmation plans based on data selected during construction

  Phase 4 - Revision of performance confirmation plans based on data collected during subsequent operations

  Phase 5 - Full-scale testing to evaluate the effectiveness of seals, grout, plugs, and backfill and to evaluate the effectiveness of drainage

  Phase 6 - Performance assessments supporting permanent closure.

- Description and discussion of computer codes used for performance confirmation, including those used in assessment of interaction effects of the thermal load on the liners, scale, and backfill.
- Description of the facilities where performance confirmation testing is accomplished.
- Description of the component in which testing is conducted and parameters measured.
- Durations of the tests.
- Description of nuclear material use, if any.

7. Main Body Outline (Continued)

8.2.3 Underground Facility

- Description of performance confirmation testing for the underground facility (see Table 8.2B)

  Phase 1 - Collection of baseline data for the host rock and engineered components

  Phase 2 - Initial performance assessments for the underground facility

  Phase 3 - Revision of performance confirmation plans based on data collected during construction

  Phase 4 - Revision of performance confirmation plans based on data collected during subsequent operation

  Phase 5 - Full-scale testing to evaluate the effectiveness of employment area seals, grouts, plugs, and backfill

  Phase 6 - Performance assessments supporting permanent closure

- Description and discussion of component codes used for performance confirmation, including those used in assessment of interaction effects of the thermal load on the liners, seals, and backfill. Validation of codes and models.
- Description of the facilities where performance confirmation testing is accomplished.
- Description of the component in which testing is conducted and parameters measured.
- Duration and sequencing of tests.
- Description of nuclear material used, if any.

Section No. & Title: **8.2 PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA**

Lead Author & Phone No. W.J. Leonard, (Placeholder)
702-794-1861

A. Table No. **8.2A**

Title: **Performance Confirmation Testing for Shafts and Ramps**

Content:

A table, spanning the period from site characterization to just prior to permanent closure, with column headings (horizontal) and information (vertical). The column headings are (from left to right):

PHASE/COMPONENT/PARAMETERS/TEST/CODE USED/
TEST FACILITY/DURATION/DISCUSSION

B. Table No. **8.2B**

Title: **Performance Confirmation Testing for the Underground Facility**

Content:

A table, spanning the period from site characterization to just prior to permanent closure, with column headings (horizontal) and information (vertical). The column headings are (from left to right):

PHASE/COMPONENT/PARAMETERS/TEST/CODE USED/
TEST FACILITY/DURATION/SEQUENCING/DISCUSSION

Section No. & Title: **8.2** **PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA**

Lead Author & Phone No. W.J. Leonard (Placeholder)
702-794-1861

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer' Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

1. Title 10, Code of Federal Regulations, Part 60, Subpart F, 60.140 (U.S. Nuclear Regulatory Commission)

2. Title 10, Code of Federal Regulations, Part 60, Subpart F, 60.141 (U.S. Nuclear Regulatory Commission)

3. Title 10, Code of Federal Regulations, Part 60, Subpart F, 60.142 (U.S. Nuclear Regulatory Commission)

4.

5.

6.

7.

8.

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:

2. Section no. & title: **8.2 PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA**

3. Lead author & phone no: **W. J. Leonard (Placeholder) (702) 794-1861**

4. Information request date: **2/21/92**

5. Work location:

6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.2 PERFORMANCE CONFIRMATION FOR THE STRUCTURES, SYSTEMS, AND COMPONENTS OF THE GEOLOGIC REPOSITORY OPERATIONS AREA**

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Marshall Weaver 702-794-1871

   Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log Number on this form should be identical to the Log Number of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

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

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log. No.	Section	Date Issued	Date Response Received

Section 8.3 Performance Confirmation for the Engineered Barrier System

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8.3 PERFORMANCE CRITERIA FOR THE ENGINEERED BARRIER SYSTEM

Skeleton Text Has Not Been Developed For This Section

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **8.3** **PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

2. Lead Author & Phone No. Paul Childress 702-794-1824

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section identifies potential mechanisms for the Engineered Barrier System (EBS) failure that are anticipated, analyzes the effects of such failures, presents the rationale for EBS performance, and outlines the series of confirmatory tests and monitoring required to provide regulatory and public confidence.

6. Opening Statement:

   Confirmation of performance for the EBS is required for anticipated processes and events.

7. Main Body Outline:

   See attached outline

8. Conclusion:

   TBD.

9. Support Authors & Their Assignments:

   Paul McKie - Support
   Marshall Weaver - Support
   Tom Statton - Support

7. Main Body Outline (Continued)

8.3 INTRODUCTION

8.3.1 Waste Package Monitoring

8.3.1.1 Describe effects on waste form of overall performance confirmation program

8.3.1.2 Description of program to monitor representative in-situ waste pack

- Radiation
- Temperature
- Water
- Package Integrity.

8.3.1.3 Description of program to monitor near-field environment

- Temperature
- Ground Water.

8.3.1.4 Waste Package Lab Test Program

- Component
- Prototype.

8.3.1.5 Duration of Post-Emplacement Monitoring Program

8.3.1.6 Demonstration of Compliance

- Review of expected environment
- Review of environmental assumptions for analysis
- Review of monitoring program to ensure consistency of environmental assumptions.

8.3.2 EBS/Waste Package Performance Objectives

8.3.2.1 Failure Mode and Effects Analysis

- List anticipated and unlikely scenarios
- List effects of each scenario.

7. Main Body Outline (Continued)

8.3.2.2 Environmental Conditions for Confirmatory Tests and Analyses

- Document conditions and relate to scenarios in Section 8.3.2.1

8.3.2.3 Confirmatory Tests and Analysis

- Describe methodology
- Document tests and analyses.

8.3.2.4 EBS Performance Allocation

- Discuss role of each component in EBS to overall performance.

8.3.2.5 EBS Performance Confirmation Results

- Discuss results of tests and analyses.

Section No. & Title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

Lead Author & Phone No. Paul Childress 702-794-1824

A. Figure No. **8.3A**

Caption: **Engineered Barrier System**

Content:

Pictorial schematic of EBS components.

B. Figure No. **8.3B**

Caption: **Waste Package**

Content:

Pictorial schematic of Waste Package components.

C. Figure No. **8.3C**

Caption: **Engineered Barrier System Performance Sequence**

Content:

Flow chart of functions.

Section No. & Title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

Lead Author & Phone No. Paul Childress 702-794-1824

A. Figure No. **8.3D**

Caption: **Engineered Barrier System Performance Versus Requirements**

Content:

Graph of radionuclide release versus time.

B. Table No. **8.3A**

Title: **Waste Package In-Situ Monitoring Program**

Content:

C. Table No. **8.3B**

Title: **Engineered Barrier System Environmental Monitoring Program**

Content:

Section No. & Title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

Lead Author & Phone No. Paul Childress 702-794-1824

A. Table No. **8.3C**

Title: **Waste Package Testing Program**

Content:

B. Table No. **8.3D**

Title: **Potential Mechanisms for Unacceptable Engineered Barrier System Performance**

Content:

C. Table No. **8.3E**

Title: **Engineered Barrier System Performance Scenarios**

Content:

Section No. & Title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

Lead Author & Phone No. Paul Childress 702-794-1824

A. Table No. **8.3F**

Title: **Engineered Barrier System Performance Analyses**

Content:

B. Figure/Table No.

Caption/Title:

Content:

C. Figure/Table No.

Caption/Title:

Content:

Section No. & Title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

Lead Author & Phone No.: Paul Childress 702-794-1824

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan, for guidance on formatting reference information.

1. Waste Acceptance Specifications
2. 10 CFR 60
3. EPA Regulations
4. Waste Form Compliance Plans
5. Waste Qualification Tests
6. Waste Package Test Reports
7. Site Characterization
8. Waste Form Test Reports
9. Performance Acceptance

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:

2. Section no. & title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

3. Lead author & phone no: **Paul Childress**

4. Information request date:

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   Environmental Monitoring Techniques

7. What is the information needed for?

   Section 8.3.1.3.

8. What group is the probable information supplier?

   Woodward-Clyde and Morrison Knudsen - Lead TBD.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    Unknown.

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:

2. Section no. & title: **8.3 PERFORMANCE CONFIRMATION FOR THE ENGINEERED BARRIER SYSTEM**

3. Lead author & phone no: **Paul Childress**
4. Information request date:

5. Work location: **M&O - Las Vegas**

6. Type of information needed:

   1) **Schematic of EBS components**
   2) **Schematic of Waste package components**
   3) **Flowchart of EBS function**
   4) **Comparison EBS modeled performance versus performance requirements. (Radionuclide release versus time)**
   5) **Listing of waste package ____ monitoring system, locations, data to be provided, etc.**
   6) **Listing of EBS Environmental Monitoring systems, location, data to be provided, etc.**
   7) **Listing of Waste package tests, types of tests, data to be provided.**

7. What is the information needed for?

   Section 8.3

8. What group is the probable information supplier?

   Performance Assessment group.

9. When is the information needed?

   TBD.

10. What kind of related information is already available in references, etc.?

    YMP SCP

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.3 PERFORMANCE CONFIRMATION FOR ENGINEERED BARRIER SYSTEM**

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): Paul Childress

   Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log Number on this form should be identical to the Log Number of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log. No.	Section	Date Issued	Date Response Received

Section 8.4 Radiation Protection

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8.4 RADIATION PROTECTION

Skeleton Text Has Not Been Developed For This Section

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **8.4 RADIATION PROTECTION**

2. Lead Author & Phone No. W.J. Leonard (Placeholder)
   702-794-1861

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section describes the plans to monitor and control internal and external radiological exposure to workers and to members of the public that might result from tests and experiments conducted during the performance confirmation period.

6. Opening Statement:

   This section provides a description of the measures established to safeguard workers and the public from radiation hazards during the performance confirmation period.

7. Main Body Outline:

8.4 RADIATION PROTECTION

- Describe plans to monitor and control radiological exposure to workers and to members of the public that might result from tests and experiments conducted during the performance confirmation period.

- Internal exposure

  - Fixed facilities
  - Portable facilities
  - Equipment
  - Instrumentation.

7. Main Body Outline (Continued)

- External exposure
  - Fixed facilities
  - Portable facilities
  - Equipment
  - Instrumentation.

- Follow format of Section 4.1.4 for the GROA
- Provide the analysis required to show compliance of plans with established requirements
- 10 CFR 20
- Other generally applicable environmental standards for radioactivity as established by Environmental Protection Agency (EPA)
- Follow formats given in Section 4.2 for restricted areas and in Section 4.5.1 for unrestricted areas
- Discuss health physics program for aspects unique to the performance confirmation program, referencing Section 8.2 as necessary.

8. Conclusion:

Adequate measures have been established to assure that workers and the public are safeguarded from radiation hazards during the construction period.

9. Support Authors & Their Assignments:

Mark Fortsch, logical lead author

MGDS Annotated Outline Planning Package
Form 2: Figures & Tables

Date: 4/17/92

Section No. & Title: **8.4 RADIATION PROTECTION**

Lead Author & Phone No. W.J. Leonard (Placeholder)
702-794-1861

A. Table No.

Title:

Content:

B. Figure No.

Caption:

Content:

C. Table No.

Title:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **8.4 RADIATION PROTECTION**

Lead Author & Phone No.:

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer's Guide, Appendix D of the Annotated Outline Management Plan, for guidance on formatting reference information.

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2.

3.

4.

5.

6.

7.

8.

9.

MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:
2. Section no. & title: **8.4 RADIATION PROTECTION**
3. Lead author & phone no: **W. J. Leonard (Placeholder) (702) 794-1861**
4. Information request date:
5. Work location:
6. Type of information needed:
7. What is the information needed for?
8. What group is the probable information supplier?
9. When is the information needed?
10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.4 RADIATION PROTECTION**

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester): W.J. Leonard 702-794-1861

   Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log Number on this form should be identical to the Log Number of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log. No.	Section	Date Issued	Date Response Received

Section 8.5 Analysis of Changes from Performance Confirmation Baseline

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8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE

Skeleton Text Has Not Been Developed For This Section

1. Section No. & Title: **8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE**

2. Lead Author & Phone No. W.J. Leonard (Placeholder)
702-794-1861

3. First Phase Planning Package Due: 6/21/91

Second Phase Planning Package Due: 10/18/91

First Phase Skeleton Draft Due: 12/30/91

Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
(Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

This section describes the plan for monitoring and analyzing changes from the baseline condition of parameters that could affect the performance of the geologic repository. It includes a specific discussion of the process for feedback, analysis of data, and implementation of appropriate action.

6. Opening Statement:

Changes from the baseline condition of parameters that could affect the performance of the repository are monitored and analyzed. Appropriate action determined to be necessary is implemented.

7. Main Body Outline: See attached.

- Monitoring system (See Table 8.5A)
- Data feedback
- Data analysis
- Determination of appropriate action, based on results of analysis
- Implementation of appropriate action
  - Immediate action
  - Delayed action.

8. Conclusion:

   Through monitoring of changes from the baseline condition of parameters that could affect the performance of the repository, and through analysis of such changes, followed by appropriate action, acceptably safe performance of the repository can be assured regarding safety of the public and workers and preservation of the environment.

9. Support Authors & Their Assignments:

Section No. & Title: **8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE**

Lead Author & Phone No. W.J. Leonard, (Placeholder)
702-794-1861

A. Table No. **8.5A**

Title: **Monitoring System**

Content:

PERFORMANCE CONFIRMATION BASELINE PARAMETER	METHOD OF MONITORING
1. 2. 3. 4. 5.	1. 2. 3. 4. 5.

B. Figure/Table No.

Caption/Title:

Content:

C. Figure/Table No.

Caption/Title:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE**

Lead Author & Phone No. W.J. Leonard (Placeholder) 702-794-1861

Instructions: List all books, articles, or other references that are expected to be used for the section. Indicate whether references are draft or final, and whether they are publicly available (i.e., published). Refer to the Writer' Guide, Appendix D of the Annotated Outline Management Plan for guidance on formatting reference information.

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:

2. Section no. & title: **8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE**

3. Lead author & phone no: **W. J. Leonard (Placeholder) (702) 794-1861**

4. Information request date:

5. Work location:

6. Type of information needed:

7. What is the information needed for?

8. What group is the probable information supplier?

9. When is the information needed?

10. What kind of related information is already available in references, etc.?

---

11. Response by (name):

12. Response date:

13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.5 ANALYSIS OF CHANGES FROM PERFORMANCE CONFIRMATION BASELINE**

2. Person Supplying Information:

3. Phone No.:

4. Lead Author (Requester):

   Instructions: Information suppliers may use this form to communicate information that has been requested by lead authors via Information Request Forms. The Log No. on this form should be identical to the Log No. of the Information Request Form.

5. Response by Information Supplier:

Note: Attach additional sheets if necessary.

MGDS Annotated Outline Information Need Form
Form C: Information Request Tracking Log

Date: 4/17/92

Note: This is a recommended format for a manual tracking system. Other tracking methods such as a simple computer data base are also acceptable.

Date:

Lead Author:

Log. No.	Section	Date Issued	Date Response Received

Section 8.6 Unresolved Safety Questions

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8.6 UNRESOLVED SAFETY QUESTIONS

Skeleton Text Has Not Been Developed For This Section

MGDS Annotated Outline Planning Package
Form 1: Text

Date: 4/17/92

1. Section No. & Title: **8.6 UNRESOLVED SAFETY QUESTIONS**

2. Lead Author & Phone No. W.J. Leonard (Placeholder)
   702-794-1861

3. First Phase Planning Package Due: 6/21/91

   Second Phase Planning Package Due: 10/18/91

   First Phase Skeleton Draft Due: 12/30/91

   Second Phase Skeleton Draft Due: 3/15/92

4. Plan Approved: W.R. Griffin 8/27/91
   (Licensing Mgr & Lead Author)

5. Section Summary (Approximately 100 Words):

   This section identifies all unresolved safety questions and provides a schedule indicating when they will be resolved.

6. Opening Statement:

   The following is a description of all unresolved safety questions. Each question is identified, explained concerning scope, depth, and specifics of the question. A schedule for resolution is provided.

7. Main Body Outline: See attached (Table 8.6A).

   - Unresolved Safety Questions (Ranked by level of severity)-See Table 8.6B

     - Questions (first and subsequent questions repeat outline sequence)
     - Background
     - Discussion

       -- Scope, depth
       -- Status (partial resolution accomplished, etc.)

     - Schedule for resolution.

8. Conclusion:

   All unresolved safety questions will be resolved in accordance with the resolution schedule contained herein. The repository performance will be expected to be within acceptable safety parameters upon completion of these resolutions.

9. Support Authors & Their Assignments:

Section No. & Title: **8.6 UNRESOLVED SAFETY QUESTIONS**

Lead Author & Phone No. W.J. Leonard, (Placeholder)
702-794-1861

A. Table No. **8.6A**

Title: **Unresolved Safety Questions**

Content:

SAFETY QUESTION	LEVEL OF SEVERITY	STATUS	SCHEDULED RESOLUTION BY
1. 2. 3. 4.	I I II III		June 30, 2004

B. Table No. **8.6B**

Title: **Levels of Severity for Unresolved Safety Questions**

Content:

LEVEL	DEFINITION
I II III	A safety question, which if not resolved could result in...

C. Figure/Table No.

Caption/Title:

Content:

MGDS Annotated Outline Planning Package
Form 3: References

Date: 4/17/92

Section No. & Title: **8.6 UNRESOLVED SAFETY QUESTIONS**

Lead Author & Phone No. W.J. Leonard (Placeholder)
702-794-1861

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MGDS Annotated Outline Information Need Form
Form A: Information Request

Date: 4/17/92

1. Log number:
2. Section no. & title: **8.6 UNRESOLVED SAFETY QUESTIONS**
3. Lead author & phone no: **W.J. Leonard (Placeholder) 703-794-1861**
4. Information request date:
5. Work location:
6. Type of information needed:
7. What is the information needed for?
8. What group is the probable information supplier?
9. When is the information needed?
10. What kind of related information is already available in references, etc.?

---

11. Response by (name):
12. Response date:
13. Response:

MGDS Annotated Outline Information Need Form
Form B: Information Response

Date: 4/17/92

1. Section No. & Title: **8.6 UNRESOLVED SAFETY QUESTIONS**

2. Person Supplying Information: W.J. Leonard (Placeholder)
   703-794-1861

3. Phone No.:

4. Lead Author (Requester):

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Lead Author:

Log. No.	Section	Date Issued	Date Response Received