U.S. DEPARTMENT OF ENERGY

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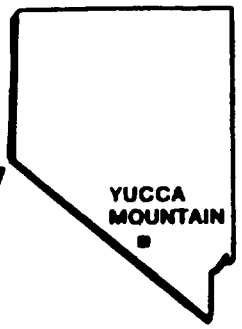

YUCCA MOUNTAIN PROJECT

ENVIRONMENTAL RADIOLOGICAL MONITORING TECHNICAL PROCEDURE MANUAL

VOLUME I

UNCONTROLLED

WORK PERFORMED UNDER CONTRACT NO. DE-AC08-87NV10576

Technical & Management Support Services

SCIENCE APPLICATIONS INTERNATIONAL CORPORATION

Environmental Radiological Monitoring
Technical Procedural Manual
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Issued By

2/1/90
Date

Prepared \2/1/90

Title
Radiation Safety Control Procedure (Radiation, Contamination, and Radioactive Material)

No. BTP-ER-011 Rev. 0
Date 5/31/89
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I. PURPOSE/SCOPE

This procedure specifies the steps to follow in implementing a radiation, radioactive contamination, and radioactive materials control program for the Technical and Management Support Services (T&MSS) contractor's Environmental Radiological Monitoring Program. This procedure addresses contamination and radiation surveys, decontamination, and radioactive materials management. This procedure does not explicitly address contamination control, since contamination control is an integral part of Environmental Radiological Monitoring Branch Technical Procedures (ERBTPs).

II. APPLICABILITY

This procedure is applicable to all T&MSS activities implemented in accordance with ERBTPs and to all facilities in which radioactive material is handled or used for which T&MSS has prime responsibility. This procedure is also applicable to all activities and facilities specifically designated by the Radiological Field Programs Division (RFPD) Manager.

III. DEFINITIONS

Hold Point

A point designated in an ERBTP or Job Performance Aid (JPA) that requires Quality Assurance/Quality Control (QA/QC) personnel concurrence and sign-off before the ERBTP/JPA can be continued, unless otherwise specified in the text associated with the Hold Point.

Job Performance Aid

An extension of a procedure, that contains the details of the steps to be followed in implementing a specific task. It contains minimal information (only that required to complete the activity), to facilitate use in the field, and is considered part of the procedure that references it. (See BTP-ER-001 for further information.)

APPROVALS

WMPO Branch Chief	Date 5/9/89	Radiological Field Program Division Manager	Date 5/3/89
WMPO Project Quality Manager	Date 5/12/89	Environmental Operations Department Manager	Date 5/3/89

Level A, B, and C Health Physics Technicians

Personnel who are qualified per the Level A, B, and C Health Physics Technician training programs, respectively. These programs are described in the "Radiological Field Programs Branch Training Requirements and Qualification Document" (see Appendix A-2, Training, in the Environmental Radiological Monitoring Technical Procedure Manual (ERMTPM)).

Level A, B, and C Health Physicists

Personnel who are qualified per the Level A, B, and C Health Physicist training programs, respectively. These programs are described in the "Radiological Field Programs Branch Training Requirements and Qualification Document" (see Appendix A-2, Training, in the ERMTPM).

Level A, B, and C Radiochemistry Technicians

Personnel who are qualified per the Level A, B, and C Radiochemistry Technician training programs, respectively; or equivalently qualified as Radiochemists (as specified in the Radiochemist training programs). These programs are described in the "Radiological Field Programs Branch Training Requirements and Qualification Document" (see Appendix A-2, Training, in the ERMTPM).

Level A, B, and C Radiochemists

Personnel who are qualified per the Level A, B, and C Radiochemist training programs, respectively. These programs are described in the "Radiological Field Programs Branch Training Requirements and Qualification Document" (see Appendix A-2, Training, in the ERMTPM).

Quality Assurance/Quality Control

Yucca Mountain Project Office (Project Office) personnel who qualify as QA/QC per the "Radiological Field Programs Branch Training Requirements and Qualification Document" (see Appendix A-2, Training, in the ERMTPM).

Technical and Management Support Services

T&MSS contractor personnel assigned to the Project Office. These individuals are responsible for implementation of the environmental radiological monitoring activities and associated activities as delineated in approved ERBTPs and JPAs.

IV. RESPONSIBILITIES

Radiological Field Programs Division Manager or Lead Health Phsicist (LHP)

The RFPD Manager or LHP, with the technical support of the Senior Health Physicist (SHP), is responsible for ensuring implementation of this procedure by qualified personnel. The RFPD Manager or LHP is also responsible for ensuring that all personnel who may need to implement portions of this procedure receive appropriate training (as a minimum, Modules 5 and 7 in Appendix A-2, Training, in the ERMTPM). The RFPD Manager or LHP is responsible for ensuring that all equipment and personnel required to implement this program are available when needed. In addition, the RFPD Manager or LHP is responsible for reviewing, with the SHP, all data sheets produced per this procedure for completeness and accuracy, and to ensure the implementation of all Project Office and T&MSS radiation safety requirements. In addition, the RFPD Manager and LHP are responsible for ensuring that T&MSS personnel have a safe working environment.

Senior Health Physicist

The SHP is responsible for providing technical support to ensure implementation of this procedure by qualified personnel. The SHP is also responsible for ensuring the technical adequacy of the procedures, training, and review of data sheets associated with this procedure. In addition, the SHP, in consultation with the RFPD Manager or LHP is responsible for reviewing the results of this procedure, as discussed above, and ensuring that T&MSS personnel have a safe working environment.

Level A, B, and C RFPD Personnel and Other Specifically Designated Personnel

These personnel are responsible for completing the assigned activities in this procedure and associated JPAs as directed by the RFPD Manager and the SHP. The individual's degree and type of involvement will be dependent on the level of his or her training as stipulated in the "Radiological Field Programs Branch Training Requirements and Qualification Document" (see Appendix A-2, Training, in the ERMTPM).

Quality Assurance/Quality Control

QA/QC personnel are responsible for completing those activities specified as their responsibility in this procedure and associated JPAs, as specifically related to the completion of Hold Points.

V. PROCEDURE

MATERIAL NOTE

See applicable JPAs (see Section VI).

NOTE

This procedure addresses activities in the following areas:

1. Control of radioactive materials and sources.
2. Leak testing of radioactive sources.
3. Area radiation surveys.
4. Contamination surveys.
5. Decontamination.
6. Contamination control.

The surveys described throughout this procedure are conducted with various survey instruments per JPA-ER-004, JPA-ER-037, JPA-ER-035, JPA-ER-031, JPA-ER-030, and JPA-ER-036.

A. Control of Radioactive Materials and Sources

This section specifies the steps and JPAs that address the control of radioactive material and sources for activities performed by T&MSS.

A.1. Following receipt of radioactive sources or materials (in accordance with BTP-ER-019, "Handling and Shipping Radioactive Material," and AP 4.3, "Possession, Procurement, Shipments, and Receipt of Radioactive Material"), the material will be controlled in accordance with JPA-ER-051.

2. Once a sample or other item is determined to be radioactive material, it shall be controlled and handled per JPA-ER-052.

3. The transfer of radioactive material or sources to the Sample Management Facility (SMF) shall be in accordance with JPA-ER-054.

4. The transfer of radioactive material or sources to Renolds Electric & Engineering Company (REECo) or the Nuclear Radiation Assessment Division of the U.S. Environmental Protection Agency (NRAD/EPA) shall be in accordance with JPA-ER-056 and JPA-ER-099, if applicable.

B.5. The transfer of radioactive material or sources to organizations other than the SMF, REECo, and the NRAD/EPA shall be in accordance with BTP-ER-019.

6. The transfer of radioactive material or sources or potential radioactive material for disposal shall be conducted per JPA-ER-057.

7. Materials identified as radioactive, but not addressed previously in this section, shall be controlled per JPA-ER-012.

B. Leak Testing of Radioactive Sources

NOTE

The official analysis for establishing compliance with Nevada Test Site (NTS) requirements of leak-test smears will be performed by REECo/RAMATROL or the NRAD/EPA.

B.1. All beta-gamma radiation sources shall be leak-tested per JPA-ER-053 at least once every three months.

2. Alpha-emitting radiation sources shall be leak-tested at least once every three months per JPA-ER-053, JPA-ER-055 (for the Pylon Rn-190 source), or JPA-ER-058 (for the Pylon RNC source), as appropriate.

C. Area Radiation Surveys

NOTE

Radiation surveys shall be performed and documented in accordance with JPA-ER-006. This section does not apply to normal office activities or activities off the NTS, unless these activities involve the use of licensable quantities of radioactive material or other special conditions exist as determined by the RFPD Manager, the LHP, or the SHP.

C.1. The Health Physics Trailer and Building 4522 (located in Area 25 of the NTS), once in use, shall be surveyed for ambient radiation at least quarterly per JPA-ER-005.

C.2. Any T&MSS work area where a significant field work activity will take place, including an area 50 feet in all directions beyond the work areas (excluding work addressed in step C.1), shall be surveyed prior to initiation of the activity (or within 30 days of the effective date of Revision 0 of this procedure and JPA-ER-008) per JPA-ER-008.

NOTE

Significant field work activity is 1 man-month or more per 12-month period.

3. A work area addressed in step C.1 shall be resurveyed per JPA-ER-008 within 30 days of termination of the use of a radioactive source or other material capable of producing an exposure rate, at one meter (from the source or other material), of greater than 0.1 mrem per hour.

D. Contamination Surveys

NOTE

Contamination surveys shall be performed and documented in accordance with JPA-ER-006.

D.1. All personnel working with radioactive material (other than the Pylon Rn-190 source), or working in an area where there is significant potential for the spread of radioactive contamination (as determined by professional judgment) to personnel, equipment, or the facility, shall follow the procedures specified in Section F, Contamination Control.

D.2. All personnel working with the Pylon Rn-190 source shall follow the survey procedure specified in JPA-ER-013. Smears taken in this survey shall be evaluated per JPA-ER-038.

D.3. All personnel working with radioactive material or sources in a possibly contaminated area or in a radiological-controlled area (as defined in the T&MSS Contractor Environment, Safety, and Health Protection Implementation Plan) shall be surveyed per JPA-ER-001 when terminating the activity or leaving the area. This step only applies to an activity or location where there is no significant potential for uncontained radioactive material. Smears taken during these surveys will be evaluated per JPA-ER-038. A special JPA will be prepared and posted at the entrance to any work area where there is significant potential for contamination. In addition, specific training will typically be required for any work activity in such an area. No such activities are currently identified, except those described in Section F.

4. The Health Physics Trailer shall be surveyed monthly per JPA-ER-005. Smears taken in this survey shall be evaluated per JPA-ER-038.

5. Building 4522 and the area where contained radioactive samples are handled or stored in the SMF or other facilities (this applies only when a radioactive material is transferred to them or handled in them) shall be surveyed quarterly per JPA-ER-011. Smears taken in this survey shall be evaluated per JPA-ER-038.

6. Equipment, samples, and other items removed from areas described in steps D.1 and D.2 shall be surveyed (JPA-ER-007) immediately prior to their time of removal and decontaminated as needed per Section E, Decontamination. Smears taken during these surveys shall be evaluated per JPA-ER-038.

E. Decontamination

E.1. The decontamination of personnel shall be completed per JPA-ER-002.

2. The decontamination of T&MSS work areas, materials, and other areas shall be completed in accordance with JPA-ER-003.

F. Contamination Control

The activities currently implemented by T&MSS have no significant potential for the spread of contamination, with the possible exception of the activity addressed in step D.2. Thus, contamination control beyond that addressed in the ERBTPs and JPAs as integral parts of the activity, and JPA-ER-013, are not addressed further in this procedure. As new activities are added to this program or new data on existing activities become available, the SHP and the RFPD Manager shall reevaluate this decision. It should be noted that contamination control shall also be included in the training program associated with the specific activities. If a condition within the responsibility of T&MSS involving radioactive contamination not covered by existing JPAs is determined to exist, the actions associated with its control and mitigation shall be directed by a Level C Qualified Health Physicist. In addition, BTP-ER-034 shall be implemented.

VI. REFERENCES

Project Office Quality Assurance Program Plan and Quality Management Procedures, WMPO/188-1.

Environmental Radiological Monitoring Technical Procedure Manual (controlled document).

QMP-17-01, Records Source and Record User Responsibilities.

T&MSS AP 4.3, Possession, Procurement, Shipment, and Receipt of Radioactive Material.

BTP-ER-001, Preparation and Control of Environmental Radiological Monitoring Procedures (controlled document, current version).

BTP-ER-019, Handling and Shipment of Radioactive Material.

BTP-ER-034, Response to Abnormal Events.

JPA-ER-001, Personnel Survey for Contamination.

JPA-ER-002, Personnel Decontamination.

JPA-ER-003, Area and Material Decontamination Instructions.

JPA-ER-004, Swipe Counting Instruction using the ESP-1.

JPA-ER-005, Health Physics Trailer Survey Instructions.

JPA-ER-006, Completing the Radiation Survey Report Form.

JPA-ER-007, Equipment Swipe Survey.

JPA-ER-008, General Area Radiation Survey.

JPA-ER-009, Ground Survey.

JPA-ER-010, Survey of Soil/Drift Wall for Sampling.

JPA-ER-011, Swipe Survey of Facilities/Structures.

JPA-ER-012, Radioactive Materials Control for Unspecified Materials.

JPA-ER-013, Contamination Control for the Use of a Pylon Rn-190 Radon Daughter Product Source.

JPA-ER-014 Equipment Portable Instrument Survey.

JPA-ER-030, Ludlum Micro-R Meter Operation.

JPA-ER-031, Ludlum Alpha Counter.

JPA-ER-035, Beta/Gamma ESP-1 Operation.

JPA-ER-036, ESP-1 Setting The Alarm Operations.

JPA-ER-037, Scaler Mode of Operation for ESP-1.

JPA-ER-038, Swipe Counting.

JPA-ER-051, Routine Source Control.

JPA-ER-052, Control and Handling of Radioactive Samples.

JPA-ER-053, Source Leak Testing Instructions.

JPA-ER-054, Transfer of Radioactive Samples to the Sample Management Facility.

JPA-ER-055, Source Leak Testing of the Rn-190 Radon Daughter Product Source.

JPA-ER-056, Transfer of Radioactive Material to the Sample Management Facility, REECo, or NRAD/EPA.

JPA-ER-057, Transfer of Radioactive Sources, Radioactive Material, and Potential Radioactive Material for Disposal.

JPA-ER-058, Leak Testing of the Pylon RNC Source.

JPA-ER-099, Chain-of-Custody Form.

VII. FIGURES

None.

VIII. QA RECORDS

The following QA records generated as a result of implementation of this procedure and associated JPAs shall be transmitted to the Local Records Center in accordance with QMP-17-01, Record Source and Record User Responsibilities.

QA Records include (1) data sheets, (2) Radiation Survey Log and other logs associated with this program, (3) counting instrument outputs, and (4) associated memos.

WASTE MANAGEMENT PROJECT OFFICE

BRANCH TECHNICAL PROCEDURE

N-QA-048
3/88

Title

ENVIRONMENTAL MONITORING RADIOLOGICAL DOCUMENTATION CONTROL AND DISTRIBUTION, GENERAL MAINTENANCE, AND CALIBRATION OF SYSTEMS

No. BTP-ER-015 Rev. 1

Effective Date 6/10/88

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I. PURPOSE/SCOPE

This procedure prescribes the steps associated with the routine control and distribution of documentation associated with environmental radiological monitoring activities. This procedure is intended to facilitate compliance with QMP-17-01, "QA Records." In addition, this procedure addresses the maintenance and calibration activities not addressed by other procedures and typically completed by outside vendors other than T&MSS.

II. APPLICABILITY

All environmental radiological monitoring activities conducted by T&MSS personnel shall be documented per applicable Environmental Radiological Monitoring Branch Technical Procedures for the Preliminary Site Characterization Radiological Monitoring Plan (PSCRMP), the Radiological Monitoring Plan (RMP), or other T&MSS activities as designated in writing by the Senior Health Physicist (SHP), or the Radiological Field Programs Branch Manager (RFPB).

III. DEFINITIONS

System Logs:

Documents, which contain signed and dated annotations of maintenance activities, equipment failures, and other activities associated with each system [e.g., Integrating Radon Samples (ISs), Continuous Air Samplers (CAS), datasheet issuance, etc.]. These logs are completed and signed by the individuals implementing the various procedures. System logs are maintained in the RFPB's office.

Level A, B, and C Qualified Personnel:

Personnel who are qualified per the Level A, B, and C training programs respectively. These programs are specified in the "Environmental Radiological Monitoring Training Program" (see Appendix A-2, "Training" of the "Environmental Radiological Monitoring Technical Procedure Manual (ERTPM)."

PSCRMP Log:

A document, which contains signed and dated general annotations of all PSCRMP activities recorded by the SHP. This document is maintained in the SHP's office.

APPROVALS			
WMPO Branch Chief	6/6/88 Date	Radiological Field Programs Branch Manager	5/19/88 Date
WMPO Project Quality Manager	6/6/88 Date	Environmental Division Manager	5/19/88 Date
		Project Operations Department Manager	5/23/88 Date

ENCLOSURE

Quality Assurance/Quality Control (QA/QC):

WMPO Quality Assurance personnel who have completed the Quality Assurance training in Appendix A-2 of the ERTPM and who are designated by the Project QA Department manager to verify completion of the "Hold Points" specified for environmental radiological monitoring activities.

RMP Log:

A document similar to the PSCRMP Log, which will be maintained in the SHP's office once the RMP activities are initiated.

T&MSS:

T&MSS refers to that part of the WMPO staff which is part of the T&MSS contractor and responsible for implementation of the environmental radiological monitoring activities.

IV. RESPONSIBILITY

Project Operations Department Manager (POD)

The POD is responsible for ensuring that adequately trained personnel are available to complete this activity in accordance with this procedure and other applicable procedures, as well as all applicable safety requirements and guidance. The POD reviews and approves, as indicated in this procedure, applicable Radiological Field Programs Branch documentation regarding the performance of this activity.

Radiological Field Programs Branch Manager (RFPB)

The RFPB is responsible for maintaining the various system logs and for providing all required supplies and equipment. In addition, the RFPB will assist the SHP in arranging equipment calibration and maintenance procurement. The RFPB is responsible for providing a safe working environment and terminating all unsafe activities inconsistent with applicable procedures. The activities may be completed by a designee if the designation is documented in a memo from the RFPB, POD, or Environmental Division Manager (ED) to the Level A qualified T&MSS personnel, RFPB, POD, ED, Local Records Center, Correspondence Control Facility (CCF), SHP, Quality Assurance, and QA/QC.

Level C Qualified T&MSS Personnel Assigned to this Activity (T&MSS Personnel)

These individuals shall complete their assigned activities as specified in this procedure and other applicable procedures and plans. These activities include the implementation of chain-of-custody requirements, the control and transfer of samples, completing the appropriate documentation and pausing (see Section VI) at all hold points until QA/QC has completed their designated activity. These individuals are also responsible for terminating activities when unsafe conditions exist.

Qualified WMPO Quality Assurance/Quality Control Personnel (QA/QC)

QA/QC is responsible for verifying the satisfactory completion of this procedure at each of the designated hold points. In addition, QA/QC is responsible for terminating activities when QA requirements are being violated or when an unsafe condition exists.

WMPO QA Organization

The WMPO QA Organization is responsible for performing audits and surveillances of radiological monitoring activities in accordance with applicable procedures. The WMPO QA Organization is responsible for terminating activities that are in violation of applicable WMPO Quality Assurance requirements.

Environmental Division Manager (ED)

The ED is responsible for assuring that adequately trained personnel are available to complete this activity and that they comply with this procedure and other applicable procedures, as well as all applicable safety requirements and guidance. The ED is responsible for reviewing and approving, as indicated on this procedure, applicable Radiological Field Programs Branch documentation.

Local Records Center (LRC)

The LRC is responsible for the storage, archiving and retrieval of the records described in this procedure.

Senior Health Physicist (SHP)

The SHP is responsible for implementation of the PSCRMP and RMP activities specified in this procedure and the documentation of all PSCRMP and RMP activities in the appropriate log(s). The SHP is responsible for ensuring

the technical adequacy and radiological safety of these activities. The SHP is also responsible for the content and maintenance of documentation of the required personnel training for these activities. This includes documentation of Level A, B, and C training and QA/QC training. The activities specified for the SHP in this procedure may be completed by a designee, if the designation is documented in a memo from the SHP, POD or T&MSS Project Manager to the RFPB, POD, ED, SHP, Local Records Center, CCF, Task Manager, WMPO QA Organization, Level A Qualified T&MSS Personnel, all Radiological Field Program Branch personnel and QA/QC personnel.

V. PROCEDURE

MATERIAL NOTE

None.

NOTE

This procedure addresses activities in the following areas:

1. System Logs
2. PSCRMP/RMP Logs
3. Controlled Materials Cabinet (CMC) Log/Transient Material Controlled Cabinets (TMCC) Log
4. Documentation Control and Distribution
5. Maintenance and Calibration

A. System Logs

A.1. The RFPB will maintain the various System Logs in a bound notebook with prenumbered pages.

A.2. The RFPB, SHP, or Level B Qualified Personnel shall document all maintenance, calibration, or other activities not specifically documented by other procedures. This includes activities not addressed in the PSCRMP/RMP when so designated in writing by the SHP.

A.3. The logs shall be identified by title and volume number.

4. The first entry in a log shall specify the previous log's title and volume number (if any) and be signed and dated by the RFPB.

A.5. The last entry in a log shall specify the next log in the series including title and volume number (if any) and be signed and dated by the RFPB.

6. Entries not associated with established activities (e.g., PSCRMP, RMP) (see Step A.2) should specifically be labeled as "Nonstandard Activities" and the SHP's documentation designating these radiological environmental monitoring activities referenced in all relevant log entries.

A.7. These logs shall be maintained as indicated in the procedure until termination of the relevant radiological activity or for 3 years, at which time they shall be transferred to the Local Records Center.

B. PSCRMP/RMP Log

B.1. The SHP shall maintain the PSCRMP and RMP (when issued) Logs in bound notebooks with prenumbered pages.

2. The PSCRMP Log shall be treated as a previous volume of the RMP Log once the RMP is initiated.

3. This log shall contain the following information:

a. All datasheet numbers for datasheets used,

b. Status of activities as designated in existing Environmental Radiological Monitoring Branch Technical Procedures (ERTPs),

c. Explanations of any deviations from PSCRMP or RMP (allowed by these plans), including related memos,

d. Descriptions and justifications for the location of any new monitoring station,

e. Descriptions and justifications for the elimination of any monitoring stations,

f. Discussions, including disposition, and documentation; of any data quality concerns and any nonconformances or deficiencies related to the Environmental Radiological Monitoring activity,

g. Changes in the status of personnel training,

h. Descriptions and justifications of revisions to the ERTP's and Environmental Radiological Monitoring Branch Technical Procedure Manual's appendices,

i. Identification of all data reports supplied by organizations outside of WMPO, and

j. General comments relating to the radiological monitoring activities.

4. Requirements specified in Steps A.3 to A.7 shall apply to this log.

C. Controlled Materials Cabinet (CMC) Log/Transient Material Controlled Cabinet (TMCC) Log

C.1. This document has been placed in the CMC by the RFPB or designee.

2. Every time the cabinet is opened, all activities associated with it (e.g., material removed, placed in the cabinet, altered, etc.) shall be documented in a signed and dated log entry.

3. The requirements in steps A.3 to A.7 shall apply to this log.

D. Datasheet Log

D.1. This document is maintained by the SHP and RFPB in the RFPB's office.

2. When a datasheet is issued for use, the SHP or RFPB shall record the datasheet number, date of issuance, and person it was issued to in the Datasheet Log in the section of the log for that type of datasheet.

3. When a datasheet is distributed by the Correspondence Control Facility (CCF), the SHP or RFPB shall record in the Datasheet Log the accession number for the package from CCF containing the datasheet and initial the entry.

NOTE

When any datasheet section is complete, a new volume of the log should be initiated for all datasheets, unless the data sheet for the completed section has been discontinued.

4. When a new log is created, the last entry in each section shall be transferred to the new log.

5. The last entry in the original log shall contain a signed and dated log entry specifying that "The last log entry in this section is number" and then the last number of the last datasheet of this type entered.

6. Steps A.5 to A.7 apply to these logs.

E. Sign Out Sheets

1. A signout sheet is a log to monitor the location of an item or device. This log is established by the verbal or written direction of the SHP or RFPB to provide data on the location and control of these items or devices. Personnel will be informed of these logs through training, memos, and procedures.

2. When the signout sheet is created, the SHP shall determine (based on a review of the applicable documents) if these documents are QA Records. No documentation of the review beyond steps E.3. and E.4. is required.

E.3. If the documents are QA Records, the SHP shall record "QA Record" on the inside cover of the log and initial and date the log.

E.4. If the documents are not QA Records, the SHP shall record "Informal Input" in the same manner as specified in step E.3.

5. The following information shall be recorded when an individual obtains the item or device or it is removed from its designated location:

   a. Date,
   b. Name,
   c. Time, and
   d. Initial entry.

6. When the item or device is returned to its designated location, the following information shall be recorded in the log: time (military) and date (if elapsed time greater than 24 hours), and then the entry shall be initialed.

7. Step A.5 applies to these logs, and step A.7 applies to these logs if designated as "QA Records."

NOTE

If a log is designated as "Informal Input," these steps are only general guidance and not auditable. The "Informal Input" logs are not QA Records as specified in Section VIII.

F. Documentation Control and Distribution

NOTE

The requirements specified in this section do not apply to the logs (see Sections A to E) associated with the Radiological Field Program Branch activities.

F.1. The SHP with the support of the RFPB and other appropriate WMPO organizations shall maintain and distribute all documentation for these activities including:

a. The Environmental Monitoring Radiological Technical Procedure Manual,
b. Procurement documentation,
c. Certificates of calibration,
d. Datasheets,
e. Training documentation,
f. Data reports,
g. Plans,
h. Required memos and letters,
i. Maintenance and calibration related documentation,
j. Nonconformance reports and Standard Deficiency Reports, and
k. Other appropriate documentation.

2. Copies of the documentation may be located in either the SHP's or RFPB's offices or other designated location as appropriate to the responsibilities.

NOTE

The RFPB is responsible for the overall implementation of the environmental radiological monitoring program and the SHP is responsible for the technical content of the program. Specific details on implementation may be addressed in other applicable Environmental Radiological Monitoring Branch Technical Procedures.

F.3. Originals where available, otherwise legible copies, of the documentation specified in items F.1.b, F.1.c, F.1.d, F.1.e, F.1.f, F.1.i, and F.1.j shall be sent to the Local Records Center (LRC) in accordance with QMP-17-01, "QA Records."

4. Copies of the documentation specified in F.3 shall be sent to or maintained by:

   a. WMPO QA Organization,
   b. LRC,
   c. CCF, and
   d. RFPB or SHP.

5. Copies of the receipt inspections and acceptance testing datasheets shall be sent to the Manager of the Administrative Branch (T&MSS).

6. Control, documentation, and distribution shall be made in a manner consistent with QMP-06-02, "Document Control," QMP-17-01, "QA Records," the PSCRMP or the RMP.

7. Copies of any documentation directly related to public or worker safety shall be sent to:

   a. POD,
   b. POD's, or T&MSS Project Manager's designated "Operations Nonradiological Safety Engineer," and
   c. SHP.

G. Maintenance and Calibration

NOTE

This procedure applies to the calibration of equipment or systems not specifically addressed by other ERTPs. The SHP and the RFPB have joint responsibility for implementation of this section, consistent with their other responsibilities.

1. Routine maintenance or calibration shall be completed by the original vendor or a qualified organization on the frequency specified in the Instrument Record generated during receipt inspect.

2. Non-routine maintenance or calibration shall be completed as needed by the original vendor or other qualified organization.

G.3. Completion of the acceptance test for equipment/system is required after maintenance.

G.4. Routine recalibration should be initiated 30 days prior to expiration of the equipment's current calibration.

5. The SHP shall withdraw equipment from use when its calibration expires, or in limited cases extend the calibration period based on a documented evaluation by the SHP and QA/QC of the item's adequacy. This extension must be justified on a technical basis although the specifics would be determined based on the equipment.

6. Calibration data including expiration dates shall be documented in the logs discussed in Sections A and B of this procedure.

7. The expiration date of the calibration shall be clearly noted on calibrated equipment and personnel shall not use the equipment after that date without recalibration.

8. Documentation of maintenance and calibration shall comply with all applicable WMPO and T&MSS procedures (e.g., procurement requirement for calibration services).

H. Maintenance and Calibration Status Monitoring

H.1. When the receipt inspection of equipment is complete, the equipment shall be added to the RFPB Equipment and Activity Status Database per JPA-ER-911.

H.2. A 30-day and 90-day report will be generated by the 10th of each month per JPA-ER-910 and submitted to the RFPB.

3. The RFPB will review the report and take appropriate action to assure completion of required maintenance and calibration activities.

H.4. Once the RFPB has reviewed the report, the RFPB shall sign and date the report and send copies to Quality Assurance, the ED, QA/QC, and the LRC.

J. Radiological Activity Documentation

J.1. The location of all permanent radiological sampling/monitoring locations shall be documented in the "NNWSI Radiological Environmental/Sampling Location Documentation" controlled document in a manner to assure it can be unambiguously located. This documentation may occur in phases as the data is available.

2. When a sampling/monitoring location is established, each of the routine activities at the location shall be entered into the RFPB Equipment and Activity Status Database per JPA-ER-910 to assure that routine exchange, maintenance and calibration occurs as appropriate.

3. Steps H.2 to H.4 will be completed for the sampling/monitoring activities. The report generated for those activities may be the same as that addressed in Step H.2.

K. Radiological Training Activities

NOTE

This activity may be replaced by a documented program established by the training at some future date.

K.1. All personnel participating in environmental radiological monitoring activities shall be trained per the "Environmental Radiological Monitoring Training Program" and applicable project, DOE/NV and SAIC requirements.

2. The content of training and the performance of the trainee shall be documented in writing.

3. The result of the training shall be entered into the RFPB Training Reports Database per JPA-ER-912 once the written documentation is complete.

4. A 90-day report will be generated by the 10th of each month per JPA-ER-913 and submitted to the RFPB.

5. Complete Steps H.2 to H.4 per this report.

L. Radiological Procedure and JPA Status Monitoring

L.1. When a procedure or JPA is issued, the issue date and expiration date of the procedure will be entered into the "Procedure and JPA Status Database" per JPA-ER-914.

2. A 90-day report will be generated by the 10th of each month per JPA-ER-915 and submitted to the RFPB.

3. Complete Steps H.2. to H.4. for this report.

VI. REFERENCES

- WMPO, "Environmental Radiological Monitoring Technical Procedure Manual."
- WMPO, "Preliminary Site Characterization Radiological Monitoring Plan," DOE/NV/10270-14, SAIC-86/8007.
- WMPO, "Radiological Monitoring Plan," DOE/NV-1576-6, SAIC-87/8008 (to be issued).
- "Scientific Investigation Plan (SIP) for Environmental Radiological Monitoring Activity," SIP #1.2.3.6.1.2.T, Rev. 0 (November, 1986).
- NNWSI Project, "Nevada Nuclear Waste Storage Investigations Project Quality Assurance Plan," WMPO/88-1 (latest revision).
- WMPO Quality Assurance Program Plan (QAPP), NVO-196-18 (latest-revision).
- WMPO, "Document Control," QMP-06-02 (latest revision).
- WMPO, "QA Records," QMP-17-01 (latest revision).
- "Generation of Equipment and Status Records," JPA-ER-910 (latest revision).
- "Data Entry for the RFPB Equipment and Activity Status Database," JPA-ER-911 (latest version).
- "Data Entry for the RFPB Training Database," JPA-ER-912 (latest version).

- "Generation of RFPB Training Status Report," JPA-ER-913 (latest version).
- "Data Entry for Procedure and JPA Status Database," JPA-ER-914 (latest version).
- "Generation of RFPB Procedure and JPA Status Report," JPA-ER-915 (latest version).

VII. FIGURES

None.

VIII. QA Records

All documentation generated by this procedure shall be considered a QA Record, with the exception of the "signout sheet" logs designated as "Informal Input" (see Section E), which shall be maintained in accordance with QMP-17-01, "QA Records."

QA Records include: (1) Those items in Step F.1 and (2) Vendor data reports.

Title

ELECTRICAL SAFETY INSPECTION OF 110 VOLT AC POWERED EQUIPTMENT

No. TP-ER-016 Rev. 0
Date 8/13/87
Page 1 of 9

I. PURPOSE/SCOPE

The purpose of this procedure is to specify the requirements for the electrical safety inspection of all 110 volt AC powered equipment used in the Pre-Site Characterization Radiological Monitoring Program (PSCRMP) and the Radiological Monitoring Program (RMP). The scope of thie procedure includes visual inspection of the equipment and electrical safety inspections.

II. APPLICABILITY

This procedure applies to the electrical safety inspections of 110 volt AC powered equipment used in the PSCRMP and RMP as described in other TP-ER procedures or for special surveys as directed by the SHP. Electrical safety inspections are completed prior to final acceptance of the equipment for use in the Environmental Radiological Program. In addition, electrical safety inspections are performed annually following calibration testing of program equipment.

III. DEFINITIONS

Multimeter

An instrument capable of measuring voltage, current, and resistance. It is used in this procedure as an ohmmeter, which measures resistance.

Electrical Safety Inspection

As defined in this procedure, means using a multimeter to verify that an instrument has adequate grounding.

Electrical Safety Inspection (ESI) Datasheet

A record for each inspected piece of equipment that contains signed and dated annotations of the electrical safety inspection activities.

APPROVALS

Task Manager	8/3/87 Date	Branch Manager	8/3/87 Date
QA Manager	8/3/87 Date	Technical Director	8/4/87 Date

IV. RESPONSIBILITY

MANAGER, PROJECT OPERATIONS DEPARTMENT (POD)

The POD is responsible for assuring that adequately trained personnel are available to complete this activity. In addition, the POD is responsible for assuring that personnel involved in this activity comply with this procedure, other applicable procedures, and all applicable safety requirements and guidance. The POD IS also responsible for providing a safe working environment.

MANAGER, RADIOLOGICAL FIELD PROGRAMS BRANCH (RFPB)

The RFPB Manager is responsible for providing all required supplies and equipment. In addition, the RFPB Manager will assist the Senior Health Physicist (SHP) in completing any required equipment calibration and maintenance service procurements. The RFPB Manager is also responsible for providing a safe working environment and terminating all unsafe activities or activities inconsistent with applicable procedures. The RFPB Manager's responsiblities specified for this procedure may be completed by a designee if the designation is documented in a memo to Quality Assurance, the SHP, the RFPB Manager, the POD Level A Qualified T&MSS personnel, CCF, and the Technical Records Center.

Level A Qualified Personnel

These individuals are responsible for completing the activities specified in this and other applicable procedures per the directions of the SHP and the RFPB Manager. These individuals are also responsible for following all applicable safety requirements and guidelines and for terminating activities when unsafe conditions exist.

Senior Health Physicist (SHP)

The SHP is responsible for the documentation and implementation of the PSCRMP and RMP activities specified in this procedure. The SHP is also responsible for assuring both technical adequacy and radiological safety of PSCRMP and RMP activities. The responsibilities of the SHP specified for this procedure may be completed by a designee if the designation is documented in a memo to Quality Assurance, the POD, SHP, Level A Qualified T&MSS personnel, the RFPB Manager and the Technical Records Center.

V. MATERIALS

The following materials are required for completion of section VI B. The materials are available from the Task Manager.

- o an analog multimeter (Micronta Model 22-210)
- o 1 red and 1 black test lead each consisting of a metal probe on one end and a male coupler on the other end

VI. PROCEDURE

Section VI stipulates specific steps for performing the following activities:

- o Visual Inspection of Electrically Powered Equipment
- o Electrical Safety Inspections

A. Visual Inspection of Electrically Powered Equipment

This activity shall be completed following receipt or calibration and prior to final acceptance of electrically (110 volt AC) powered equipment.

A.1. Check to see if the equipment requires 110 volt AC power for operation. If not proceed to step A.8.

2. Check the exterior of the equipment for the following as applicable.

   a. Cracks or holes in the casing.
   b. Broken or loose knobs or switches.
   c. Cracked or broken dials.
   d. Any obvious damage or missing components.
   e. Exposed bare wires.
   f. Cracked or cut power cord.
   g. Broken or loose prongs on the plug.

3. If any damage is found or suspected, record the information on the "Visual Inspection Comments" line of the Electrical Safety Inspection Datasheet (ESI Datasheet) and proceed to step A.4. If no damage is found, proceed to step A.5.

A.4. Contact the SHP, describe the problem and follow the SHP's instructions.

A.5. Examine the plug on the end of the power cord. If the plug has two prongs proceed to step A.6, if it has 3 prongs proceed to step A.7.

A.6 Check the power cord to see if the instrument is double insulated. If it is not, go to step A.4, otherwise proceed to step B.1.

A.7 Proceed to step B.1.

A.8. Terminate this procedure. The equipment does not require AC power so visual and electrical safety inspections per this procedure are not required.

B. Electrical Safety Inspections

This activity shall be completed following receipt or calibration and prior to final acceptance of electrically powered equipment.

B.1. Obtain the Micronta Model 22-210 multimeter from the SHP's office.

2. Locate the "-" and "+" female couplers for the test leads on the multimeter (on the Micronta Model 22-210 multimeter these couplers are found on the bottom lefthand corner of the front of the multimeter). If the red and black leads are not connected, insert the male connector of the black lead into the female coupler labeled "-" and the red lead into the female coupler labeled "+".

3. Make sure that the knob on the upper left hand corner of the multimeter is turned to the right ("+DC AC Ω ").

4. Turn the center switch of the multimeter to the "cont" position.

5. Touch the probes (metal ends) of the red and black leads together. An audible high frequency signal should occur indicating continuity of circuit. If the signal does not occur, go to step A.4, otherwise proceed to step B.6.

CAUTION

Do not have your fingers touching the metal probes while performing the measurements in this procedure. Connection with the fingers can result in erroneous measurements.

B.6. Disengage the metal ends of the probes.

7. Turn the center switch of the multimeter to the "X1" position of the "OHMS" section of the dial (the upper right portion of the dial).

B.8. Touch the metal probes of the red and black leads together. Using the knob located on the upper right corner of the multimeter adjust the meter until the needle is lined up with the zero on the ohms scale.

9. Disengage the metal ends of the probes.

NOTE

Leave the center switch of the multimeter at the "X1" position of the "OHMS" section of the dial while performing the electrical safety inspection . .

10. On the equipment undergoing electrical safety inspection, if the plug at the end of the power cord has only two prongs, proceed to step B.21, otherwise continue.

NOTE

The rounded thick prong on the plug of the power cord is considered the "ground prong". The other smaller prongs are considered the "hot prongs".

11. Make sure that the piece of equipment to be electrical safety tested is not plugged in and turn the power switch to the "on" position.

B.12. Place one of the multimeter probes against one of the hot prongs and the other probe against the other hot prong of the plug on the power cord of the equipment undergoing electrical safety inspection. The multimeter should be reading less than 50. On the ESI data-sheet, record the reading in the "hot-hot" blank under the plug section in the column marked "Switch On". If the reading is greater than 50, refer to B.27 and B.30.

NOTE

Left and Right refers to the orientation of the plug prongs as they would enter an electrical outlet.

B.13. Remove one of the multimeter probes from a hot prong and place it on the ground prong. Repeat this process for the other hot prong. The multimeter should be reading infinity (∞). On the ESI datasheet, record the readings in the "left hot-ground" and "right hot-ground" blanks under the plug section in the column marked "Switch On" or "Switch Off" as appropriate. If the reading is not infinity (∞), refer to B.27 and B.30.

NOTE

"Switch On" or "Switch Off" corresponds to the position of the power switch of the equipment undergoing electrical safety inspection.

B.14. Place one of the multimeter probes on one of the hot prongs and the other against the metal portion of the switch of the equipment being tested. If the equipment case is metal, repeat the task substituting the case for the switch. Repeat the entire, above mentioned process for the other hot prong. The readings on the multimeter should be infinity (∞). On the ESI datasheet, record the prong-switch readings in the "left hot-case" and "right hot-case" blanks under the case section in the column marked "Switch On" or "Switch Off" as appropriate. Note the case readings for the left and right prongs in the "comment" lines of the ESI. If the switch is not metal, note this in the "comment" lines and go to step B.33. If the reading is not infinity (∞), refer to B.27 and B.30.

B.15. Place one of the multimeter probes on the ground prong and the other against the metal portion of the switch of the equipment being tested. The multimeter should be reading zero (less than 10 ohms). On the ESI datasheet, record the reading in the "ground-case" blank under the case section in the column marked "Switch On" or "Switch Off" as appropriate. If the reading is greater than zero, refer to B.27 and B.30.

B.16. Remove the multimeter probes from the equipment being tested.

17. Turn the power switch of the piece of equipment being tested to the "off" position.

18. Place one of the multimeter probes against one of the hot prongs and the other probe against the other hot prong of the plug on the power cord of the equipment undergoing electrical safety inspection. The multimeter should be reading infinity (∞). On the ESI datasheet, record the reading in the "hot-hot" blank under the plug section in the column marked "Switch Off". If the reading is not infinity (∞), refer to B.27 and B.30.

19. Repeat steps B.13 through B.16.

20. Proceed to step B.26.

B.21. Complete steps B.12, B.14 and B.16 with the power switch of the equipment undergoing electrical safety testing in the "on" position.

B.22. Turn the power switch of the equipment undergoing electrical safety inspection (testing) to the off position.

23. Place one of the multimeter probes against one of the hot prongs and the other probe against the other hot prong of the plug on the power cord of the equipment undergoing electrical safety inspection. The multimeter should be reading infinity (∞). On the ESI datasheet, record the reading in the "hot-hot" blank under the plug section in the column marked "Switch Off". If the reading is not infinity (∞), refer to B.27 and B.30.

24. Complete steps B.14 and B.16.

25. On the ESI datasheet in the blanks labeled "left hot-ground", "right hot-ground", and "ground-case" enter the word "N/A".

B.26. Turn the center switch of the multimeter to the "off" position.

CAUTION

Make sure the turn the multimeter off, otherwise the batteries will go dead.

B.27. If the inspection with the multimeter turned up any deviations from the expected meter readings, note this in the "comments" section of the ESI datasheet.

28. Finish filling out the ESI datasheet by completing the following information in the spaces provided on the form:

a. your name in the "name" blank,
b. the name and model of the instrument inspected in the "equipment name" and "model" blanks,
c. the serial number of the instrument inspected in the "serial number" blank,
d. the name, model and serial number of the multimeter used in the "meter name/model/serial number" blank, and
e. sign and date the form in the "inspected by" blank.

29. Return the multimeter, the ESI datasheet, and the tested equipment to the SHP's office.

B.30. Discuss the results of the inspection, particularly any deviations as noted in the "general comments" section of the ESI datasheet, with the SHP, and follow the SHP's instructions.

31. Have the SHP indicate pass or fail in the "SHP's comments" section and sign and date the section marked "SHP signature".

B.32. Terminate this procedure.

B.33. Examine the case of the equipment being tested. If there is another metal object suitable for testing, perform step B.14 using that object instead of the switch. Record the results and the name of object in the "comment" section of the ESI.

B.34. Go to step B.15.

VII. REFERENCES

SAIC T&MSS, "Environmental Radiological Monitoring Procedure Manual".

SAIC T&MSS, "Preliminary Site Characterization Radiological Monitoring Plan", DOE/NV/10270-14, SAIC-86/8007 (February 1986).

SAIC T&MSS, "Radiological Monitoring Plan", (to be issued).

SAIC T&MSS, "QAPP and Supporting Documents".

VIII. FORMS

o Electrical Safety Inspection Datasheet (ESI) (Figure B.1-1)

Figure 8.1-1

ELECTRICAL SAFETY INSPECTION DATASHEET

Name: _____

Equipment Name: _____ Model: _____ Serial Number: _____

Meter Name/Model/Serial Number: _____

Visual Inspection Comments: _____

Switch On

PLUG	READING (Ω)	EXPECTED READING
Hot-Hot:		
Left Hot-Ground:		< 50
Right Hot-Ground:		"
CASE		
Left Hot-Case:		"
Right Hot-Case:		"
Ground-Case:		< 10

Switch Off

PLUG	READING	EXPECTED READING
Hot-Hot:		
Left Hot-Ground:		"
Right Hot-Ground:		"
CASE		
Left Hot-Case:		"
Right Hot-Case:		"
Ground-Case:		< 10

Comments: _____

Inspected by: _____ Date: _____

SHP's Comments: _____

SHP Signature: _____ Date: _____

Title	No. BTP-ER-017 Rev. 0
ENVIRONMENTAL MONITORING RADIOLOGICAL PLANS/REPORTS, ANALYSES, COMPUTER PROGRAM USAGE, AND READINESS REVIEWS	Effective Date 6/10/88
	Page 1 of 22

I. PURPOSE/SCOPE

This procedure is intended to impart the philosophy and guidance to ensure that high technical quality is part of the planning, analytical activities, and products of the Radiological Field Programs Branch. A process is outlined that incorporates Technical & Management Support Services (T&MSS) policy, U.S. Department of Energy (DOE) criteria, and specific requirements for documentation as described in the Waste Management Project Office (WMPO) Quality Assurance (QA) Program Plan.

The philosophy of T&MSS is that the quality of technical work must always come first. Quality is defined as the attribute of our work that drives us to complete the scope of work agreed on in a manner that is technically correct, appropriate to the anticipated use of the results, and within the constraints of available resources. To meet this goal: (1) the scope of work must be designed so that it is responsive to the needs of the customer and provides sufficient resources to complete the job; (2) the work must be executed in a technically correct manner; (3) results must be documented in a way applicable to their intended use; and (4) documentation must be maintained to support the use of the results.

The scope of this procedure includes the planning and execution of technical work, the preparation of results, and documentation requirements. Designing radiological activities is the responsibility of the Radiological Field Programs Branch (RFPB), and includes QA Level I, II, and III activities as discussed in the Scientific Investigation Plan for this activity.

To assure the quality of the technical work, this procedure implements steps to ensure that all plans/reports and analyses are properly reviewed and documented. This procedure is intended to ensure that all computer usage is consistent with T&MSS and WMPO procedures, properly documented, and appropriate. Finally, this procedure ensures that any technical activity implemented shall be subject to the appropriate review, documentation, and approval process.

II. APPLICABILITY

This procedure is applicable to all work completed by T&MSS and its contractors for the RFPB. It is intended to supplement requirements described in the WMPO Quality Assurance Program Plan (QAPP) as they relate to these activities.

APPROVALS			
		Radiological Field Program Branch Manager	5/19/88 Date
WMPO Branch Chief	6/6/88 Date	Environmental Division Manager	5/19/88 Date
WMPO Project Quality Manager	6/6/88 Date	Project Operations Department Manager	5/23/88 Date

III. DEFINITIONS

DOCUMENTS

A document is any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results.

PLAN/REPORT

For purposes of this procedure, a plan/report is written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results issued as a stand-alone document. An attachment to an issued letter or memo is not a stand-alone document.

ANALYSIS

For purposes of this procedure, an analysis is written or pictorial analytical information not issued as a stand-alone document that provides detailed support to a plan/report or other Nevada Nuclear Waste Storage Investigations (NNWSI) Project activities. An analysis may be issued as an attachment to an issued letter or memo.

LOG

A log is a bound document containing detailed descriptions of a specific activity or the operation of an instrument. This document is typically described in a plan. However, in a case where short-term, nonstandard activities are involved, the log used may be described in a T&MSS memo issued by the Senior Health Physicist (SHP).

DATASHEET

A datasheet is a pre-established form for the recording of data. The use and contents of datasheets are delineated in applicable Branch Technical Procedures.

TECHNICAL REVIEW

A technical review is a critical review to verify the adequacy of the approach, analytical techniques, and results of activities.

TECHNICAL STAFF

The technical staff, for purposes of this procedure, are the professional members of the Project Operations Department, Project Regulatory

Compliance Department, and Project Technical Integration, Analysis and Evaluation Department.

T&MSS

For purposes of this procedure, T&MSS refers to that part of the WMPO staff which is part of the T&MSS contractor and responsible for implementation of the environmental radiological monitoring activities.

IV. RESPONSIBILITIES

SENIOR HEALTH PHYSICIST (SHP)

The SHP has been delegated the responsibility for the quality of all completed Environmental Radiological Monitoring Activities (ERMAs) by the T&MSS Project Manager. Responsibility for the quality of individual activities may be delegated to a Principal Investigator (PI) by the SHP. The SHP shall support the RFPB manager in identifying all technical documents and analyses required to complete the RFPB activities.

ENVIRONMENTAL DIVISION MANAGER (ED)

The ED is responsible for the review and approval of all RFPB activities. The ED is also responsible for providing a safe working environment for all RFPB activities.

PRINCIPAL INVESTIGATOR (PI)

The PI is responsible for completing documents as directed by the SHP and the RFPB manager. Support from technical staff and other staff may be sought for completing work. The PI is responsible for assuring that all staff members follow this procedure.

PROJECT OPERATIONS DEPARTMENT MANAGER (POD)

The POD is responsible for assuring that adequately trained personnel are available to complete this activity and the assigned personnel comply with this procedure, other applicable procedures, and all applicable safety requirements and guidance. The POD is responsible for review and approval of all technical documents. The POD is also responsible for providing a safe working environment for RFPB activities.

RADIOLOGICAL FIELD PROGRAMS BRANCH MANAGER (RFPB)

The RFPB, with the assistance of the SHP, shall identify and review all technical documents and analyses required to complete RFPB activities. The RFPB is responsible for providing all required supplies and equipment to implement this procedure. The RFPB is responsible for providing required funding and a safe working environment, and for terminating all unsafe activities and activities that are inconsistent with applicable procedures.

TECHNICAL STAFF

Technical Staff are members of the T&MSS staff who are responsible for supporting the PI in the completion of documents. They shall perform their assigned duties in conformance with this procedure and complete their contributions in a high-quality manner.

OTHER STAFF

Other staff are T&MSS staff members outside the technical groups, temporary T&MSS support, and other staff members from organizations. Their responsibilities include supporting the PI in the completion of documents as defined by their existing scope of work or as specified in an agreement related to a particular activity. This procedure applies to all specific work scope documents related to the RFPB activities.

TECHNICAL DEPARTMENT MANAGERS (TDM) (PROJECT REGULATORY COMPLIANCE, PROJECT TECHNICAL INTEGRATION, ANALYSIS AND EVALUATION)

The TDMS are responsible for the administrative management of personnel from their branches who are associated with this activity and for the review of documents as specified in this procedure.

WMPO Quality Assurance Organization (QA)

QA is responsible for performing audits, inspections, and surveillances of radiological monitoring activities in accordance with applicable WMPO QA procedures. QA is responsible for reviewing and approving documents and analyses for compliance with applicable WMPO QA requirements. QA is also responsible for terminating activities when they are in violation of applicable WMPO QA requirements or when unsafe working conditions exist.

V. PROCEDURE

MATERIALS NOTE

None.

NOTE

The procedure consists of the following activities:

1. Plan/Report Verification and Control
2. Analysis Verification and Control
3. Verification and Control of Computerized Computational Aids
4. Log and Datasheet Verification and Control
5. Readiness Review of Field Activities

A. Plan/Report Verification and Control

NOTE

Figure A.1-1 illustrates the steps to be followed in the development of a plan/report. This section discusses the requirements and steps of the verification and control process.

A.1. The RFPB, with input from the SHP, identifies a required plan/report and its associated QA level (no formal documentation is required). Items are identified based on the Preliminary Site Characterization Radiological Monitoring Plan, the Radiological Monitoring Plan or an equivalent document, the Scientific Investigation Plan, and specific requests from the customer.

A.2. The RFPB, with support as needed from the SHP and the TDM, selects a PI.

NOTE

Assignment of a qualified PI to prepare the designated document is essential to high technical quality. This assignment is primarily the responsibility of the RFPB and the SHP. Quality-related factors that must be considered in assigning the PI include relevant training and experience, availability, and long-term staff development. At the discretion of the RFPB and the SHP, constraints can be placed on the PI to emphasize the strengths and bolster the weaknesses of technical staff in the interest of assuring high-quality work. Examples of constraints include additional reviews of progress and stipulation of the use of specific technical staff or other staff. For T&MSS Health

Physics personnel, no formal documentation of this step is required unless otherwise specified in the WMPO QAPP and supporting documents, applicable NNWSI Project Procedures, T&MSS Administrative Procedures, or applicable Branch Technical Procedures. The qualification of WMPO staff is presently on file and has been evaluated by the RFPB and the SHP.

NOTE

Step A.3 is required to ensure a consensus on the technical adequacy of the detailed approach to work elements, the appropriateness of the expected results, and cost control. The PI is responsible for documenting this step. Agreement between the SHP, RFPB and PI is required prior to starting work.

A.3. The PI, SHP, and RFPB must develop a document preparation approach that addresses any calculations to be performed, the scope of required background investigations (if any), the expected sources and types of data to be obtained, data screening processes, QA level and other details of expected computer usage, staff identification, and specific reviews during the analytical work. For activities involving significant amounts of staff time (0.1 man-year), or if several individuals are involved, the approach shall be formally documented (as a T&MSS memo or other equivalent documentation prepared by the PI).

A.4. Prepare the plan/report as specified in Step A.3. The details of the report preparation and review are shown in Figure A.1-1.

NOTE

A stamp may be provided for the purpose of assuring consistency and minimizing the work required for recordkeeping. An example of the T&MSS transportation stamp and instructions for its use are shown in Figure A.1-2. Similar stamps for other branches, or stamps specifically for this task, may also be used if the stamps are consistent with Figure A.1-2. This same data may also be recorded by hand. In all cases this data shall be recorded.

A.5. Analyses shall be performed in a planned, controlled, and documented manner. Analyses shall be complete and legible, and each page shall be labeled with the following information:

a. Identification of the preparing and reviewing persons.
b. Date of work and review.
c. Page number and total number of pages.
d. Task name.
e. Title of document.
f. CCF file number.

The content of QA Level I and II calculations shall be sufficiently detailed and organized that a technically qualified person can review and understand the purpose, method, assumptions, data, references, and units of the analysis without consulting the author. The calculations of an analysis, which are used to support a plan/report, shall be attached to the plan/report when it is submitted to the Local Records Center (LRC).

The content of QA Level III calculations shall be sufficiently detailed and organized that a technically qualified person can review and understand the purpose, method, assumptions, data, references, and units of the analysis with limited consultation with the author. This consultation should not require a demonstration of the method, but should focus on supporting information that is only briefly summarized in this level of documentation. The calculations of analyses, which are used to support a plan/report, shall be attached to the plan/report when it is submitted to the LRC.

NOTE

The preparation of plans/reports and analyses may require literature searches, reviews of existing data, reviews of existing models, etc. An NNWSI Project position paper has been written (SAIC, April 1986), entitled "Non-Quality Assurance Level I Information in the Licensing Process."

This paper takes the position that:

> Background and corroborative information that may or may not have been acquired and controlled in a manner consistent with Quality Assurance Level I requirements will be selectively used in the licensing process as background or corroborative support to primary information.

While not directly applicable to QA Level II and III work, the current position indicates that this type of information is important and can be used, provided sufficient documentation is prepared.

A.6. Background investigations are required for technical data and models needed in plans/reports and analyses. These investigations will be marked with the T&MSS stamp described in step A.5. Minimum content of the written results of each investigation will include:

a. Work element for which the investigation is being conducted.

b. Sources reviewed.

c. Applicability of data and/or models for the work element being considered.

d. Modifications required for use (if any).

e. Reasons for rejection if significant data and/or methods are not used.

This investigation may be incorporated into the plan/report or analysis, but it must be documented in a manner traceable to this analysis. QA Level I and II documentation for this investigation shall clearly indicate the information used, information rejected, how it was used or modified, and the implications to work conducted. Written records should be such that they can be understood by a technically qualified individual without contact with the author.

QA Level III documentation for this investigation shall be included in documents completed as a result of the work element and in brief supporting notes. The document should contain a list of references for material used or modified in the work. Notes and work element results should be sufficient for a technically qualified person to understand how the referenced information was used with minimal clarificatin from the author.

A.7. Computers may be a useful tool for all of the previously mentioned activities. Output used to support plans/reports or analyses preparation shall be stamped with the T&MSS stamp (Step A.5).

Computer calculations for QA Level I and II work elements shall be attached to other information supporting a plan/report and transmitted with the plan/report to the LRC. The content of computer calculations shall include the computer type, program name and version, evidence of program verification/validation (as appropriate), input and output data, and justification of the applicability of the program to the specific task. This shall be accomplished by completing Section C of this procedure.

Computer calculations for QA Level III work elements shall be attached to other information supporting the plan/report. The computer type, program name and version, and input and output data shall be indicated. The user should be prepared to justify the use of the code, if requested.

A.8. Continue to next step.

9. Preparation of the working draft plan/report is the responsibility of the PI. The plan/report shall be detailed enough to permit its application to the intended function. This level of detail is determined by the PI.

10. Prior to internal review of the plan/report, or concurrent with the internal review of the plan/report (see Step A.11), the RFPB and the SHP shall informally discuss the plan/report with the PI.

NOTE

Informal reviews of the working draft report by the RFPB and the SHP are intended to identify major technical or documentation deficiencies that could require additional analysis. All plans/reports shall undergo internal T&MSS editorial, technical, and managerial reviews later in the development process, prior to being transmitted to the WMPO. These reviews of the plan/report can be delayed, at the discretion of the PI, until completion of the final draft report. All comments and resolutions shall be documented on Document Review Sheets (DRSs) per QMP-06-03, "Document Review/Acceptance/Approval", with the exception of the informal reviews.

11. The RFPB may elect to use an abbreviated review cycle (working draft, final draft, etc.) if a document meets all of the following criteria:

    a. It is derived entirely from reviewed documents or information that will appear in a reviewed document.

    b. It will be used informally to explain, introduce, or summarize reviewed documents internally or to the WMPO.

    c. Use of the plan/report will complement review of more formal products of the task.

    Documents meeting these criteria (e.g., presentations and slides) will be reviewed by the RFPB, the SHP, and the PI prior to use. The completed T&MSS stamp (see note, page 6) is evidence of review.

    Coordination of the review is the responsibility of the PI. Sufficient review time should be allowed prior to the due date for delivery to the WMPO. All comments and resolutions shall be documented on a Document Review Sheet (DRS) per QMP-06-03, "Document Review/Acceptance/Approval."

A.12. The title page of these plans/reports shall be consistent with existing WMPO practices and procedures. The second page will contain a specific designation of the QA Level and the signatures of the POD, ED, QA, RFPB, SHP, PI, and other support personnel, as appropriate.

A.13. Editing review of all plans/reports shall be done.

A.14. The adequacy of plans/reports shall be verified by review. Technical reviews covered by T&MSS, WMPO, and NNWSI Project procedures are critical reviews to verify the adequacy of the approach, analytical techniques, and results of activities. At a minimum, this will include a review by the POD, ED, RFPB, SHP, TDM, QA, and PI for all plans/reports. Additional reviews involving persons outside the NNWSI Project may be required by either the SHP, RFPB or PI for some applications. All comments and resolutions shall be documented on DRSs.

The adequacy of QA Level I and II documents and supporting information shall be verified by reviews documented on Document Review Comment sheets. The PI is responsible for maintaining transmittal records, signed comment copies for the reviewers, and a brief description of the reviewers' qualifications. The PI is responsible for ensuring that the qualifications of WMPO reviewers are on file. The qualification of reviewers outside the WMPO shall also be documented. This documentation shall be in the form of a memo submitted to the CCF with the concurrence of the POD. Reviewers outside of T&MSS are usually used only for significant QA Level I plans/-reports.

For QA Level III, the PI is responsible for providing a copy of the plan/report for review and being prepared to discuss supporting information at the request of the reviewers. The qualifications of the reviewers do not require documentation; the minimum reviewers are the RFPB and the SHP.

15. T&MSS management review shall focus on aspects of the work that deal with contractual obligations and technical integration with other segments of the NNWSI Project. Only plans/reports (not supporting information) will be given this review. The records of this review will be documented on Document Review Comment Sheets. This review for QA Level I and II documents shall include, at a minimum, the appropriate TDMs, RFPB, SHP, POD, ED, and QA. For QA Level III, the required level of review will be designated by the RFPB.

Depending on the results of these reviews, additional documentation of technical work may be required. At the discretion of the RFPB, SHP and PI, a revised plan/report may be reviewed again as a working draft (in which case, go to Step A.13) or deemed a final draft plan/report (proceed to the next step, A.16).

A.16. Preparation of the final draft plans/reports is the responsibility of the PI with support from the RFPB and the SHP. Preparation activities shall involve the incorporation of comments from the internal draft review. No documentation requirements are identified for incorporation of comments in QA Level III work. Comment resolutions for QA Level I and II work should be indicated in the DRSs. Such resolution should be brief and understandable to a technically qualified person after consultation with the author. All DRSs will be sent to the LRC when the document is issued.

17. The next step is the preparation (by the PI) and concurrence review of the transmittal letter. The purpose of this review is to correct any minor problems prior to sending the plan/report to the WMPO. Documentation of this step is an initialed and dated transmittal letter. The review will include the customary T&MSS management, PI, SHP, and the RFPB. When this review is completed and corrections made, the document shall be sent to the WMPO under the signature of the POD for milestone level 3 and 4 documents. For milestone level 1 and 2 documents, the signature of the T&MSS Project Manager or his designee is required. Any action item or milestone number shall be recorded in the subject line of the transmittal letter.

18. The WMPO review will be completed per WMPO's own requirements.

A.19. Resolution of WMPO comments shall be documented by the PI using a DRS referencing WMPO's comment letter and specifying this resolution. A record of this resolution shall be submitted to the LRC. Preparation of the draft final plan/report involves the resolution of any remaining comments from the WMPO or others, the completion of any additional analyses, and revision of the final draft report. Preparation of the draft final document will include a transmittal letter under the signature of the POD or appropriate T&MSS management (based on T&MSS policy). The letter should contain a brief summary of the document and an indication of the milestone or action item number.

20. Review of the draft final plan/report shall proceed per Steps A.13 to A.19. The review should focus on changes since the previous review and comment responses. The review will be limited to T&MSS staff and management unless, at the discretion of the PI, SHP or RFPB, outside technical review is needed.

21. Transmittal of the final plan/report to the WMPO is at the direction of the WMPO. This could involve a camera-ready copy for publication or a letter report for internal use. The essential part of this step ais to implement and document WMPO instructions in the transmittal letter.

22. Terminate procedure.

NOTE

If an analysis is not part of a plan/report, then Section B rather than Section A shall be followed. (An example of an analysis that is not part of a plan/report is an attachment to a letter or memo.)

B. Analysis Verification and Control

B.1. Complete Steps A.1 to A.3. No formal documentation is required, with the exception of the qualification of non-WMPO individuals involved in any QA Level I analyses. Then return to this point.

B.2. Complete Steps A.5 to A.8 (as appropriate), then return to this point.

B.3. If this analysis is not part of an attachment to a memo or letter, go to Step B.6; otherwise continue to the next step.

4. The PI, with support from the SHP or the RFPB, shall prepare a documentation transmittal letter or memo consistent with the information in Step B.1.

5. The review of the analysis will be the same as the T&MSS concurrence requirement for the transmittal letter. For QA Level I analyses, the concurrence shall include at a minimum the POD, ED, TDM, SHP, RFPB, and QA. For QA Level II analyses, the concurrence chain shall include the POD, ED, RFPB, SHP, and QA.

B.6. Using a document transmittal sheet, transmit copies of the analysis to the RFPB, SHP, and LRC.

B.7. Terminate procedure.

C. Verification and Control of Computerized Computational Aids

C.1. When a computer program is used, its selection must be justified as part of the analysis.

2. Prior to the use of any computer program, determine how the program is controlled at the WMPO by discussion with the SHP and the Computer Support Center (CSC).

3. If the computer program is not presently available, follow the appropriate WMPO procedure (see the SHP) to obtain a properly controlled copy.

C.4. When a computer program is used in this task, document the following information as part of the analysis:

a. Version number and data.

b. Reference to verification/validation documentation (this may be a determination that all or any part of this verification and validation activity is not required).

c. List of the input data and output data for each run.

C.5. Where temporary modifications to a program are made to facilitate analysis, a listing of the compilation (where feasible) or of the program or subroutine, as appropriate, shall be included in the documentation. On this documentation, highlight the change by circling the altered lines. Leave the original lines in a comment statement. (This may be included with Item C.4.c.)

6. When utility software that requires programming to complete the intended function is used, such as the SAS system or Lotus, the programming should be documented in a manner similar to th described in Step C.5., as appropriate.

7. Complete Step A.5. for this computer documentation, then go to Step C.8.

C.8. If this activity involves preparation of a plan/report, return to Step A.9; otherwise continue.

9. Complete Steps B.3. to B.7. for a computer program rather than an analysis.

D. Log and Datasheet Verification and Control

NOTE

The preparation and verification of logs and datasheets is specifically addressed in Environmental Radiological Monitoring Branch Technical Procedures (ERTPs) such as BTP-ER-008, "Documentation of On-Site Data and Off-Site Data Analysis Reports," and BTP-ER-015, "Environmental Monitoring Radiological Documentation Control and Distribution, General Maintenance, and Calibration of Systems." In addition, specific ERTPs address the collection, documentation, and control of each type of data through datasheets and logs.

E. Readiness Review of Field Activities

NOTE

The implementation of field activities is specifically addressed in the plan for this activity and its implementing procedures. However, prior to initiating field activities, an evaluation of the "Operational Readiness" of this activity will be made. This evaluation shall document that the required preliminary activities have been completed prior to initiation of the field activity.

E.1. The RFPB and the SHP shall obtain an "Operation Readiness Review Documentation" datasheet (Figure E.1-1).

E.2. The RFPB and the SHP shall review the item specified on the datasheet and mark "N/A" in the "Documentation" column for any action that is not applicable to this activity.

3. The RFPB and the SHP shall then add any additional items for this activity based on the review of appropriate documents such as:

   a. Appropriate plan
   b. Appropriate safety plan
   c. "Occupancy - Use Readiness Manual"
   d. WMPO QAPP
   e. Receipt inspection and acceptance testing procedures

4. The SHP and/or the RFPB shall complete the following sections of the datasheet:

   a. The unique datasheet number
   b. Page number data
   c. Activity description
   d. Date this datasheet was approved for use

5. The SHP and the RFPB shall sign the datasheet.

E.6. The RFPB and the SHP shall then assign an individual to review this activity relative to the datasheet. If this reviewer is someone other than the SHP, formal documentation of his/her qualifications to complete this review will be attached to the memo advising him/her of this designation as reviewer and transmitting the datasheet.

E.7. The reviewer shall complete the datasheet by:

a. Recording "yes" in the "Documentation" column, if appropriate, followed by a reference(s) in parentheses that documents the basis for the determination.

b. Recording "no" in the "Documentation" column, if appropriate, and referencing a comment number in parentheses that will provide a description of the relevant activity status, including appropriate references, and an assessment of the impact on initiation of operation.

c. Recording the comments from step E.7.b (with appropriate numbers) on a separate sheet of paper, leaving a 1-1/2 inch space at the top of the paper.

d. Recording the datasheet number on each comment page (see Step E.7.c), and signing and dating the comment sheet.

e. Recording any general comments at the end of the comment pages.

f. Signing below the last comment on the last comment page.

g. Attaching the comment pages to the datasheets.

h. Returning the datasheet with any comments attached to the RFPB.

8. The RFPB and the SHP shall review the results of the readiness review. If, in the opinion of the RFPB and the SHP, the activity should be initiated based on the results of this activity, go to Step E.12; otherwise continue.

E.9. The RFPB and the SHP shall arrange for completion of the required task activities to achieve operational readiness or, if the activity is no longer necessary, shall terminate the activity at this point.

10. The RFPB shall obtain an uncompleted copy of the datasheet previously sent to the reviewer in Step E.6.

11. Go to Step E.2.

E.12. The RFPB or the SHP shall prepare a memo to the ED and the POD specifying the basis for determining the activity is "operationally ready."

13. Copies of all completed datasheets and support documentation for this activity shall be provided as attachments to this memo.

E.14. A line for concurrence or nonconcurrence by the ED and the POD shall be at the bottom of this memo.

15. The memo will be sent to the ED and the POD, who will indicate the operation readiness status of the activity by signing either the concurrence or nonconcurrence line.

16. If additional information is requested, it shall be sent in a second memo to the ED and the POD.

E.17. One copy of this memo is supplied to the LRC and another to the RFPB.

18. If nonconcurrence is indicated, go to Step E.9.; otherwise, the program may be initiated subject to criteria specified in documentation accompanying the original memo or recorded in the second memo from Step E.17 (if a second memo is generated).

19. Terminate procedure.

VI. REFERENCES

Preliminary Site Characterization Radiological Monitoring Plan, DOE/NV/10270-14, SAIC-86/8007 (February 1986)

Radiological Monitoring Plan, DOE/NV-10570-6, SAIC-87/8008 (current version)

WMPO Quality Assurance Project Plan (QAPP) WMPO/88-1 (current version)

Nertney, R.J., et al., "Occupancy-Use Readiness Manual--Safety Considerations--," ERDA-76-45-1, September 1975.

SAIC, April 1986, NNWSI Project Position Paper, "Non-Quality Assurance Level I Information in the Licensing Process."

WMPO, "Document Review/Acceptance/Approval," QMP-06-03 (latest version).

WMPO, "QA Records," QMP-17-01 (latest version).

"Documentation of On-Site Data and Off-Site Data Analysis Reports," BTP-ER-008 (latest version).

"Environmental Monitoring Radiological Documentation Control and Distribution, General Maintenance, and Calibration System," BTP-ER-015 (latest version).

VII. FIGURES

- Environmental Monitoring-Radiological Task Document Preparation (Figure A.1-1)
- T&MSS Transportation Stamp (Figure A.1-2)
- Operational Readiness Review Documentation (Figure E.1-1)

VIII. QA RECORDS

All documents generated as a result of the requirements of this procedure that relate to QA Level I and II work are QA records per QMP-17-01, "QA Records." These documents shall be maintained as QA Records and include:

- Documents
- Plans/Reports
- Analyses
- Computer Inputs/Outputs
- Document of Computer Programs Alteration (see Step C.5.)
- Datasheets
- Logs (completed)
- Document Review Sheets

FIGURE A.1-1 RADIOLOGICAL FIELD PROGRAMS BRANCH REPORT/PLAN DEVELOPMENT PROCESS

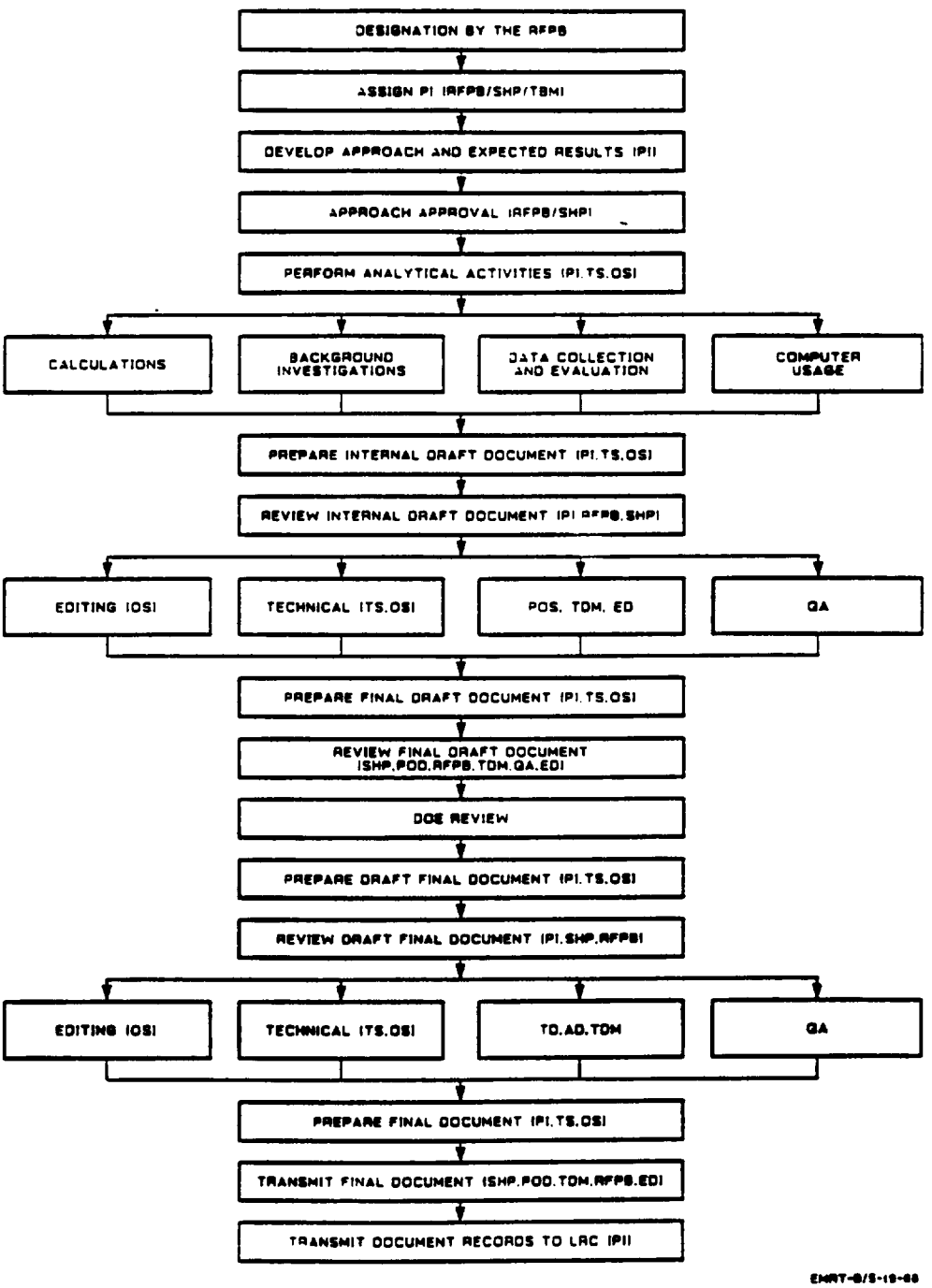


Figure A.1-1. Radiological Field Programs Branch Plan/Report Development Process

LINE	STAMP	USE
1	T&MSS TRANSPORTATION BRANCH	ORGANIZATION NAME
2	TITLE: _____	WORK PIECE NAME
3	PAGE _____ OF _____	PAGE NUMBER
4	T&MSS FILE: _____	DOCUMENT CONTROL REFERENCE
5	BILL ANDREWS: _____ DATE: _____	AUTHOR INITIALS AND DATE COMPLETED
6	VERIFIED: _____ DATE: _____	REVIEWER INITIALS AND DATE RECEIVED

APPLICATION:

1. ALL SUPPORT RECORDS FOR TRANSPORTATION DOCUMENTS.
2. STAMP AND COMPLETE ON EVERY PAGE IN UPPER RIGHT HAND CORNER. LINES 2 AND 4 NEED ONLY BE COMPLETED ON FIRST PAGE IF DOCUMENT IS STAPLED OR BOUND.

Figure A.1-2. T&MSS Transportation Stamp

Page 1 of

Operational Readiness Review Documentation
(ORRD)
_____

Activity: _____

Approved for Use: Date _____ SHP _____ TM _____

Date _____ Reviewer _____

Action	Documentation
1. Has DOE/WMPO authorized the initiation of this activity?	
2. Does an approved plan for this activity exist?	
3. Has a hazard/safety review been prepared?	
4. Has the required equipment been obtained?	
5. Has the appropriate receipt inspection and acceptance testing procedure for the component effecting quality been issued?	
6. Have the appropriate operational procedures been issued?	
7. Have the appropriate quality control and documentation procedures been issued?	
8. Have required support services been procured?	
9. Has the personnel training program been issued?	
10. Have the personnel successfully completed the required training?	

Figure E.1-1 Operational Readiness Review (page 1 of 3)

Page 2 of

Continuation of ORRD
_____

Action	Documentation
11. Has all equipment successfully passed the receipt inspection and acceptance tests (per item 5) or have all related NCRs been resolved.	
12. Do personnel involved in the activity have or have access to the required safety equipment?	
13. Is the equipment requiring calibration currently calibrated?	
14. Is a sufficient stock of required datasheets and other documentation required available?	
15. Are the required personnel and funding available?	
16. Have the following individuals been notified of the initiation of this activity: a. T&MSS Project Manager b. Technical Director c. Administrative Director d. Affected branch managers e. Quality Engineer Manager	

Figure E.1-1 Operational Readiness Review (page 2 of 3)

Title
ENVIRONMENTAL MONITORING RADIOLOGICAL PLANS/REPORTS, ANALYSES, COMPUTER PROGRAM USAGE, AND READINESS REVIEWS

No. BTP-ER-017 Rev. 0

Effective Date 5/10/88

Page 22 of 22

Page of

Continuation of ORRD
_____

Action	Documentation

Title

RECEIPT INSPECTION FOR RADIOLOGICAL MONITORING PROGRAM MATERIALS AND EQUIPTMENT

I. PURPOSE/SCOPE

The purpose of this procedure is to provide instructions for the receipt inspection of general materials and equipment for implementation of Radiological Monitoring Program (RMP) activities. The scope of this procedure includes all general materials and equipment associated with the Environmental-Radiological Task.

II. APPLICABILITY

This procedure specifies the general inspection and operability checks that are required to be conducted on materials and equipment upon receipt and prior to use for RMP activities. This procedure applies to equipment for which manufacturers' tests/calibrations are well documented and for which a simple "ON/OFF" type operational test (operability check) is sufficient to demonstrate conformance with specifications (i.e., non-complicated equipment). Such non-complicated equipment and materials may be placed into service by RMP personnel after successful completion of a receipt inspection and operation check, and a general physical inspection for visible defects and flaws.

Detailed receipt inspection/acceptance test instructions for selected equipment, as determined by the Senior Health Physicist (SHP) and RFPB Manager, are included in specific RMP implementing procedures issued in the Environmental Radiological Monitoring Technical Procedures Manual (ERMTPM).

III. DEFINITIONS

Receipt Inspection:

A receipt inspection (inspection) is a physical examination of purchased material or equipment to provide objective evidence that the item conforms to the specifications on the purchase requisition, is free of shipping damage, and is accompanied by appropriate documentation from the manufacturer.

APPROVALS

Task Manager	8/3/87 Date	Branch Manager	8/3/87 Date
QA Manager	8/3/87 Date	Technical Director	8/4/87 Date

Acceptance Test:

An acceptance test is a post-delivery test developed by the SHP that is necessary to verify that a relatively complex piece of equipment or system meets the quality and safety requirements of the program.

Operability Check:

An operability check (check) (functional test) is a simple ON/OFF, SCALE/VALUE, or BATTERY LEVEL type instrument test that provides evidence that a relatively non-complicated (simple) piece of equipment is operating according to the specifications of the manufacturer.

Non-complicated Equipment:

Noncomplicated equipment means instrumentation for which the manufacturer has provided documented evidence of operability/functional tests conducted on the instrument prior to release, and for which a simple "ON/OFF" type operability check is sufficient to demonstrate that the instrument is operating as specified and documented.

PSCRMP Log

A document that contains signed and dated general annotations of all Preliminary Site Characterization Radiological Monitoring Plan (PSCRMP) activities by the Senior Health Physicist. This log is maintained in the SHP's office.

Level B Qualified T&MSS Personnel Assigned to the Activity

For the purposes of this procedure, Level B qualified personnel are individuals certified as qualified per the Level B training program as specified in the "Environmental Radiological Monitoring Training Program" (see Appendix A-2, "Training" of the "Environmental Radiological Monitoring Technical Procedure Manual," (ERTPM).

Quality Assurance/Quality Control (QA/QC) Personnel

Project Quality Assurance personnel who have completed Quality Assurance training specified in Appendix A-2 of the ERTPM, and are designated by the T&MSS Quality Assurance Manager to verify completion of the "Hold Points" specified in this procedure.

RMP Log

A document similar to the PSCRMP Log, which will be maintained in the SHP's office once RMP activities are initiated.

IV. RESPONSIBILITY

Manager, Radiological Field Programs Branch (RFPB)

The RFPB Manager is responsible for providing any required equipment logs and all required supplies and equipment. In addition, the RFPB Manager will assist the SHP in completing required equipment calibration and maintenance services procurements. The RFPB Manager is responsible for providing a safe working environment and terminating all unsafe activities or activities inconsistent with applicable procedures. These responsibilities may be completed by a designee if the designation is documented in a memo to the Level A Qualified T&MSS personnel, Quality Assurance, the Project Operations Department Manaegr, the RFPB Manager, Technical Record Center and the Correspondence Control Facility (CCF).

Level B Qualified T&MSS Personnel Assigned to this Activity (T&MSS Personnel)

These individuals shall complete the activities specified in this procedure and other applicable procedures and plans per the directions of the SHP and RFPB Manager. This includes pausing in completion of procedural steps at all hold points until QA/QC has completed their designated activity. These individuals are also responsible for terminating activities when unsafe conditions exist and for following all applicable safety requirements and guidelines.

Qualified T&MSS Quality Assurance/Quality Control Personnel (QA/QC)

QA/QC is responsible for verifying satisfactory completion of this procedure at each of the designated hold points. In addition, QA/QC is responsible for terminating activities in this procedures when QA requirements are being violated or when an unsafe condition exists.

Technical Records Center

The Technical Records Center is responsible for maintaining retrievable copies of the original data sheets for this activity.

Senior Health Physicist (SHP)

The SHP is responsible for implementation of the PSCRMP and RMP activities specified in this procedure and the documentation of these activities in the applicable logs. The SHP is responsible for assuring the technical adequacy and radiological safety of these activities. The activities specified for the SHP in this procedure may be completed by a designee, if the designation is documented in a memo to the Level A Qualified T&MSS Personnel, SHP, QA/QC, the POD, the RFPB Manager, Technical Records Center and the CCF.

V. MATERIALS

None.

VI. PROCEDURE

This procedure contains detailed steps for the following activity:

- Subsection A describes the steps for routine receipt inspection not covered under other Environmental Radiological Monitoring Technical Procedures.

A. Receipt Inspection

This activity shall be completed following receipt and prior to use of materials and equipment procured for use in implementing PSCRMP and RMP activities. QA/QC need not be present during completion of this procedure.

NOTE

Inspection of general expendable materials such as office supplies are not required to be documented in accordance with the following steps. All materials, even office supplies, should be inspected for defects prior to use and discarded accordingly if not capable of performing as expected.

A.1. Obtain the receipt inspection forms from the RFPB Manager. Receipt insection forms include:

a. Inventory Radiological Equipment (IRE) (Fig. A.1-1)
b. Spare Parts Inventory (SPI) (Fig. A.1-2)
c. Copy of the purchase requisition

2. If the items received are spare parts/materials, go to step A.4.

3. Record the following applicable information in the IRE:

a. date on "DATE" line.
b. equipment identification in "ITEM/NAME" column.
c. manufacturers name in "MFR" column.
d. item model information in "MODEL" column.
e. serial number or other unique identification number for the material in the "Ser." column.
f. record current PSCRMP Log or PMP Log volume number "Book" column.
g. describe the physical condition(s) in the "Condition" column.
h. note any other comments in the "Comments" column.
i. sign on the "By" line adjacent to the "Date" line beneath the form title line.

A.4 Record the following spare parts/material information on the SPI:

a. date on the "Date" line,
b. name each type of material, supply item, or part in the "Part" column,
c. identify associated instrument name, if applicable, in the "Instrument" column,
d. manufacturer, if available, of each supply item or part in "MFR" column,
e. part number, if available, of each item in "Part No." column,
f. if manufacturer and/or part number is not available, use "Other Description" column for description/identification of part,
g. number of each item in the "#" column, and
h. use "Comments" column for any addition clarification or description of condition for the items being checked.

5. If material is being inspected, go to step A.18. If equipment is being inspected and checked, continue to next step.

A.6. If a "Certificate of Calibration" is required by the purchase requisition or specification, verify that the "certificate of calibration" or equivalent certification documentation is available. If certificate of calibration is available, go to step A.9.

7. If a certification of calibration is not available, return equipment and forms to RFPB Manager.

8. Terminate procedure.

A.9. Check the certification document for accuracy and completeness. Note such items as:

a. Correct equipment ID,
b. Reference standard or standard method identification,
c. Date of certification,
d. Responsible agency or organization, and
e. Signature or other authenticating emblem.

10. Attach the certification document to the IRE and continue.

11. If two copies of Operations and Maintenance Manual or Instruction Manual (ONM) are available, note this information in the IRE comments column and go to step A.14, otherwise continue.

A.12. If a ONM is available, note this on the IRE and on the Status Line of the IRE, then go to Step A.14, otherwise continue.

13. Based on the RFPB Manager's instructions, terminate procedure or document the instructions and continue to next step.

A.14. Conduct a simple operability check in accordance with manufacturer's recommended check method from ONM or if unavailable based on RFPB's instructions.

15. Record the results of operability check on the bottom of the IRE or SPI form.

16. Notify the RFPB Manager of any apparent problems.

A.17. Based on the RFPB Manager's instruction, either terminate procedure or continue to next step.

A.18. Return forms to the RFPB Manager for disposition.

19. The RFPB Manager reviews inspection/check results for adequacy. If adequate, go to step A.23.

20. The RFPB Manager discusses apparent problems with seller and QA. If problem is resolved, go to step A.23.

21. Issue a nonconformance report per WMPO QAPP and supporting documents.

22. Terminate procedure.

A.23. The RFPB Manager assigns a unique number to the form and records this number on the form.

24. If the RFPB Manager in consultation with the SHP has determined a log should be maintained for this instrument, the RFPB Manager will initiate this log at this time. All future activities associated with this instrument will be noted in this log.

25. If this instrument is calibrated, request the RFPB Mdanager to complete an instrument Records Form (Figure A.1-3) for this instrument.

26. The RFPB Manager records the following types of information in the PSCRMP/RMP Log:

    a. Item (material or equipment) name and type,
    b. I.D. number (i.e., serial number, DOE number) if available,
    c. SPI and/or any Instrument Records Form (IRF) form numbers,
    d. the title and volume number of any log created,
    e. date of entry, and
    f. signs the entry.

27. If any new or corrected information becomes available for an item, the RFPB Manager will return to the entry, record the new/correct information in the log and initial and date the change.

28. If an IRF is completed, the RFPB Manager will complete a calibration sticker and attach it to the instrument. The recalibration date will be determined based on the more limiting of the following items:

    a. manufacturer recommendation, if any,
    b. the professional experience of the RFPB Manager and the SHP with whom the RFPB Manager will consult, and
    c. two years from the date of the calibration.

29. The RFPB Manager will record the recalibration data on the IRF and institute procedures of activities to assure appropriate recalibration of the instrument.

30. The RFPB Manager will transmit copies of the completed SPI and IRE to:

    a. Technical Records Center,
    b. Manager QA,
    c. Manager, Environmental Field Programs Branch,
    d. SHP, and
    e. T&MSS property management group.

31. Terminate procedure.

VII. REFERENCES

SAIC T&MSS, "Environmental Radiological Monitoring Procedure Manual"

SAIC T&MSS, "Preliminary Site Characterization Radiological Monitoring Plan," DOE/NV/10270-14, SAIC-86/8007 (February 1986)

SAIC T&MSS, "Radiological Monitoring Plan," (to be issued)

NMPO, QAPP and Supporting Documents.

VIII. FORMS

- Inventory of Radiological Equipment (IRE) (Figure A.1-1)
- Spare Part Inventory (SPI) (Figure A.1-2)
- Instrument Records Form (Figure A.1-3)

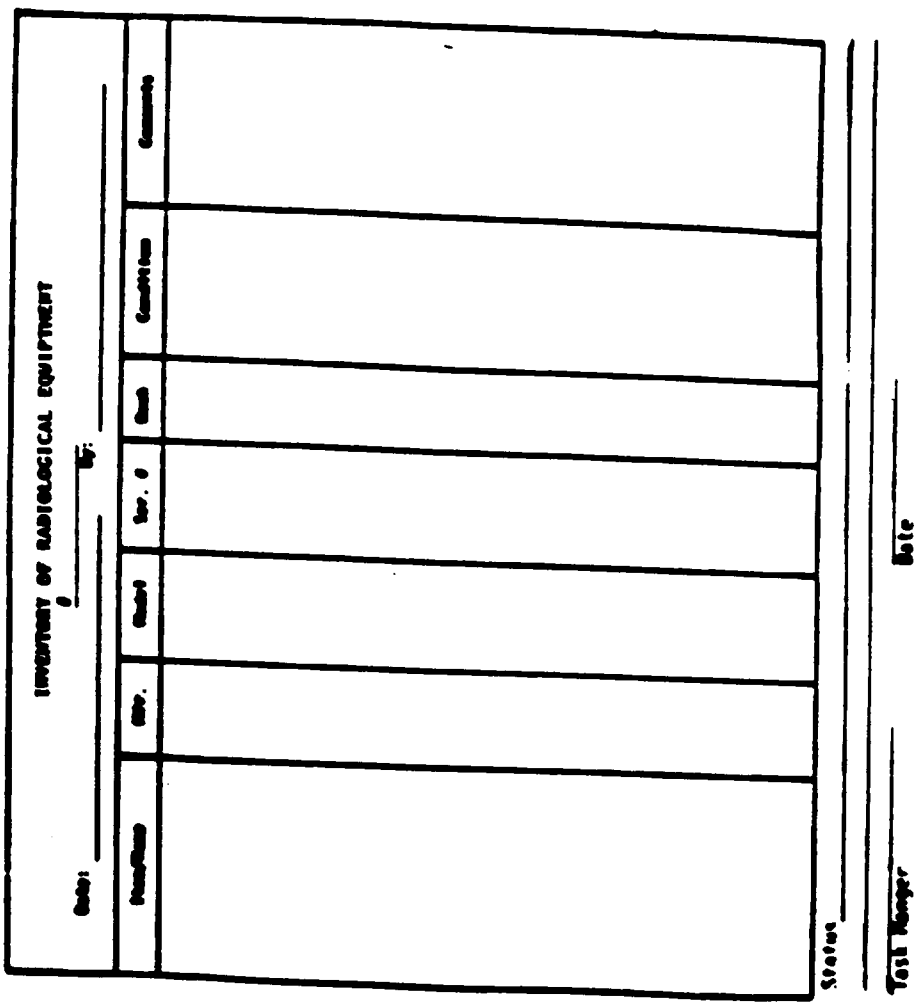

INVENTORY OF RADIOLOGICAL EQUIPMENT
Date:
Description
Qty.
Model
Ser. #
Cond.
Condition
Comments
Status
Date
Task Manager

Figure A.1-1

T-AD-033

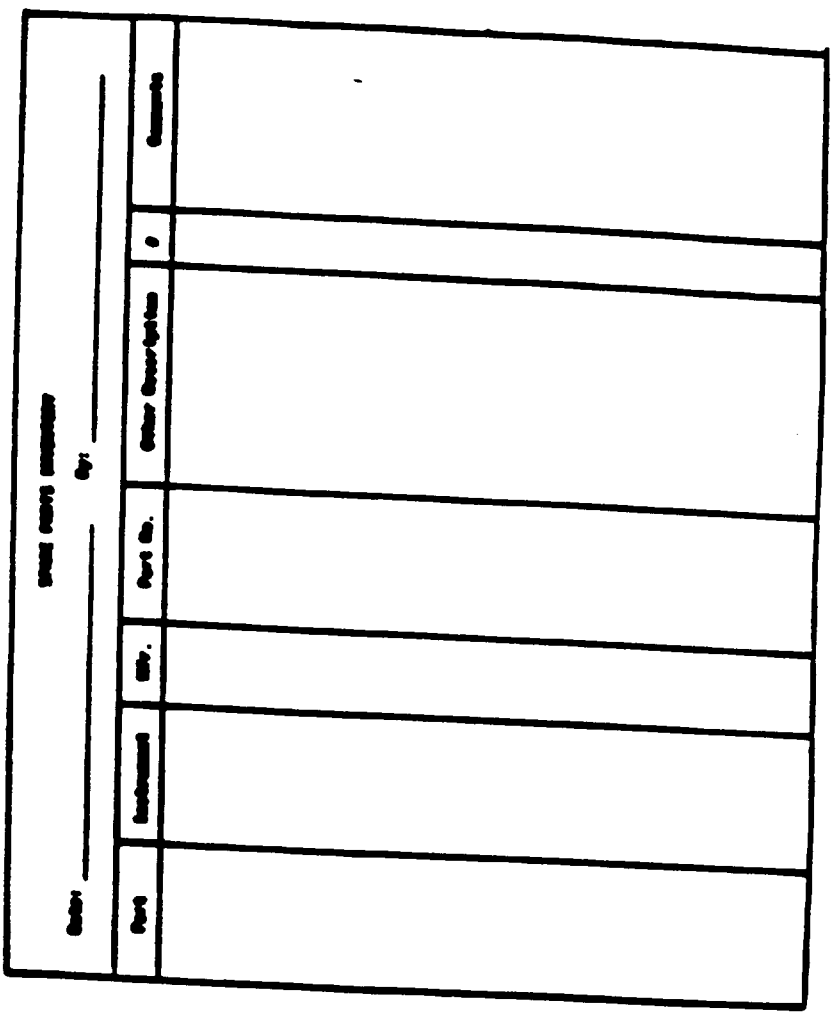


Figure A.1-2

FIGURE A.1-3

T-AD-04?

INSTRUMENT RECORD

System _____ Location _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Model No. _____ Ser. No. _____ Type _____

Rec'd by _____ At Location _____

Date Installed _____ By _____ In Service _____

Service Interval _____ Calibration Interval _____

Calibration Responsibility _____

Service Responsibility _____

Checking Interval _____ Responsibility _____

Comments:

Title

Response to Projected Unplanned Events

No. BTP-ER-034 Rev. 0
Date 5/31/89
Page 1 of 67

I. PURPOSE/SCOPE

This procedure specifies the steps to follow in responding to projected abnormal events for the Technical and Management Support Services (T&MSS) Environmental Radiological Monitoring Program and other programs associated with the Environmental Operations Department. This procedure applies to all activities in the Health Physics Trailer, Building 4522 in Area 25 at the Nevada Test Site (NTS), and other ancillary facilities. This procedure will also apply to those activities associated with Sample Management Division activities in the field and at the Sample Management Facility. Unlike other procedures, personnel will receive sufficient training to allow them to follow this procedure even if a copy of the procedure is not physically present at the work location.

II. APPLICABILITY

This procedure is applicable to all T&MSS activities identified in the previous section, that are implemented under Branch Technical Procedures (BTPs), and to all activities in the Health Physics Trailer and Building 4522, including those activities implemented by other participants who have joint usage of the facilities. This procedure is also applicable to all activities and facilities specifically designated by the Radiological Field Programs Division (RFPD) Manager. In addition to normal distribution of this procedure and its associated Job Performance Aids (JPAs), this procedure and/or its associated JPAs shall be located at emergency supply locations and other locations specifically identified by the procedure/JPA or in a memo from the Senior Health Physicist (SHP).

III. DEFINITIONS

Controlled Area

Any area to which access is controlled in order to protect individuals from exposure to radiation and radioactive materials.

Derived Air Concentration (DAC)

Quantity obtained by dividing the Annual Limit of Intake (ALI) for any given radionuclide by the volume of air breathed by an average worker during a working year (2.4×10^3 m^3).

APPROVALS

WMPO Branch Chief	Date 5/9/89	Radiological Field Program Division Manager	Date 5/12/89
WMPO Project Quality Manager	Date 5/12/89	Environmental Operations Department Manager	Date 5/3/89

DAC-hour

The activity that would be inhaled by an average worker (see above) if the worker was exposed to a concentration of one DAC for one hour.

Unplanned Event

As used in this procedure, any abnormal event that may have a negative impact on safety, operations, or environmental protection. This definition includes any near miss that could have had such an impact.

Job Performance Aid

A controlled approved document providing a list of steps to perform an activity as specified in BTP-ER-001. These documents are used in the field as the implementation documents for BTPs for limited types of activities. The JPAs associated with this procedure are found in the Environmental Radiological Monitoring Technical Procedure Manual (ERMTPM), in which this procedure is typically contained.

Level A, B, and C Health Physics Technician

Personnel who are qualified per the Level A, B, and C Health Physics Technician training programs, respectively, or are equivalently qualified Health Physicists (as specified in the program). These programs are described in the RFPD training program (see Appendix A-2, Training, in the ERMTPM).

Level A, B, and C Health Physicist

Personnel who are qualified per the Level A, B, and C Health Physicist (HP) training programs, respectively. These programs are described in the RFPD training program (see Appendix A-2, Training, in the ERMTPM).

Quality Assurance/Quality Control (QA/QC)

Yucca Mountain Project Office (Project Office) QA personnel who qualify as QA/QC per the RFPD training program (see Appendix A-2, Training, in the ERMTPM).

Technical Safety Coordinator (TSC)

An individual designated by the Assistant Project Manager for Site Operations in consultation with the Assistant Project Manager for Site Evaluation. The TSC is responsible for the implementation of the non-radiological field safety program for T&MSS. This individual has a technical background in Occupational Safety, Industrial Hygiene, and hazardous materials handling.

Affected T&MSS and Participant Staff (Affected Staff)

Affected Staff are those individuals (including other participants) who routinely perform work in the Health Physics Trailer, Building 4522, or the Sample Management Facility; or are implementing a field program associated with the Environmental Operations Division or the Sample Management Division. These individuals are specifically trained in the implementation of this procedure and appropriate associated technical training modules (see Appendix A-2, Training, in the ERMTPM). Personnel qualified as Health Physics Technician Level C, TSC, or Health Physicist Level B shall receive detailed specific training in implementing this procedure.

For the purposes of implementing this procedure, members of the U.S. Department of Energy/Nevada Operations Office (DOE/NV) Office of Environment, Safety, and Health and the professional staff of the Reynolds Electrical & Engineering, Inc. (REECo) Health Physics Department (including Health Physics Technicians) are assumed to be Affected Staff with the appropriate level of training. This assumption is based on the training they receive within their own organizations, not on T&MSS training.

Visitors

Those individuals who are involved in the activities associated with this procedure, but are not qualified members of any of the trained groups identified above.

Technical and Management Support Services

That part of the staff which is part of the T&MSS contractor organization and is responsible for implementation of the environmental radiological monitoring activities or is associated with them.

Unplanned Event Director (UED)

The on-scene individual responsible for directing implementation of this procedure. The UED is the absolute authority for implementation of this procedure, except where authority is assigned to a NTS emergency response organization. Where NTS authority takes precedent, the UED shall act to facilitate implementation of the NTS authority's direction. The UED is identified based on the following criteria, in descending order of preference: (1) if the SHP is present, then he or she is the UED; (2) if a Level C qualified Health Physicist is present, then he or she is the UED; (3) if the TSC, a Level B Health Physicist, or a Level C Health Physics Technician is present, then that individual is the UED; (4) if the facility manager is present, then he or she is the UED; (5) if the activity supervisor is present, then he or she is the UED; and finally (6) if none of the above are present, then the most qualified Affected Staff member present is the UED.

NOTE

If more than one individual in a particular category is present, the first individual on the scene is in charge. The UED may transfer the responsibility of this position to anyone present (other than visitors) who the UED feels is more technically qualified to implement the appropriate response. In determining whether to transfer responsibility, the UED should consider the importance of continuity of response activities and knowledge of the situation. This transfer of responsibility does not automatically occur if a more qualified individual arrives after the initial determination, by events, of the UED by the process specified above.

IV. RESPONSIBILITIES

Radiological Field Programs Division Manager (RFPD)

The RFPD Manager, with the technical support of the SHP, is responsible for ensuring implementation of this procedure by qualified personnel. The RFPD Manager is also responsible for ensuring that all personnel outside the RFPD who may need to implement portions of this procedure receive appropriate training (specifically Modules 5 and 7 in Appendix A-2, Training, in the ERMTPM). The RFPD Manager is responsible for ensuring that all equipment and personnel required to implement this program are available when required. The RFPD Manager is responsible for reviewing the results (see JPA-ER-999) of this procedure with the SHP to ensure that T&MSS personnel have a safe working environment.

Senior Health Physicist

The SHP is responsible for providing technical support to ensure implementation of this procedure by qualified personnel to the extent possible. The SHP is also responsible for ensuring the technical adequacy of the procedures, training, and results associated with this procedure. Finally, the SHP, in consultation with the RFPD Manager, is responsible for reviewing the results of this procedure and ensuring that T&MSS personnel have a safe working environment.

Level C Health Physics Technician, Equivalently Qualified Health Physicist, or Technical Safety Coordinator (Non-Radiological Events)

These individuals are responsible for completing the activities in this procedure and associated JPAs within the limitations of their training and as directed by the RFPD Manager and the SHP.

Level A, B, and C RFPD Personnel, QA/QC, Affected Staff, and Other Specifically Designated Personnel

These individuals are responsible for completing the activities in this procedure and associated JPAs within the limitations of their training and as directed by the RFPD Manager and SHP. Responsibilities shall be specified in the applicable procedure section or associated JPA.

Unplanned Event Director

The UED, if designated as specified in this procedure, directs field implementation of this procedure. The UED has the authority to make immediate unreviewed or unapproved changes in this procedure when such changes are necessary to ensure the protection of public and worker health and safety or the environment.

NOTE

If more than one individual in a particular category is present, the first individual on the scene is in charge. The UED may transfer the responsibility of this position to anyone present (other than visitors) who the UED feels is more technically qualified to implement the appropriate response. In determining whether to transfer responsibility, the UED should consider the importance of continuity of response activities and knowledge of the situation. This transfer of responsibility does not automatically occur if a more qualified individual arrives after the initial determination, by events, of the UED by the process specified above.

Visitors

These individuals are responsible for following the direction of the UED or designee.

V. PROCEDURE

MATERIALS NOTE

The materials required will be determined based on circumstances and applicable JPAs. Emergency supplies are available in each facility and vehicle used in association with RFPD activities.

NOTE

1. Section A addresses Initiation of Response to Abnormal Events.
2. Section B addresses Injuries.
3. Section C addresses Fires.
4. Section D addresses Vehicle Emergencies.
5. Section E addresses Severe Weather.
6. Section F addresses NTS Evacuations.
7. Section G addresses Intrusion of Unauthorized Personnel.
8. Section H addresses Intrusion of Animals into Equipment or Facilities.
9. Section I addresses Severe Equipment Malfunction and Loss of Power.
10. Section J addresses Radiation and Radioactive Materials.
11. Section K addresses Chemical Spills and Releases.
12. Section L addresses Events in which the Public or News Media are Involved.

NOTE

If more than one individual in a particular category is present, the first individual on the scene is in charge. The UED may transfer the responsibility of this position to anyone present (other than visitors) who the UED feels is more technically qualified to implement the appropriate response. In determining whether to transfer responsibility, the UED should consider the importance of continuity of response activities and knowledge of the situation. This transfer of responsibility does not automatically occur if a more qualified individual arrives after the initial determination, by events, of the UED by the process specified above.

NOTE

The actions described in this document are not intended to address recovery from an unplanned event; rather, they are intended to stabilize the particular situation, implement the required notifications, and complete the required documentation. Recovery from an unplanned event is addressed in JPA-ER-992, which shall be initiated, when appropriate, as part of the implementation of JPA-ER-998. In addition, for some unplanned events the UED may not be required, as indicated in those sections of this procedure. In cases where the UED is not required, the steps preceding step A.4 are ignored. The notes prior to step A.4, however, may still be applicable.

A. Initiation of Response To Abnormal Events

A.1. If an abnormal event has occurred, then the UED shall be identified based on the criteria in Section III, Definitions. The UED is then responsible for implementation of this procedure.

A.2. If there is, or may be, an imminent hazard to personnel, evacuate them immediately. All visitors and non-essential staff should be evacuated from the affected area as soon as possible. The UED shall designate an individual(s) to ensure evacuation of any visitors present. It is essential that the UED account for all personnel in an evacuation. Evacuation of the Health Physics Trailer and Building 4522 shall be completed according to JPA-ER-990 and JPA-ER-991, respectively.

NOTE

The JPAs for evacuation of a building shall be posted near the exit for each room in a structure.

NOTE

Unless otherwise stated, the activities covered in the balance of this procedure are performed by the UED. Each response activity has an associated decision tree. The decision tree is summarized in a figure referenced at the beginning of each response activity.

NOTE

In many cases, several sections based on step A.3 may apply. Implement all applicable sections. Note the UED should use the following criteria in determining the order in which activities should occur: (1) treat serious personnel injuries; (2) evacuate personnel from areas of significant hazard; (3) stabilize hazardous conditions; and (4) complete other activities in a logical sequence, to be determined by the UED.

A.3. Identify the hazard or abnormal event. If it falls in one of the categories listed below, go to the section indicated (see Figure A-1), otherwise continue:

a. If the event involves a fire, go to Section C.

b. If the event involves injuries, go to Section B.

c. If the event involves a vehicle emergency, go to Section D.

d. If the event involves severe weather, go to Section E; no UED is designated unless specifically referenced in the procedural steps.

e. If the event involves NTS evacuation alarms or direction, go to Section F.

f. If the event involves the intrusion of unauthorized personnel, go to Section G; no UED is designated.

g. If the event involves the intrusion of animals into equipment or facilities go to Section H, no UED is designated.

h. If the event involves significant equipment malfunctions, go to Section I; no UED is designated.

i. If the event involves radiation or radioactive material, go to Section J.

j. If the event involves a chemical spill or release, go to Section K.

k. If the event involves the news media or members of the public, go to Section L; no UED is designated.

NOTE

Steps A.4, A.5, and A.6 may be completed simultaneously.

A.4. Using available information, stabilize the situation.

A.5. Post any suspected or existing hazards and take measures to mitigate any potential risks to personnel or the environment.

A.6. Implement notification requirements per JPA-ER-998.

A.7. Document the condition per JPA-ER-999.

B. Injuries

This procedure is written assuming that the UED has received at least an eight-hour training course in first aid. Training in cardiopulmonary resuscitation (CPR) is a prerequisite for responding to injuries where breathing or heartbeat have stopped. In such cases, the UED should be the individual most qualified in CPR. A decision tree for injuries is summarized in Figure B-1.

B.1. Determine the probable cause of the injury. If electric shock is suspected, disconnect the power before touching the victim.

2. Evaluate the danger to you and the victim from the surroundings, such as fire, water, and passing automobiles. Consider the danger of causing further injury by moving the victim. Move the victim to a safer location only if necessary to avoid further injury.

3. Check for breathing and heartbeat and stop severe bleeding before attending to other conditions.

B.4. For severe injuries requiring immediate medical assistance, go to step B.5; otherwise go to step B.13.

B.5. Assign someone to request emergency assistance. Inform that individual of the patient's condition and the type of assistance needed.

6. Restore or maintain breathing and heartbeat using techniques prescribed by the American Red Cross.

7. Stop heavy bleeding using the direct pressure method (preferred method) or other methods prescribed by the American Red Cross.

8. Perform first aid procedures for other injury types (such as burns, poisoning, fractures, eye injuries, heat stress, frostbite, animal bites, etc.) as recommended by the American Red Cross.

9. Take steps to prevent shock, such as elevating the wounded area, covering the victim to prevent loss of body heat, and administering fluids in accordance with recommendations of the American Red Cross.

10. Examine the victim carefully for other injuries. Keep checking until medical help arrives.

11. When medical help arrives, provide any assistance requested.

B.12. Follow steps in JPA-ER-998 and JPA-ER-999 regarding notification and documentation of this event; then terminate this procedure.

B.13. Administer first aid for minor injuries using methods recommended by the American Red Cross.

14. If the injury resulted from an animal bite, try to identify the animal, taking care not to be bitten.

B.15. Follow steps in JPA-ER-998 and JPA-ER-999 regarding notification and documentation of this event; then terminate this procedure.

C. Fires

The decision tree for fires is summarized in Figure C.1.

C.1. Upon discovery of a fire or suspicion of a fire (smoke, burning odor, etc.), activate the fire alarm, if any, and verbally notify all personnel in the area of the fire condition. Unnecessary personnel shall leave the area immediately.

B. 2. Report the fire through the NTS Emergency Reporting System:

a. By telephone - Dial 123 from any NTS area.

b. By radio - Say "MAYDAY, MAYDAY, MAYDAY" and give your call sign and net number.

When the 900 Emergency Coordinator answers, provide the following information:

a. Your name.

b. Telephone number (if reporting by telephone).

c. Exact location of fire.

d. Extent of fire (approximate size).

e. Type of fire, if known (electrical, flammable liquid, brush, etc.).

WARNING

Do not remain in area, if there is significant risk in doing so, to facilitate access to radio or telephone communications.

C.3. Remain near the radio or telephone until released by the 900 Emergency Coordinator.

WARNING

Do not attempt to control a fire beyond the capability of your training and equipment; it entails unnecessary risks.

C.4. If a fire is too large or uncontrollable, evacuate the area (see JPA-ER-990 or 991); then go to step C.8.

C.5. If the fire is small, attempt to control it with the proper fire extinguisher when this can be done safely; otherwise treat the fire as uncontrollable per step C.4.

6. If possible, shut off power to major equipment by throwing the appropriate circuit breaker or the main circuit breaker.

C.7. Obtain the nearest fire extinguisher and use it in accordance with the manufacturer's instructions (usually printed on the label).

C.8. All personnel not directly involved in reporting or fighting a fire shall immediately evacuate. Such personnel shall use the safest exit and close the doors behind them to help contain the fire.

9. If time permits, vital records should be secured and all operations involving hazardous materials should be shut down.

10. Designate a person familiar with the facility to inform arriving firefighters of the specific location of the fire and of any special hazards present, such as explosives, flammable liquids or gases, radiation sources, reactive chemicals, or other hazardous materials.

C.11. Complete JPA-ER-998 and JPA-ER-999.

C.12. Terminate this procedure.

D. Vehicle Emergencies

NOTE

Emergency supplies for the RFPD vehicles are located in the tool box in the back of the vehicle.

The decision tree for vehicle emergencies is summarized in Figure D-1.

D.1. If the vehicle is in a location where there is an unstable situation or imminent hazard (e.g., fire), evacuate the vehicle.

2. If there are injuries associated with the vehicle emergency, see Section B; if a fire is involved, see Section C.

CAUTION

Do not subject yourself to significant hazards while attempting to use the radio. If the radio is in the vehicle, stabilize the situation before using the radio. If there is no fire hazard, then you may use the radio from outside the vehicle.

D.3. If assistance is required and a radio is available, contact Station 900; if the situation justifies emergency help (ambulance service needed, fire assistance needed), broadcast "MAYDAY, MAYDAY, MAYDAY." In either situation, provide the following information by radio:

a. Your name.
b. Net on which you are broadcasting.
c. Your location.
d. Nature of the problem.
e. Nature of the assistance required.

Stay on the radio to answer questions or take direction.

CAUTION

Extreme caution should be used to prevent brush fires when using ignition sources in a dry environment. In addition, care should be exercised to minimize the potential for heat or sunstroke.

4. If you are on a road, place warning signs in front of and behind a disabled vehicle at a sufficient distance to allow oncoming traffic to stop. If signs are unavailable, station personnel at appropriate points to flag down vehicles.

5. Repair the vehicle, if necessary. Be sure there is a stable base before using a jack. Do not get under an unblocked vehicle.

6. If the vehicle is stuck in sand, mud, etc., use the practices addressed in Training Module 14, Logistics, to attempt to free it.

7. If assistance is still required, contact Station 900 as described in step D.3.

D.8. Follow the steps in JPA-ER-998 and JPA-ER-999 as soon as possible, then terminate this procedure.

E. Severe Weather

The decision tree for severe weather is summarized in Figure E-1.

CAUTION

If it is raining at your current location, or if it appears it is raining or may have recently rained in the mountain areas above your work location, stay clear of gullies, washes, or other areas where flash flooding may occur.

E.1. If you are working in the field and severe weather appears imminent, leave the area and return to Area 25 or other appropriate location.

2. During a lightning storm, do not work in the flat open areas around Yucca Mountain; stay in your vehicle or structure. You could easily be the highest ground point in an area and thus are likely to be struck by lightning. If lightning strikes a building where you are working, survey the area for fires. The object(s) that provided the primary path to ground for the lightning will probably still be very hot, so care should be exercised.

3. If you are working in the Yucca Mountain area and significant snowfall or ice storms are predicted or appear likely, leave the area and return to Area 25 or other lower elevations. This will minimize the potential for being trapped in an area by impassable roads.

4. If you are in a flash flood area when water begins to rise, the UED shall select the most expeditious method for reaching high ground. Move to high ground per this decision. Do not attempt to save vehicles or equipment at the risk of personnel. It is important to remember when making these decisions that the water level rises very rapidly during flash flood conditions.

E.5. If flash flood conditions exist, go to step E.9.

E.6. Stop your vehicle if the visibility drops below 100 feet or the road is too slippery to travel. Do not continue unless an emergency exists. Pull off the road and put out warning signs; then go to step E.9.

E.7 If weather conditions have significant potential to create a hazardous condition for personnel, the UED shall evacuate the area.

E.8. Follow the steps in JPA-ER-998 and JPA-ER-999 as soon as possible, then terminate this procedure.

E.9. Once you have reached a safe location, contact Station 900 if possible. Do not return to the vehicle until the water level has returned to a minimal level.

10. If the potential hazard is over, either return to the vehicle and continue work activities or return to Area 25, whichever alternative appears more appropriate.

11. If you are stranded, you may walk back to Area 25 or other occupied locations if you can do so safely. It is important to consider your physical condition and the potential for severe sunburn, heat or sunstroke, hypothermia, or frostbite before you make this decision.

12. If it appears unsafe to walk back, stay together and await rescue. Measures should be taken to make it easier to locate you, such as starting a small camp fire and staying in the open. Take all steps possible to avoid the effects of severe environmental exposure such as sunburn, heat or sunstroke, hypothermia, frostbite, etc.

E.13. Follow the steps in JPA-ER-998 and JPA-ER-999 as soon as possible, then terminate this procedure.

F. NTS Emergencies and Evacuations

The decision tree for NTS emergencies and evacuations is summarized in Figure F-1.

F.1. For NTS emergencies and evacuations, NTS procedures take precedence. Follow the instructions either posted for NTS alarms or provided directly by NTS security, REECo Health Physics, DOE/NV Environment Safety and Health, Nye County Sheriff's Officer, or other NTS designated emergency personnel.

F.2. Follow the steps in JPA-ER-998 and JPA-ER-999 as soon as possible; then terminate this procedure.

G. Intrusion of Unauthorized Personnel

The decision tree for intrusion of unauthorized personnel is summarized in Figure G-1.

G.1. If there is an unidentified individual in the area, request to see an identification badge and ask the person why he or she is in the area.

2. If the individual does not have a badge, contact security. If the individual should not be in the facility, ask him or her to leave.

G.3. If the individual refuses to leave, or if you believe such action may be appropriate (e.g., the person may have removed something from the facility, the person's reason for being there does not seem justified, or the person is behaving suspiciously), contact security and describe the situation.

G.4. If the individual does not comply, contact security and inform them of the situation.

G.5. If you have contacted security in steps G.1 to G.4, complete the activities in JPA-ER-998 and JPA-ER-999; then terminate this activity.

H. Intrusion of Animals into Equipment or Facilities

The decision tree for intrusion of animals into equipment or facilities is summarized in Figure H-1.

CAUTION

If a mammal acts in an aggressive manner, leave the area immediately. Such behavior may be indicative of rabies. When dealing with a rattlesnake, remember that it can strike an object from a distance equal to the snake's total length. Exercise care in dealing with these animals. If you are bitten by an animal, follow the steps in Section B.

H.1. If an animal is found in the equipment or facility associated with your activity, attempt to facilitate the animal's egress from the equipment or facility. Do not corner an animal; such action will typically induce very aggressive behavior.

2. If you require assistance, contact REECo Occupational Safety.

H.3. Complete JPA-ER-999. If you contacted REECo Occupational Safety, also complete the steps in JPA-ER-998. Terminate this activity.

I. Severe Equipment Malfunction or Loss of Power

The initial decision tree for severe equipment malfunction or loss of power is summarized in Figure I-1. Subsequent decision trees are referenced in this figure and in the first step describing the appropriate response activity.

I.1. If the malfunction has created a potential safety hazard, address this hazard first. Appropriate tags (see JPA-ER-070) should be placed on all potentially hazardous and malfunctioning equipment.

a. If you believe that an electrical equipment or circuit is arcing or shorting, go to step I.2 (see Figure I-2).

b. If the malfunction is loss of power to Building 4522 or the Health Physics Trailer, go to step I.24 (see Figure I-3).

c. If there is a failure of the hood in the Health Physics Trailer, go to step I.25 (see Figure I-4).

d. If there is a failure in the hood in Building 4522, go to step I.28 (see Figure I-5).

e. If there is a failure in the ventilation system for the oven room, go to step I.13 (see Figure I-6).

f. If the malfunction is a tripped or blown breaker or fuse, go to step I.39 (see Figure I-7).

g. If there is an equipment malfunction not previously discussed, terminate use of this equipment. Stabilize the condition, then go to step I.19 (see Figure I-8).

I.2. Throw the breaker or breakers for this circuit. If you are unsure of which breaker or breakers are appropriate, throw the main circuit breaker.

I.3. Post an appropriate danger tag on the breaker and any associated equipment.

I.4. Disconnect or disable the equipment, if possible. If the equipment was clearly the source of the problem, remove the danger tag from the breaker and re-energize the circuit.

I.5. If the hood in the Health Physics Trailer is not in operation or is unaffected, go to step I.8.

I.6. If the hood in the Health Physics Trailer is operating and there is the potential for the spread of radioactive contamination, go to Section J. After completing the appropriate steps in Section J, return to this point in the procedure.

I.7. Return all radioactive material to the appropriate storage area.

I.8. If the hood in Building 4522 is not in operation or is unaffected, go to step I.13.

9. Seal all containers of volatile materials in the Building 4522 hood.

10. Shut the hood.

11. Post the hood as out of service.

I.12. Minimize occupancy of the area.

I.13. If the ventilation system in the oven room is not in operation or is unaffected, go to step I.16.

14. Since the ventilation system is not working, do not initiate ashing activities. If the ashing activities are already initiated, terminate them as soon as possible.

I.15. Turn off the furnaces and ovens, and ensure maintenance of sample chain-of-custody.

I.16. Notify other individuals in the area.

17. If the circuit involves the ultra-cold freezer, the freezer, or one of the refrigerators, and is not re-energized, notify the RFPD Manager.

I.18. Complete JPA-ER-998 and JPA-ER-999.

I.19. If there is an equipment malfunction not previously discussed, terminate use of this equipment. Stabilize the condition.

20. Post the hazard appropriately.

21. If this malfunction involves the ultra-cold freezer, the freezer, or one of the refrigerators, notify the RFPD Manager.

I.22. Complete JPA-ER-998 and JPA-ER-999.

23. Terminate this activity.

I.24. When there is a loss of power to Building 4522 and/or the Health Physics Trailer, initiate the following steps as appropriate.

I.25. If the hood in the Health Physics Trailer was not in operation or is unaffected, go to step I.28.

26. If the hood in the Health Physics Trailer was operating and there is the potential for the spread of radioactive contamination, go to Section J. After completing the appropriate steps in Section J, return to this point in the procedure.

I.27. Return all radioactive material to the appropriate storage area.

I.28. If the hood in Building 4522 was not in operation or is unaffected, go to step I.32.

29. Seal all containers of volatile materials in the Building 4522 hood.

30. Shut the hood.

I.31. Minimize occupancy of the area.

I.32. If the ventilation system in the oven room was not in operation or is unaffected, go to step I.34.

I.33. Turn off the furnaces and ovens, and ensure maintenance of sample chain-of-custody.

I.34. Notify other individuals in the area.

35. Shut down all electrical systems and equipment (do not throw the breakers) in the affected area, with the following exceptions (these breakers are specifically labeled):

a. The ultra-cold freezer.
b. The refrigerators.
c. Any hoods in operation at that time.

36. Take steps to ensure maintenance of sample chain-of-custody.

I.37. Complete JPA-ER-998 and JPA-ER-999.

38. Terminate this activity.

I.39. If the malfunction is one of the following:

a. A blown electrical circuit breaker. If the malfunction re-occurs after being reset, go to step I.3.

b. A blown electrical circuit breaker. Reduce the load on the circuit and reset the breaker, go to step I.44.

c. A blown fuse in the breaker panel, go to step I.3.

d. A blown fuse/breaker in a piece of equipment, continue.

I.40. Disconnect the equipment.

I.41. If the fuse/breaker blows a second time, go to step I.43.

I.42. Replace the fuse or reset the breaker, then go to step I.44.

I.43. Tag the equipment as "Maintenance Due" and out of service (per JPA-ER-070), and describe the problem on a "Special" tag (per JPA-ER-070).

I.44. Complete JPA-ER-999.

I.45. Terminate this activity.

J. Radiation and Radioactive Materials

CAUTION

Implementation of this procedure should reflect an effort to minimize public and worker exposure and to minimize the release of radioactive, hazardous, and toxic materials to the environment.

The decision tree for radiation and radioactive materials is summarized in Figure J-1.

NOTE

The applicable limits are summarized below:

Allowable Smearable (Removable) Contamination in the Controlled Area

For natural uranium, U-238 and associated decay products ---- 1000 dpm of alpha/100 cm^2.

For transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129 ---- 20 dpm/100 cm^2.

For natural thorium, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133 ---- 200 dpm/100 cm^2.

Beta-gamma emitter (except as noted elsewhere) ---- 1000 dpm/100 cm^2.

Allowable Fixed contamination in the Controlled Area

For natural uranium, U-238 and associated decay products ---- 5000 dpm of alpha/100 cm^2.

For transuranics, Ra-226, Ra-228, Th-230, Th-228, Pa-231, Ac-227, I-125, I-129 ---- 300 dpm/100 cm^2.

For natural thorium, Th-232, Sr-90, Ra-223, Ra-224, U-232, I-126, I-131, I-133 ---- 1000 dpm/100 cm^2.

Beta-gamma emitter (except as noted elsewhere) ---- 5000 dpm/100 cm^2.

Allowable Airborne Radioactive Material Criteria

Potential airborne concentration shall not exceed 10 DAC-hours.

Radiation Level Posting and Access Criteria

Radioactive sources are stored in this area, then the area is posted as a "Source Storage Area."

Dose rate at 30 cm from the source of radiation or from any surface through which radiation penetrates at a rate exceeding 5 mrem per hour is posted as a "Radiation Area."

Dose rate at 30 cm from the source of radiation or from any surface through which radiation penetrates at a rate exceeding 100 mrem per hour is posted as a "High Radiation Area."

Dose rate at 30 cm from the source of radiation or from any surface through which radiation penetrates at a rate exceeding 5 rem (5000 mrem) per hour is posted as a "Very High Radiation Area."

Title

Response To Projected Unplanned Events

J.1. Based on the type of event, go to the following steps; if more than one of the conditions exists, address them in the order of hazard (highest first):

a. Potential for airborne contamination (above limits) beyond the boundary of the appropriate radiation area, go to step J.6 (see Figure J-2).

b. Potential release of radioactive contamination (above limits) beyond the boundary of the appropriate radiation area, go to step J.5 (see Figure J-2).

c. Potential for radiation exposure above allowed personnel exposure limits, go to step J.17 (see Figure J-3).

d. Detection of radioactive contamination on personnel, go to step J.24 (see Figure J-4).

e. Detection of radioactive contamination in excess of applicable limits on equipment or in facilities, go to step J.30 (see Figure J-5).

f. Significant damage (potential for release of radioactive material) to a radioactive source or radioactive material shipping package, go to step J.5 (see Figure J-2).

g. Potential release of detectable quantities of radioactive contamination beyond the boundary of a controlled area, go to step J.42 (see Figure J-5).

h. Potential for the inhalation of detectable quantities of radioactive material, go to step J.5 (see Figure J-2).

i. Detection of radioactive contamination on equipment or in facilities, go to step J.30 (see Figure J-4).

j. Radiation exposure in excess of appropriate control limits, go to step J.50 (see Figure J-5).

k. Loss of radioactive source, go to step J.55 (see Figure J-6).

l. Miscellaneous radiation related events, continue at step J.2 (see Figure J-7).

J.2. Stabilize the conditions:

a. Minimize exposure of the public and workers.

b. Minimize the potential for release of radioactive material.

c. Post the area appropriately (see JPA-ER-025).

d. Minimize the potential for contamination of existing samples and ensure maintenance of sample chain-of-custody.

e. Decontaminate equipment and facilities as appropriate (see JPA-ER-003).

J.3. Complete JPA-ER-998 and JPA-ER-999.

J.4. Terminate this procedure.

J.5. The area posting shall be "Contamination Area"; go to step J.7.

J.6. Post "Airborne Radioactivity" rather than "Contamination Area."

J.7. If the release occurs outside a hood, go to step J.10; otherwise continue.

8. Close the hood face and shut off the hood.

J.9. Since the sources of radioactive material currently used in RFPD activities are relatively small, the first consideration should be to evacuate workers from the affected area.

NOTE

None of the facilities discussed in this procedure have traditional nuclear facility ventilation systems. The facilities have independent hoods and ventilators. They may also have cooling systems that communicate with the outside air source. Specifically, the Health Physics Trailer has one hood and two air conditioners (window type). Building 4522 has one hood in the "sample preparation area," the "oven room" canopy system, the "electrical/electronic shop" solder gas ventilator, and the "high bay area" welding ventilator.

J.10. If the release occurs in a facility, shut down the facility's ventilation system if you believe that the concentration may exceed the applicable limits at the point of release (none of the facilities addressed by this procedure have high-efficiency particulate air filtered ventilation systems). The ventilation system my be shut down by throwing the main breaker or appropriate control switches.

J.11. Survey personnel per JPA-ER-001 and decontaminate as needed per JPA-ER-038. Be sure to prevent personnel from entering the potentially contaminated area while they are being surveyed. Personnel decontamination may be delayed to allow posting of the areas of potential contamination, but take steps to contain the radioactive contamination on personnel so it does not spread to other areas or become airborne.

J.12. If the release occurred in a facility, post "Contamination Area" or "Airborne Area," as appropriate, on the facility doors, then go to step J.15; otherwise continue.

J.13. If the release occurred outdoors and appropriate protective equipment (see JPA-ER-017) is available, do a preliminary survey per JPA-ER-009 or JPA-ER-016.

J.14. Post the area per JPA-ER-025 or JPA-ER-026, as appropriate.

J.15. Complete JPA-ER-998 and JPA-ER-999.

J.16. Terminate this procedure.

CAUTION

Care should be exercised in implementing steps J.17 to J.22 to ensure that radiation exposure is as low as reasonably achievable. Typically these activities should generate integrated exposures less than 50 mrem. If higher exposures are projected, then activities involving surveys in the higher areas should be eliminated and the area posted based on conservative estimates.

J.17. If the exposure rate exceeds 100 mrem/hr and shielding cannot be installed or restored quickly (with an integrated exposure of less than 50 mrem), go to step J.19.

J.18. Restore the shielding.

J.19. Retreat to a point where the dose rate is less than 2 mrem/hr (determined per JPA-ER-008).

J.20. Survey the area per JPA-ER-008 to locate the boundary of area where the dose rate is greater than 100 mrem/hr.

J.21. Post the area as a "High Radiation Area" per JPA-ER-025. If possible, locked barriers should be used to preclude access to any "High Radiation Area." If locked barriers are not feasible, then maintain observation of and prevent entry to the "High Radiation Areas" until you are relieved by REECo Health Physics personnel.

J.22. Survey the area per JPA-ER-008 to locate the boundary of any area where the dose rate is greater than 2 mrem/hr. Post the area as a "Radiation Area" per JPA-ER-025.

J.23. Complete JPA-ER-998 and JPA-ER-999, then terminate this procedure.

J.24. Survey each affected individual per JPA-ER-001 (and JPA-ER-016 if appropriate).

J.25. Decontaminate personnel as needed per JPA-ER-002.

J.26. Review with the individual past work activities, then survey the equipment used and the work areas using JPA-ER-008, JPA-ER-009, JPA-ER-011, and JPA-ER-007, as appropriate, to determine the source of the contamination.

27. If the source of the contamination is one of the following:

a. A radioactive source or shipping package, go to step J.34.

b. Equipment or the work area, go to step J.30.

c. From outside the immediate work area, go to step J.55.

d. Not found, then continue.

J.28. Complete JPA-ER-998 and JPA-ER-999.

29. Terminate this procedure.

J.30. If you have already completed the applicable survey, go to step J.31. Otherwise, survey the equipment and work area using JPA-ER-008, JPA-ER-009, JPA-ER-011, and JPA-ER-007, as appropriate, to determine the location and extent of the contamination.

J.31. If contamination is in excess of 2000 dpm/100 cm^2 of alpha activity (other than uranium) or 20,000 dpm/100 cm^2 of any activity, go to step J.52; otherwise, decontaminate the equipment and/or work area per JPA-ER-003.

J.32. Complete JPA-ER-998 and JPA-ER-999.

J.33. Terminate this procedure.

J.34. If the source of the contamination is a radioactive material package, note the label on the package. The label should provide you with an indication of the exposure rate from the package (see Figure J-1).

35. If possible, determine from associated documentation and labeling the type and quantity of radioactive material involved.

J.36. Survey the source of the contamination per JPA-ER-008 to determine the existing exposure rate and adjust your activities to minimize radiation exposure.

J.37. Survey the source of contamination per JPA-ER-007 for contamination using available instruments.

J.38. If the package or source appears to be leaking contamination, place the source in a plastic bag (without handling it directly) and seal the bag or other container (typically with tape). If a paint can or other sealable container is available, use it. For such containers, the lid may be sealed with tape to minimize the potential for loss of containment.

J.39. If multiple plastic bags, paint cans, or other types of sealable containers are available, survey each container can per JPA-ER-053. If a container is contaminated, repeat steps J.37 and J.38 as needed. If only one container is available, or if the final appropriate container available is contaminated, then decontaminate the container per JPA-ER-003.

40. If the dose rate from the source is significant (greater than 2 mrem/hr at contact), place it in a shielded container, if available.

J.41. If the source has been contained or is the source of contamination, move the source or package from the immediate area and survey the area for contamination per JPA-ER-009.

J.42. If contamination is detected, decontaminate the area per JPA-ER-003, but only if it is possible to do so easily and safely.

J.43. If you did not decontaminate the area, attempt to stabilize the contamination and post the area per JPA-ER-025.

44. If you are outside the boundaries of the NTS and unable to decontaminate the area, maintain surveillance and control of the area, if feasible. Notify the RFPD Manager, the SHP, any Level C Health Physicist, or DOE/NV-HPED of the situation and follow their directions.

45. If you are on the NTS, notify REECo Health Physics and follow their directions.

46. If you are off the NTS, contact the RFPD Manager, the SHP, or REECo Health Physics for instructions on removing the contaminated item to a safe location.

J.47. Transport the contaminated item in the appropriate shipping container with appropriate documentation (see BTP-ER-019) only. Transport the item to the designated location, unless previously instructed otherwise.

J.48. Complete JPA-ER-998 and JPA-ER-999.

J.49. Terminate this procedure.

J.50. Survey the area per JPA-ER-008 to locate the boundary of an area where the dose rate is greater than 2 mrem/hr.

51. If it is possible, reduce this dose rate to below limits in a simple manner.

J.52. Post the area as appropriate per JPA-ER-025.

J.53. Complete JPA-ER-998 and JPA-ER-999.

J.54. Terminate this procedure.

J.55 Review with the individual past work activities, then survey the work equipment and area using JPA-ER-008, JPA-ER-009, JPA-ER-011, and JPA-ER-007, as appropriate, to determine the location of the source.

J.56. If the source is not found, go to step J.60. If the source is found, survey it per JPA-ER-053, JPA-ER-055, or JPA-ER-058 and continue.

J.57. If there is smearable contamination in excess of limits found associated with the source, go to step J.34.

J.58. Label the source with a "Hold" tag or label indicating that SHP authorization is required prior to use.

59. Return the source to its designated storage area.

J.60. Complete JPA-ER-997, then go to step J.62.

J.61. Complete JPA-ER-998 and JPA-ER-999.

J.62. Terminate this procedure.

K. Chemical Spills and Releases

CAUTION

This section does not apply to spills or releases of large quantities (more than five gallons) of chemicals. In such a situation, the procedures would be addressed by AP 6.13, "Hazardous Material Management and Handling Plan"; the Project Oil/Gas/Hazardous Waste Spill Contingency Plan; and the Yucca Mountain Project Emergency Plan (or until this document is issued, the DOE/NV Emergency Preparedness Plan).

CAUTION

The materials in the spill control kit may be hazardous materials and should be treated like any other hazardous materials (see applicable Material Safety Data Sheets (MSDS's)). In addition, the material generated in mitigating these materials maybe hazardous waste and should be treated accordingly (see BTP-ER-035).

NOTE

Five gallons is the largest container size currently anticipated for chemicals used in facilities addressed by this procedure. Consequently, this section describes methods for control and clean-up of relatively small spills.

The decision tree for chemical spills or releases is summarized in Figure K-1.

K.1. Notify other personnel of the spill and instruct them to avoid the area affected by the spill. Maintain control of the area where the spill occurred.

2. Arrange first aid for injured personnel.

CAUTION

Do not enter the contaminated area until the necessary protective clothing and equipment have been determined.

3. Eliminate any fire or explosion hazards, such as electrical hazards, open flames, or incompatible materials.

K.4. Obtain the following information, to the extent possible, from container labels and related MSDS's before commencing further response actions:

a. Type and concentration of the spilled material.

b. Hazardous characteristics of the spilled material, such as (1) flash point, (2) toxicity, (3) corrosiveness, (4) potentially incompatible substances, (5) effects resulting from exposure, and (6) first aid measures for personnel exposure.

5. Determine dangerous conditions or potential consequences of the spill, including:

a. Fire or explosion.

b. Presence of oxygen-deficient atmosphere in a confined space.

c. Presence of toxic gases.

d. Other nearby hazardous material that may be involved in the event of a fire or explosion.

K.6. Determine from the MSDS the appropriate spill response equipment and protective clothing necessary for safe and effective response.

NOTE

The Spill Control Products Instruction Manual (SCPIM) (see Appendix A-4 of the ERMTPM) will be attached to the back of any controlled copy of this procedure, if the procedure is not part of a controlled copy of that manual.

K.7. Determine the appropriate response by following the SCPIM and the balance of this procedure. The SCPIM steps may be used as substitutes for the balance of the steps in this procedure, if appropriate. Steps K.43 and K.44 are always implemented. If the spilled material is one of the following:

a. A strong acid, go to step K.15.

b. A strong base, go to step K.22.

c. An oxidizer, go to step K.31.

d. Flammable, go to step K.38.

e. Mercury, go to step K.45.

f. Something else, continue at step K.8.

K.8. If instructions in the MSDS conflict with the following steps, contact the TSC or the SHP for advice.

9. Put on appropriate protective clothing.

10. Shut off or otherwise stem the spill at its source (e.g., by placing a leaking container in a larger, liquid-tight container).

11. Contain the spilled liquid material using sand, vermiculite, POLYZORB, or other sorbent material to dam the flow.

12. Use a POLYZORB sorbent pillow (or equivalent) to collect the remaining spilled liquid.

K.13. Dispose of the sorbent materials as laboratory waste (see BTP-ER-035).

K.14. Go to step K.44.

NOTE

The following steps apply to neutralizing and cleaning up spills of strong acids. Strong acids are defined as solutions of organic or inorganic acids with a pH smaller than 3. Acids that are also oxidizers or flammable require additional precautions to avoid initiation of fire or explosions (see applicable section). Materials with a pH between 3 and 10 shall not represent a hazard related to pH (acidity/alkalinity).

K.15. If instructions in the MSDS conflict with the following steps, contact the TSC or SHP for advice.

16. Wear protective gloves and chemical goggles.

17. Neutralize the spilled material with sodium bicarbonate (powder). Work from the outside of the spill toward the center. Use the sodium bicarbonate powder to dam the spill and prevent further spread.

18. Continue adding sodium bicarbonate until there is no longer any evolution of gas.

19. Soak up the neutralized liquid with a POLYZORB sorbent pillow (or equivalent).

20. Dispose of the sorbent materials as laboratory waste.

K.21. Go to step K.44.

NOTE

The following steps apply to cleanup of spills of strong bases. Strong bases are defined as solutions with pH greater than 10.

K.22. If instructions in the MSDS conflict with the following steps, contact the TSC or SHP for advice.

23. Wear protective gloves and chemical goggles.

24. Shut off or otherwise stem the spill at its source (e.g., by placing a leaking container in a larger, liquid-tight container).

25. Contain the spilled liquid material using sand, vermiculite, POLYZORB, or other sorbent material to dam the flow.

K.26. Neutralize the spilled material with Neutrasorb (Acid Neutralizer) or an equivalent neutralizing solution. Work from the outside of the spill toward the center.

27. Continue adding neutralizer solution until the color change of the indicator is observed (from Red/Yellow to Blue/Green).

28. Soak up the neutralized liquid with POLYZORB sorbent pillows (or equivalent).

29. Dispose of the sorbent materials as laboratory waste (see BTP-ER-035).

30. Go to step K.44.

NOTE

The following steps apply to the cleanup of spills of oxidizing materials.

K.31. If instructions in the MSDS conflict with the following steps, contact the TSC or SHP for advice.

32. Wear protective gloves and chemical goggles.

33. Shut off or otherwise stem the spill at its source (e.g., by placing a leaking container in a larger, liquid-tight container.

34. Contain the spilled liquid material using sand or POLYZORB sorbent material to dam the flow.

35. Soak up the spilled liquid with POLYZORB sorbent pillows (or equivalent).

K.36. Dispose of the sorbent materials as laboratory waste (see BTP-ER-035).

K.37. Go to step K.44.

NOTE

The following steps apply to the cleanup of spills of flammable liquids.

K.38. If instructions in the MSDS conflict with the following steps, contact the Occupational Safety and Health Coordinator or the SHP for advice.

39. Wear protective gloves.

40. Shut off or otherwise stem the spill at its source (e.g., by placing a leaking container in a larger, liquid-tight container).

41. Contain the spilled liquid material using sand or SOLUSORB sorbent material to dam the flow.

42. Soak up the spilled liquid with SOLUSORB sorbent pillows (or equivalent).

K.43. Dispose of the sorbent materials as laboratory waste (see BTP-ER-035).

K.44. Follow steps in JPA-ER-998 and JPA-ER-999 regarding notification and documentation of this event; then terminate this procedure.

K.45. Specific mercury spill procedures will be followed when a spill of mercury occurs.

WARNING

Minimize all inhalation of mercury vapors and physical contact with mercury.

46. Locate the "Mercury Spill Control" kit, remove one of the mercury vapor masks that have been added to the kit, and put it on immediately.

47. Minimize the spread of the spill.

K.48. Obtain a "Mercury Vapor Detector" (which has been added to the normal "Mercury Spill Control" kit). Open the detector's packaging (noting the time) and place it in a convenient location to monitor the vapors from the spill.

49. Follow the clean-up steps specified on the "Mercury Spill Control" kit.

K.50. Sprinkle RESISORB over surfaces or other areas that are suspected to still contain mirocdroplets (very small amounts) of mercury.

51. Record the following information on the "Mercury Vapor Detector" in use:
    a. date,
    b. time (noted earlier in step K.48),
    c. "1st detector," and
    d. your initials.

52. If the "Mercury Vapor Detector's" treated surface has turned gray, it is indicating that mercury vapor was present in detectable quantities during the cleanup. If the treated surface of the detector is not gray (detectable amounts of the vapor were not detected), then go to step K.55; otherwise continue.

53. Obtain a "Mercury Vapor Detector." Open the detector's packaging and record the following information on it:
    a. date,
    b. time,
    c. "2nd detector," and
    d. your initials.

NOTE

The second detector will be picked up as part of the survey and recovery procedures implemented as described in JPA-ER-992. These activities may include the use of additional detectors.

54. Place this detector in a convenient location to monitor the vapors from the spill.

K.55. Leave the immediate area, taking the sealed package of spilled materials with you. If you have installed a second "Mercury Vapor Detector," take the first one with you.

56. Place the waste in a paint can or other available container. Be sure to label the container.

57. Remove your mercury vapor mask and place it in a waste container. Be sure to label the container.

58. Place any "Mercury Vapor Detectors" removed form the area into a sealed package and give it to the TSC or SHP when it is feasible.

K.59. Post the area where the spill occurred as a chemical spill area.

60. Handle the waste generated in the activity as specified in BTP-ER-035 when it is feasible to do so.

K.61. Follow steps in JPA-ER-998 and JPA-ER-999 regarding notification and documentation of this event; then terminate this procedure.

L. Events in Which the Public or News Media are Involved

The decision tree for events in which the public or news media are involved is summarized in Figure L-1. The steps in this section should in no way be allowed to interfere with the mitigation of any hazardous situation.

NOTE

Currently, the situation discussed in this section is considered extremely unlikely. In addition, there are no foreseeable events associated with this activity that could constitute a significant hazard to the public. However, to ensure all appropriate contingencies are addressed, this section provides some additional direction.

L.1. If the news media are present, do not provide them with information unless specifically authorized to do so by the DOE/NV Office of External Affairs (295-3521, or after-hours External Affairs Duty Officer at 794-6681). Instead, indicate the matter is being referred to the DOE/NV Office of External Affairs and offer to transmit their question(s) to that office or provide them with the phone number.

L.2. The exception to step L.1 is if there is a significant hazard associated with the event; the news media should be provided with the same data discussed in step L.3, and any other information needed to properly define the situation. The news media should be provided only this general information; specific information on an individual's exposure can only be provided to that individual. Prior to providing this information, write it down and then read it back to the news media. Refer questions to the DOE/NV Office of External Affairs, unless there are necessary clarifications of the data you provided. If you provide answers to questions, record the questions and the answers. Use discretion and technical judgment in dealing with the news media.

NOTE

If members of the public elect not to participate in appropriate mitigation activities, inform them of the potential hazards and mitigation procedures. Document their identity and the information provided.

L.3. If members of the public are present, provide them with any information available relating to their exposure, if any, to the radioactive or hazardous materials resulting from the incident. Document these data and each individual's name and address, if possible. Members of the news media are part of the public for this step; however, the data you provide to an individual should only relate to his or her own exposure or that of any individual(s) for whom the person is a legal guardian.

L.4. Contact the DOE/NV Office of External Affairs and the Yucca Mountain Project Manager's Office (794-7920) as soon as possible and provide them with complete information on the situation. If only radio communication is available, do not provide unreleased data on this unsecured system unless so directed by DOE/NV or the Project Office.

L.5. If radio communication is used, follow up using telephone or similar communication as soon as possible.

L.6. Notify the RFPD Manager and/or other T&MSS management as soon as possible.

L.7. Complete JPA-ER-998 and JPA-ER-999. Attach copies of all released information to the associated documentation.

L.8. Terminate this procedure.

VI. REFERENCES*

AP 6.13, Hazardous Material Management and Handling Plan.

BTP-ER-001, Preparation and Control of Environmental Radiological Monitoring Procedures.

BTP-ER-019, Handling and Shipping of Radioactive Material.

BTP-ER-035, Radioactive and Hazardous Waste Handling and Disposal.

Yucca Mountain Project Office, Oil/Gas/Hazardous Waste Spill Contingency Plan (to be issued).

DOE/NV, Emergency Preparedness Plan (to be issued).

JPA-ER-001, Personnel Survey Contamination.

JPA-ER-002, Personnel Decontamination.

JPA-ER-003, Area and Material Decontamination.

JPA-ER-004, Swipe Counting Steps with ESP-1.

JPA-ER-008, General Area Instrument Survey.

JPA-ER-009, Ground Survey.

JPA-ER-011, Survey of Facilities/Structures.

JPA-ER-016, Definition of Skin Contamination Zone

JPA-ER-017, Use of Anti-Contamination Apparel (RAD).

JPA-ER-025, Posting Radiologically Controlled Areas (Temporary).

JPA-ER-026, Posting Radiologically Controlled Areas (Permanent).

JPA-ER-053, Source Leak Testing.

JPA-ER-055, Source Leak Testing of the RN-190 Radon Daughter Product Source.

JPA-ER-058, Leak Testing of the Pylon RNC Source.

JPA-ER-070, Equipment Tag-Out.

JPA-ER-990, Evacuation of HP Trailer.

JPA-ER-991, Evacuation of Building 4522 in Area 25.

JPA-ER-992, Preparation and Implementation of Unplanned Event Recovery Plans.

JPA-ER-997, Documentation and Notification for a Lost Source Event.

JPA-ER-998, Unplanned Event Notification Requirement.

JPA-ER-999, Unplanned Event Documentation.

QMP-17-01, Record Source and Record User Resource Responsibilities.

Yucca Mountain Project Office, Yucca Mountain Project Emergency Plan (to be issued).

Yucca Mountain Project Office, Environmental Radiological Monitoring Technical Procedure Manual (controlled document).

*Latest versions.

VII. FIGURES

Figure A-1 - Unplanned Events Decision Tree.

Figure B-1 - Decision Tree For Injuries.

Figure C-1 - Decision Tree For Fires.

Figure D-1 - Decision Tree For Vehicle Emergency.

Figure E-1 - Decision Tree For Severe Weather Conditions.

Figure F-1 - Decision Tree For NTS Evacuations.

Figure G-1 - Decision Tree Relating To Unauthorized Personnel.

Figure H-1 - Decision Tree For Intrusion of Animals Into Equipment and Facilities.

Figure I-1 - Decision Tree For Equipment Malfunction.

Figure I-2 - Short Circuit Decision Tree.

Figure I-3 - Loss of Power Decision Tree.

Figure I-4 - Health Physics Trailer Hood Failure Decision Tree.

Figure I-5 - Building 4522 Hood Failure Decision Tree.

Figure I-6 - Oven Room Ventilation System Failure Decision Tree.

Figure I-7 - Blown Breaker/Fuse Decision Tree.

Figure I-8 - Other Malfunction Decision Tree.

Figure J-1 - Decision Tree For Radiation Events.

Figure J-2 - Potential For Airborne or Surface Contamination Decision Tree.

Figure J-3 - Exposure Beyond Planned Levels Decision Tree.

Figure J-4 - Control Area Contamination Control Decision Tree.

Figure J-5 - Contamination Detection (Equipment and Areas) Decision Tree.

Figure J-6 - Lost Source Decision Tree.

Figure J-7 - Radiation Events Not Addressed In Figures J-2 to J-6 Decision Tree.

Figure K-1 - Decision Tree For Chemical Spill or Release.

Figure L-1 - Public/News Media (Press) Notification Decision Tree.

VIII. QA RECORDS

The following documentation generated as a result of implementing this procedure shall be considered a QA Record and shall be maintained in accordance with QMP-17-01, Record Source and Record User Responsibilities:

1. Data sheets.
2. Radiation Survey Logs and other logs associated with this program.
3. Counting instrument outputs.
4. Associated memos.
5. Other documentation generated as a result of this procedure.

Title

Response To Projected Unplanned Events

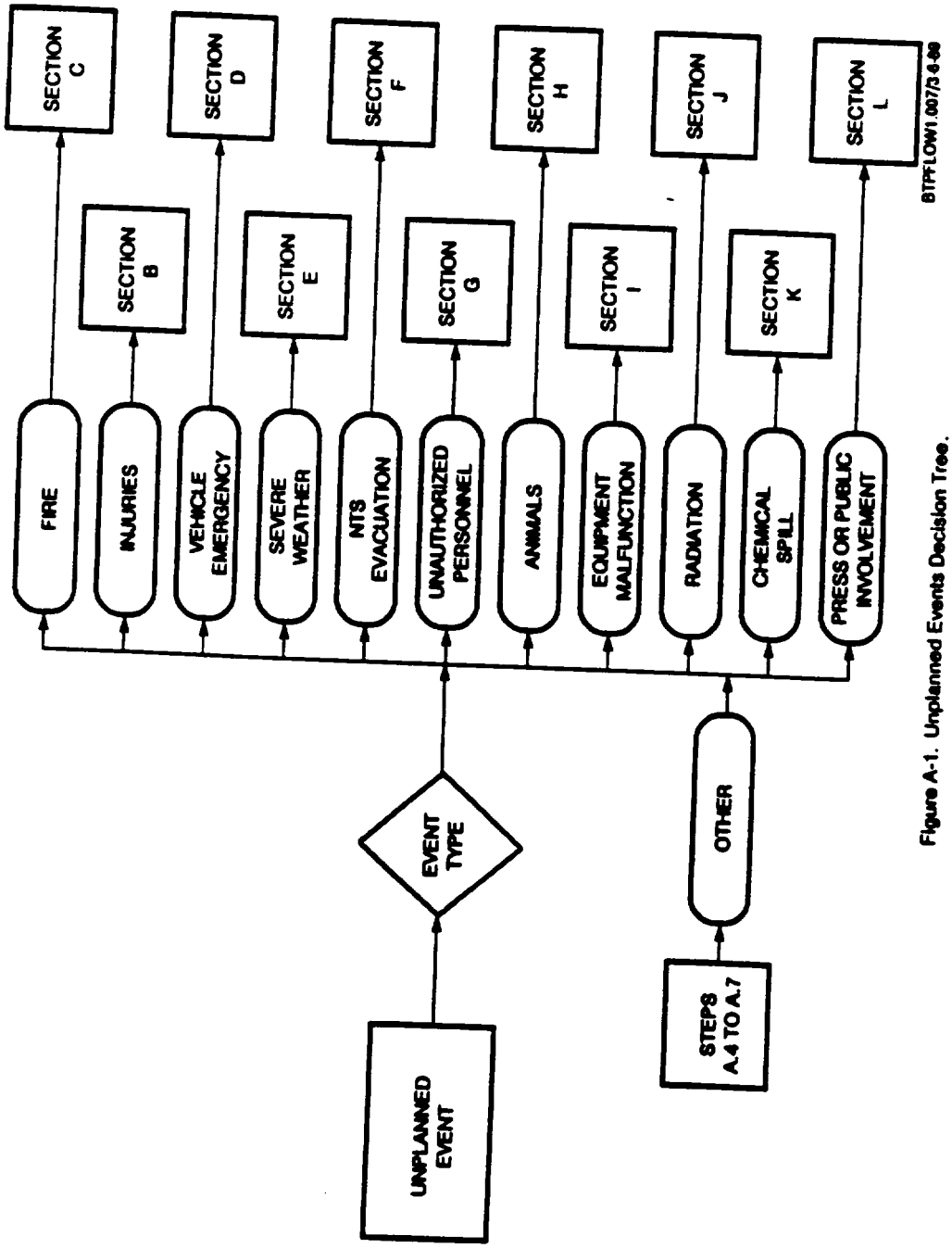


Figure A-1. Unplanned Events Decision Tree.

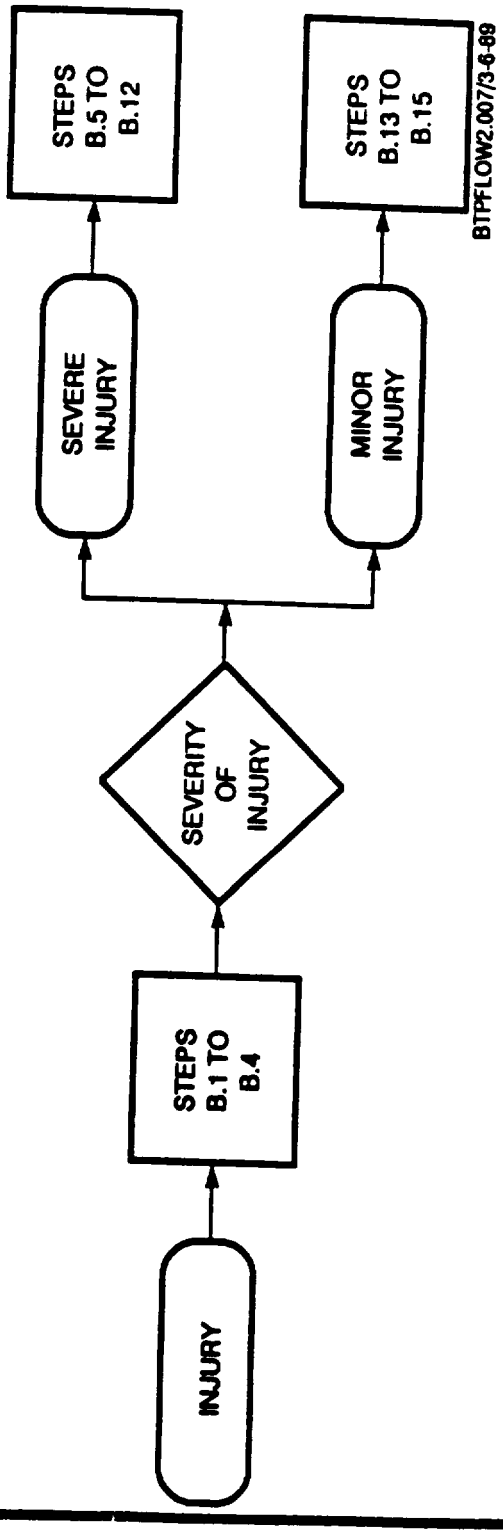


Figure B-1. Decision Tree for Injuries.

Title

Response To Projected Unplanned Events

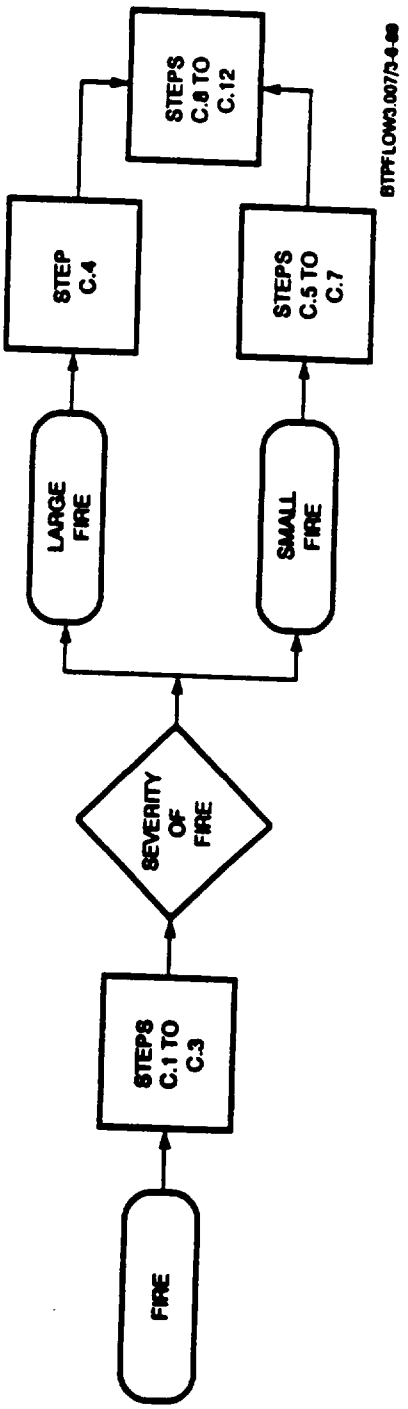


Figure C-1. Decision Tree for Fires.

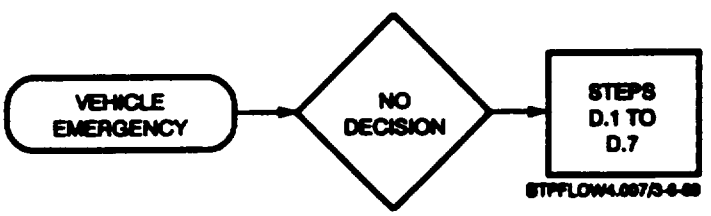


Figure D-1. Decision Tree for Vehicle Emergency.

Title

Response To Projected Unplanned Events

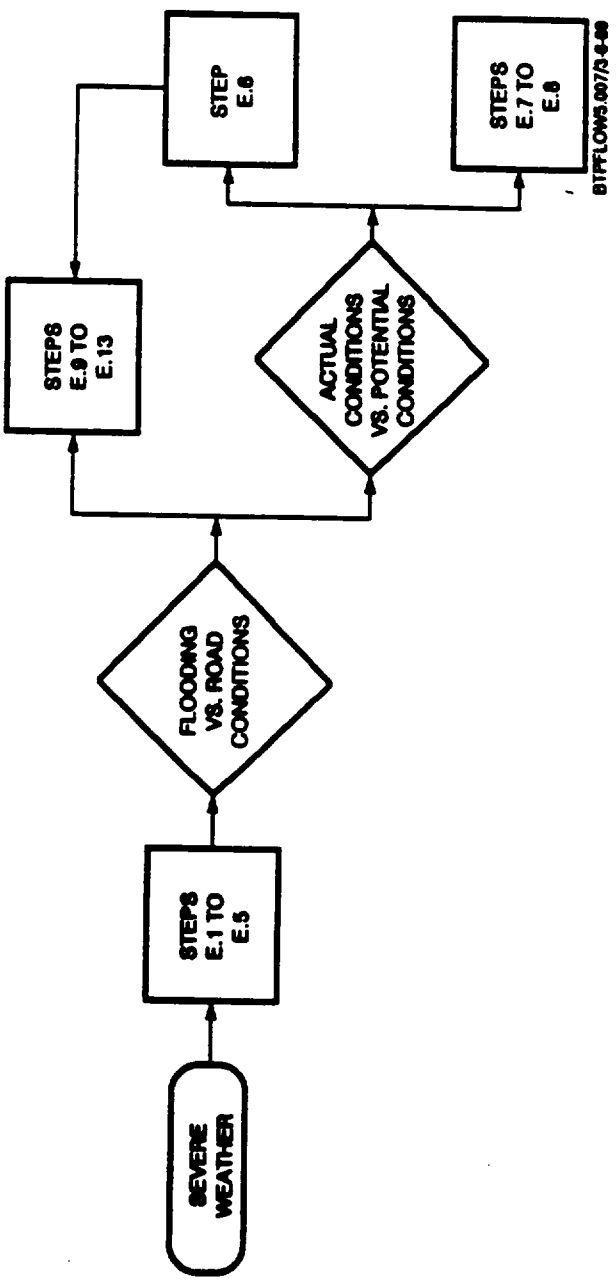


Figure E-1. Decision Tree for Severe Weather Conditions.

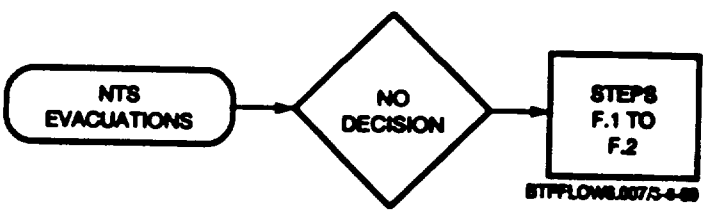


Figure F-1. Decision Tree for NTS Evacuations.

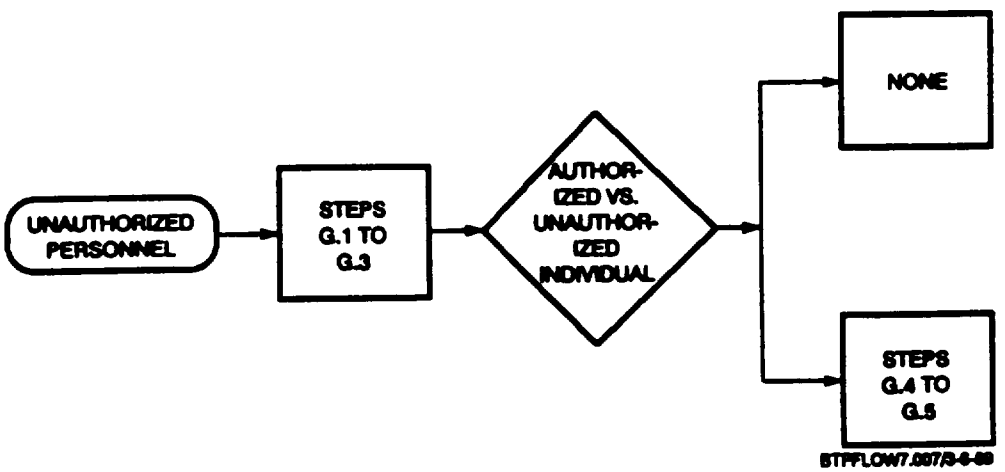


Figure G-1. Decision Tree Relating to Unauthorized Personnel.

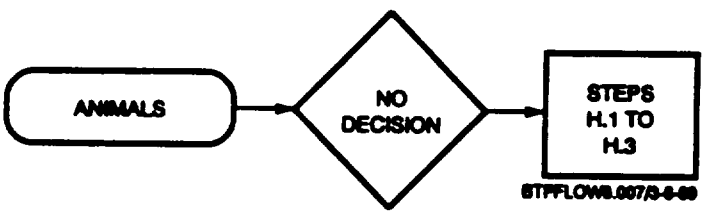


Figure H.1. Decision Tree for Intrusion of Animals into Equipment and Facilities.

Title

Response To Projected Unplanned Events

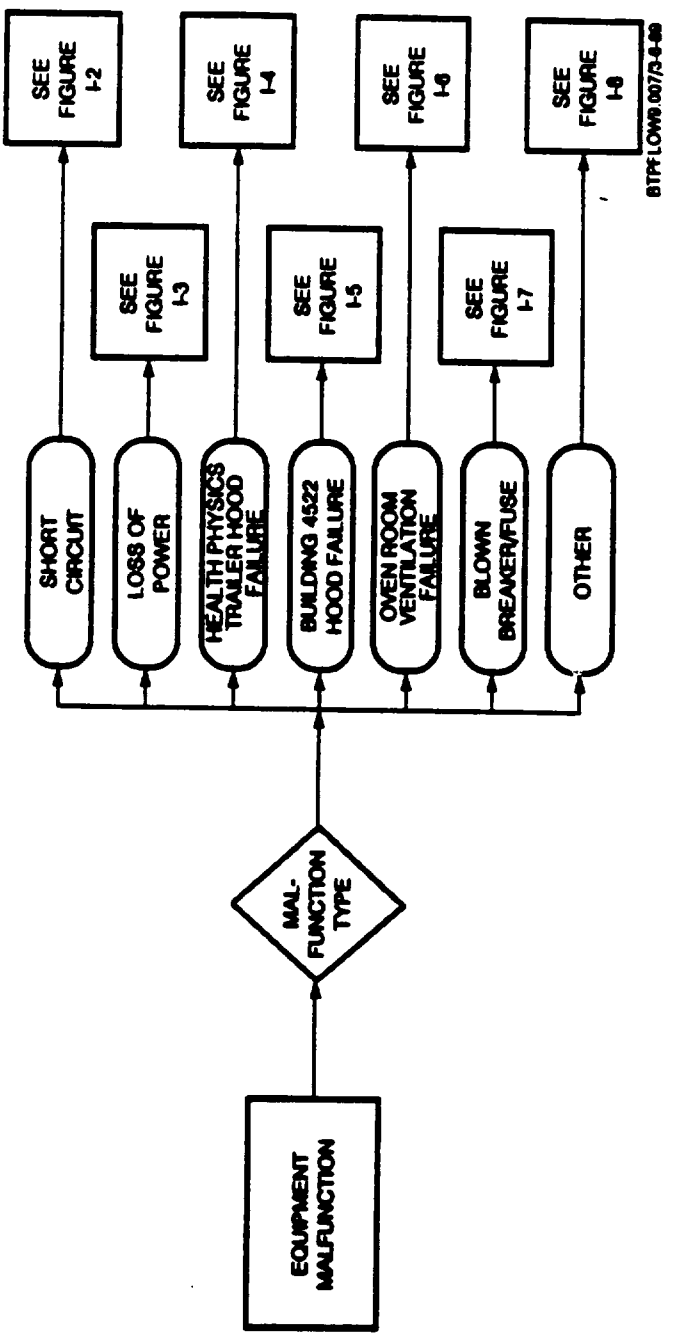


Figure I-1. Decision Tree for Equipment Malfunction.

Title

Response To Projected Unplanned Events

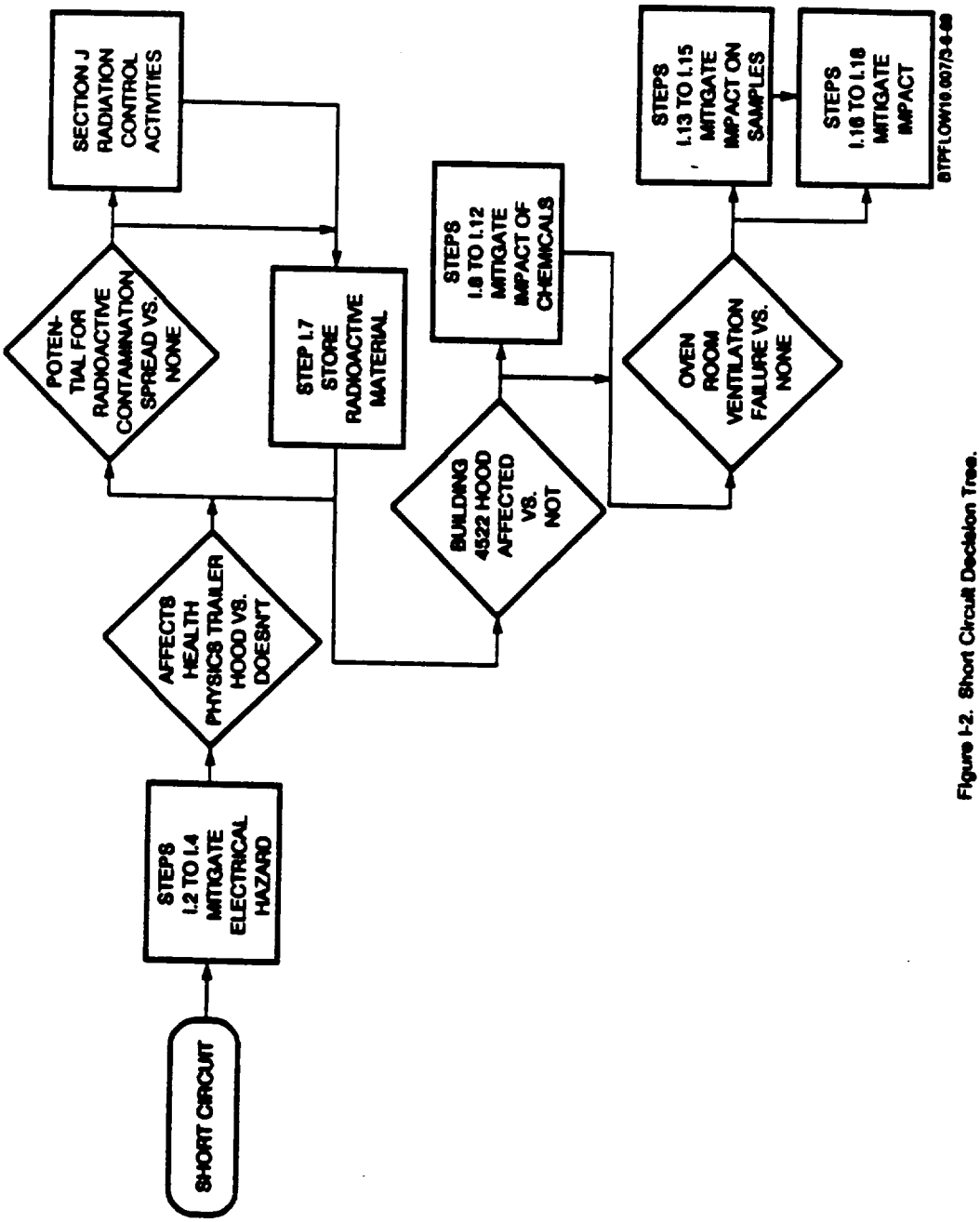


Figure I-2. Short Circuit Decision Tree.

Title

Response To Projected Unplanned Events

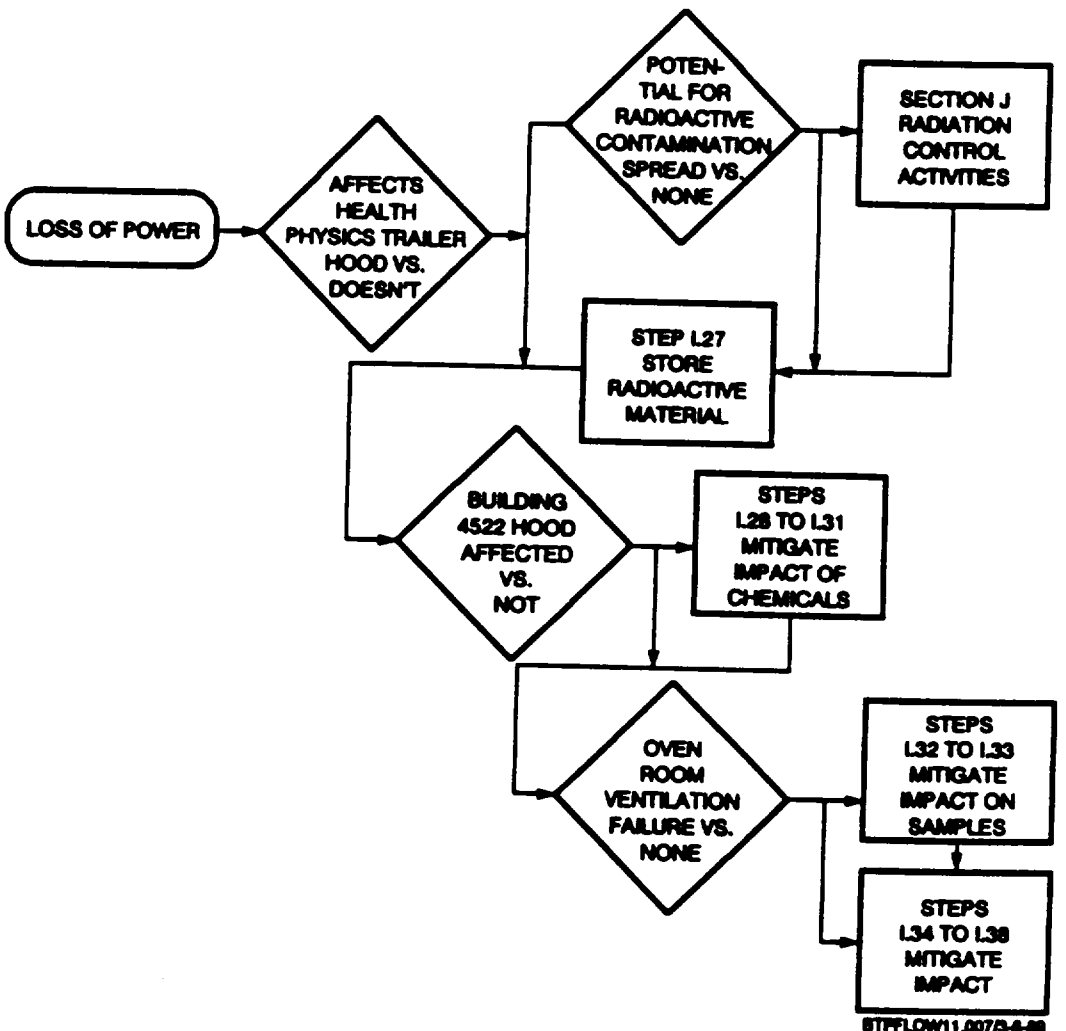


Figure I-3. Loss of Power Decision Tree.

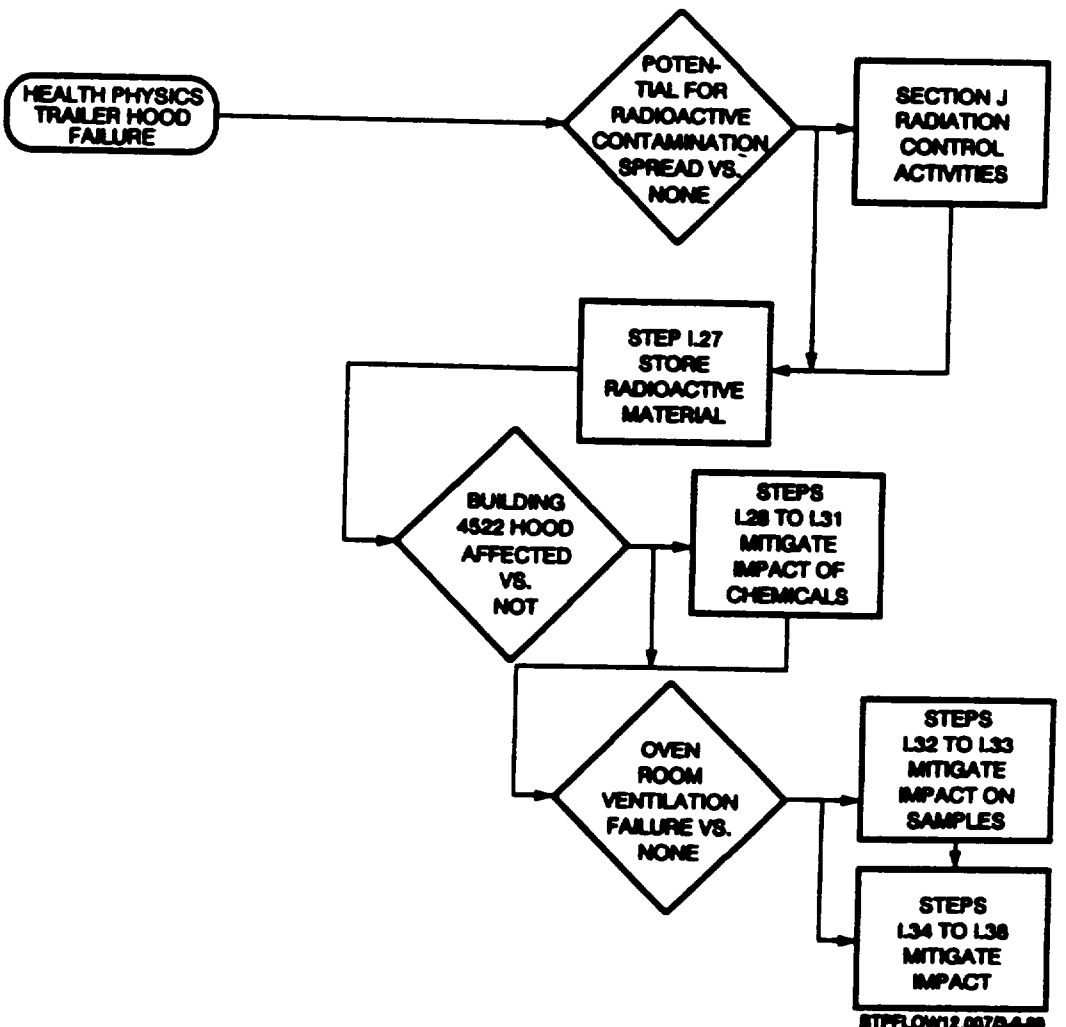


Figure I-4. Health Physics Trailer Hood Failure Decision Tree.

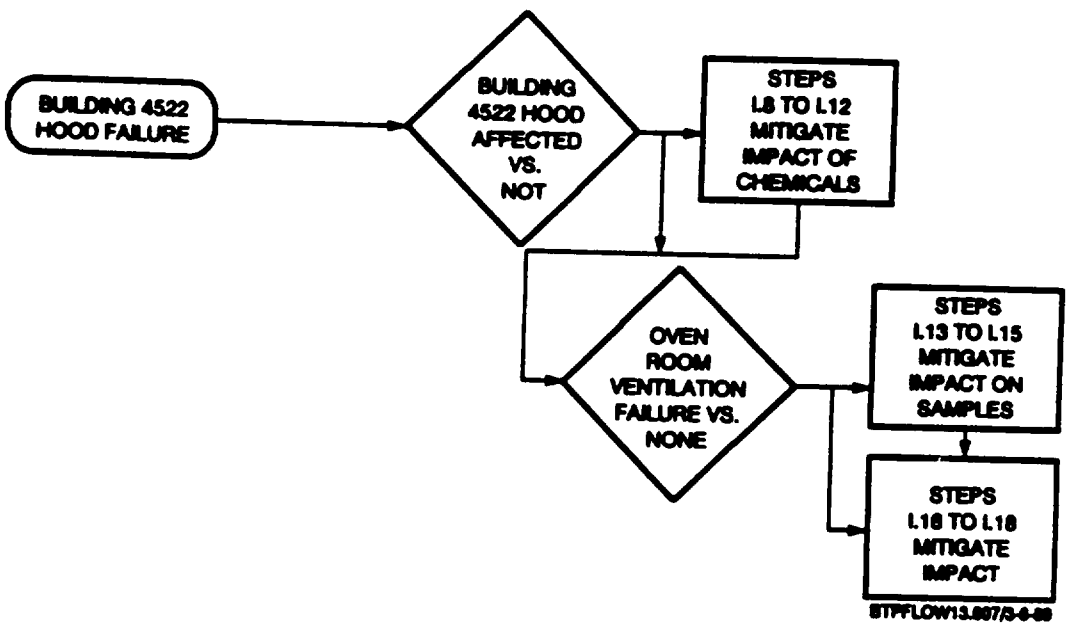


Figure I-6. Building 4522 Hood Failure Decision Tree.

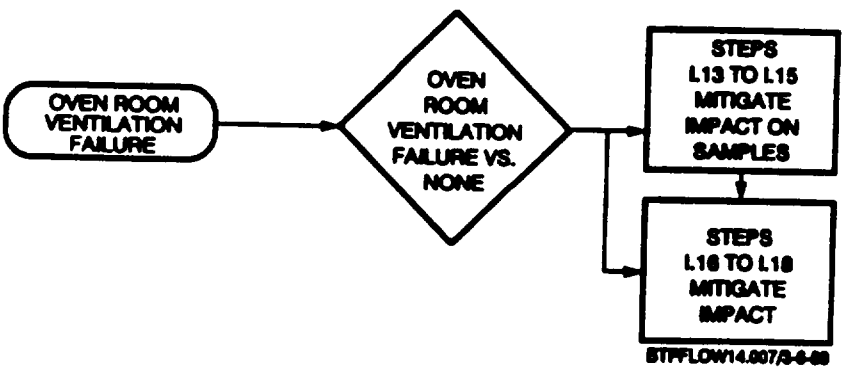


Figure I-6. Oven Room Ventilation System Failure Decision Tree.

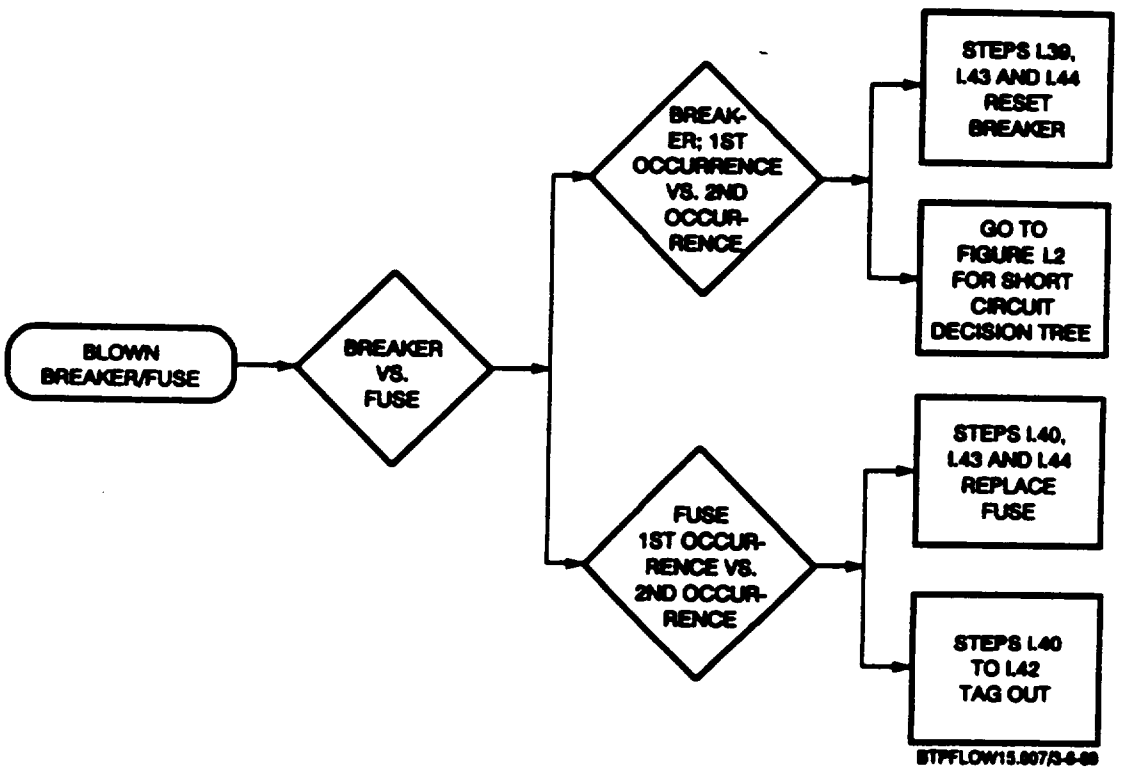


Figure I-7. Blown Breaker/Fuse Decision Tree.

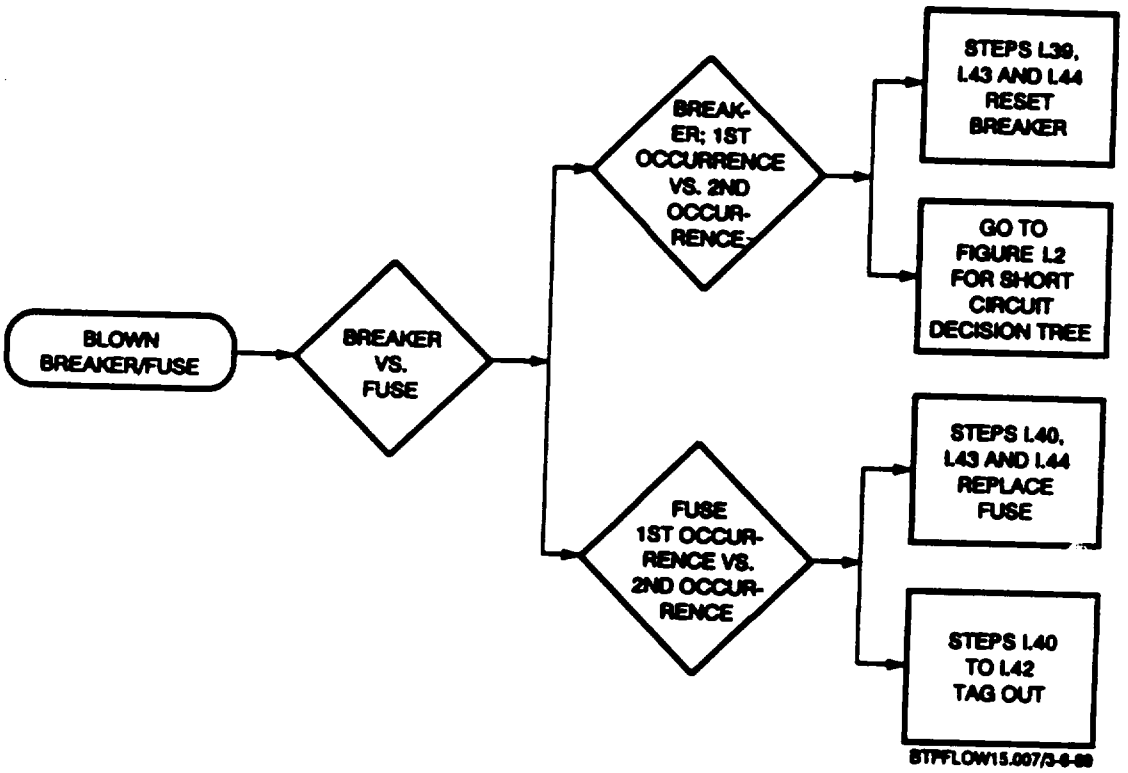


Figure I-7. Blown Breaker/Fuse Decision Tree.

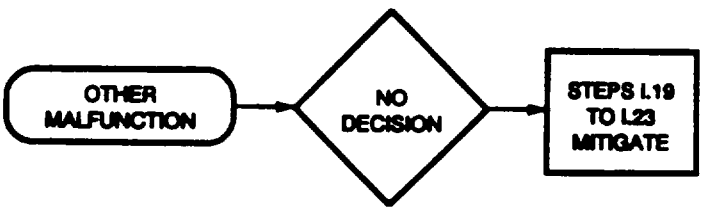


Figure I-8. Other Malfunction Decision Tree.

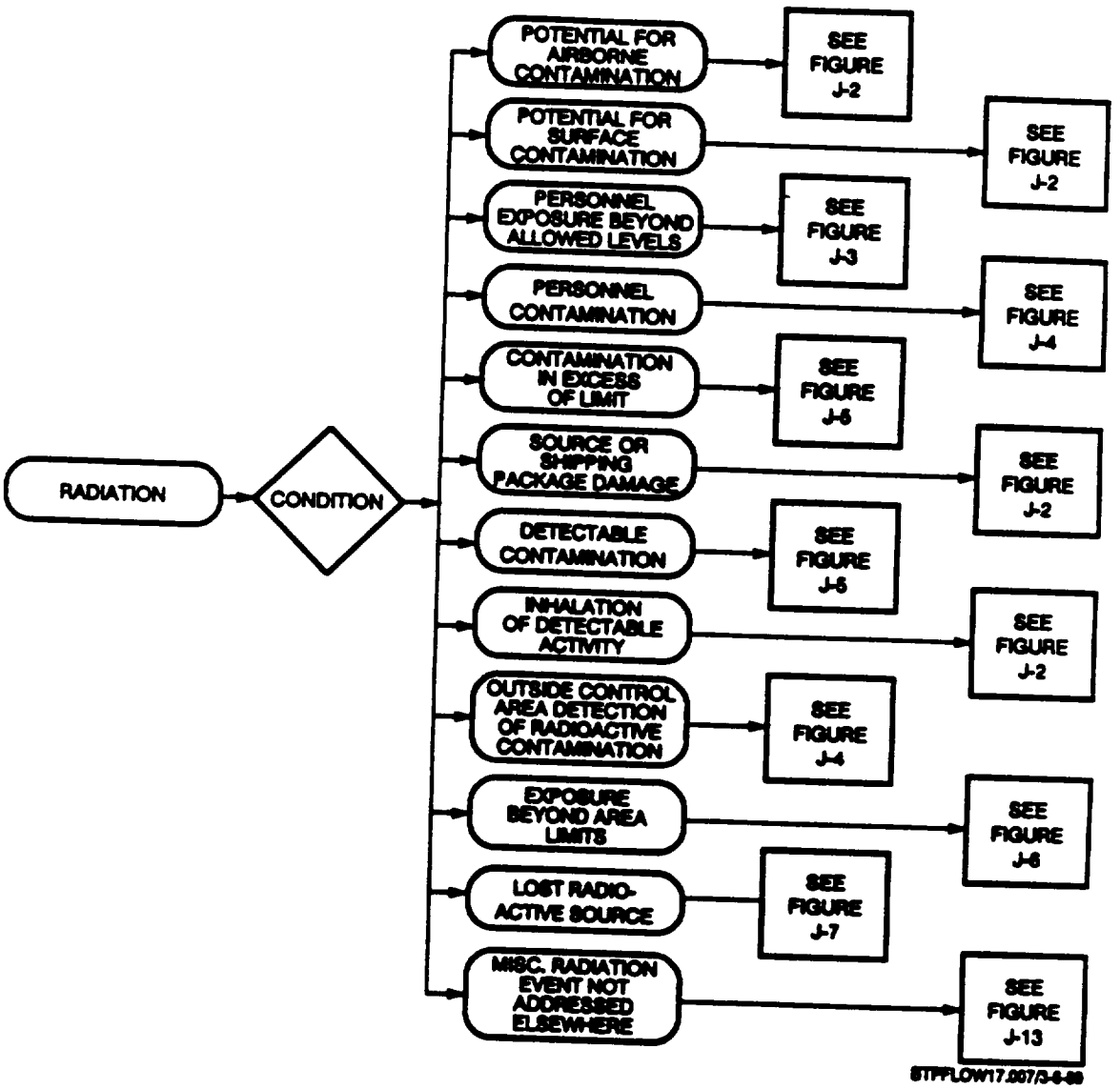


Figure J-1. Decision Tree for Radiation Events.

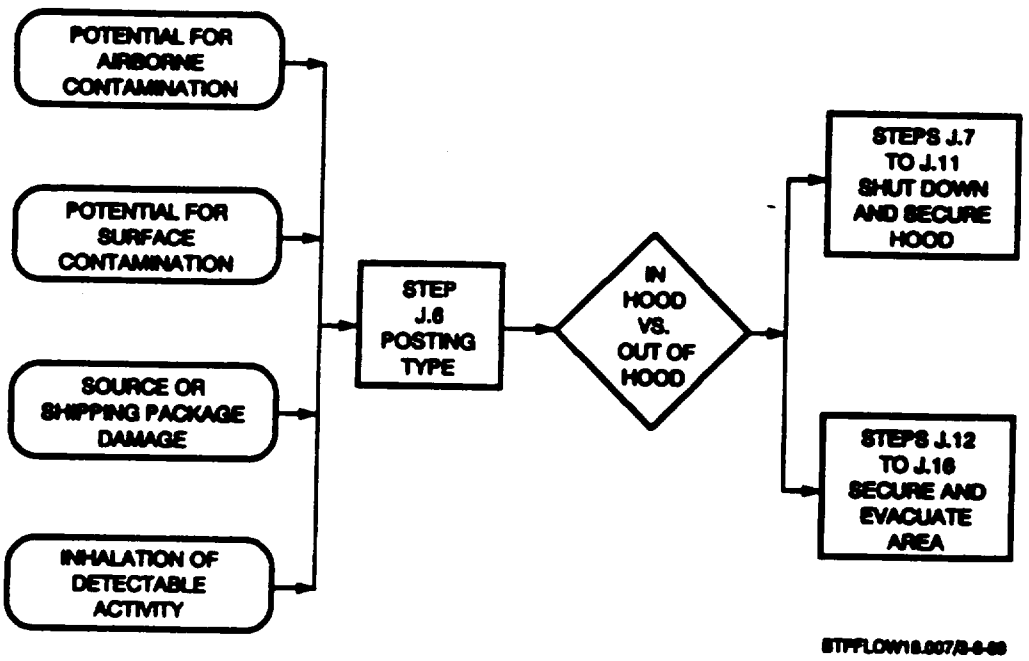


Figure J-2. Potential for Airborne or Surface Contamination Decision Tree.

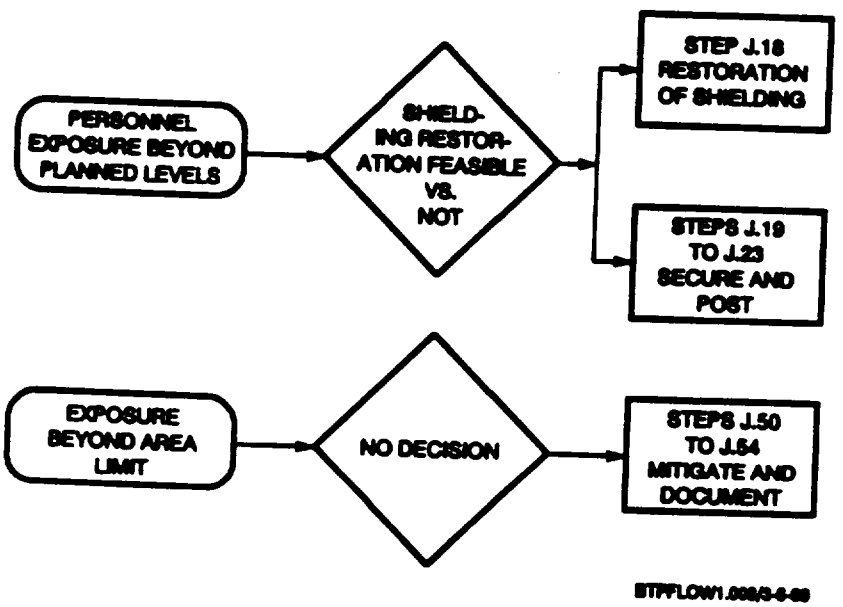


Figure J-3. Exposure Beyond Planned Levels Decision Tree.

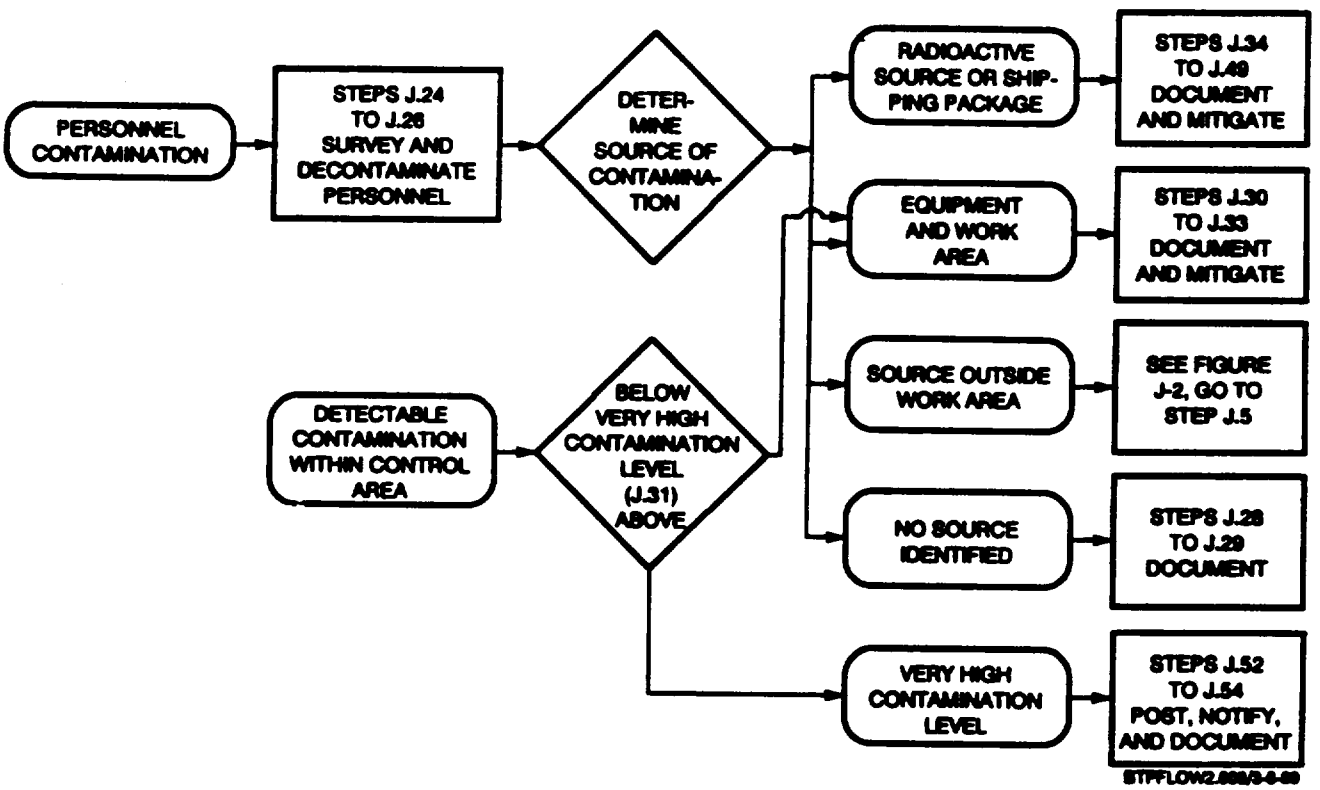


Figure J-4. Control Area Contamination Control Decision Tree.

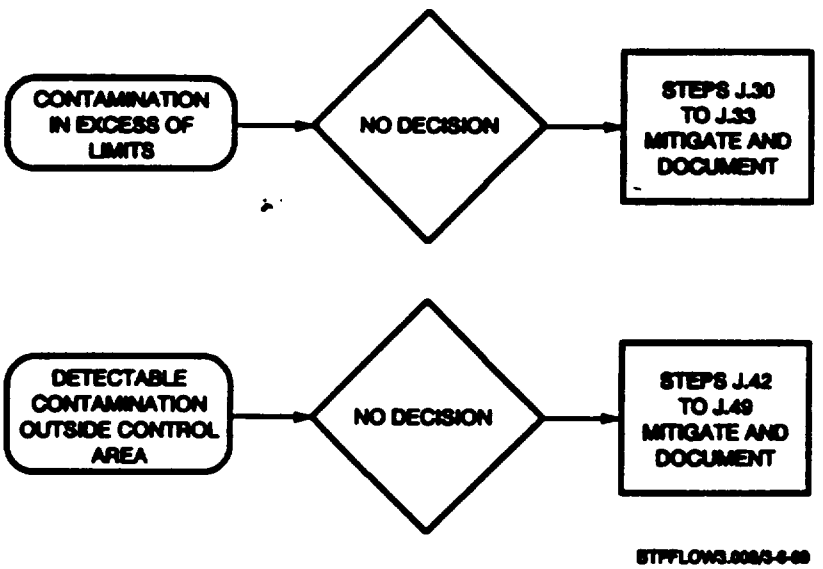


Figure J-5. Contamination Detection (Equipment and Areas) Decision Tree.

Title

Response To Projected Unplanned Events

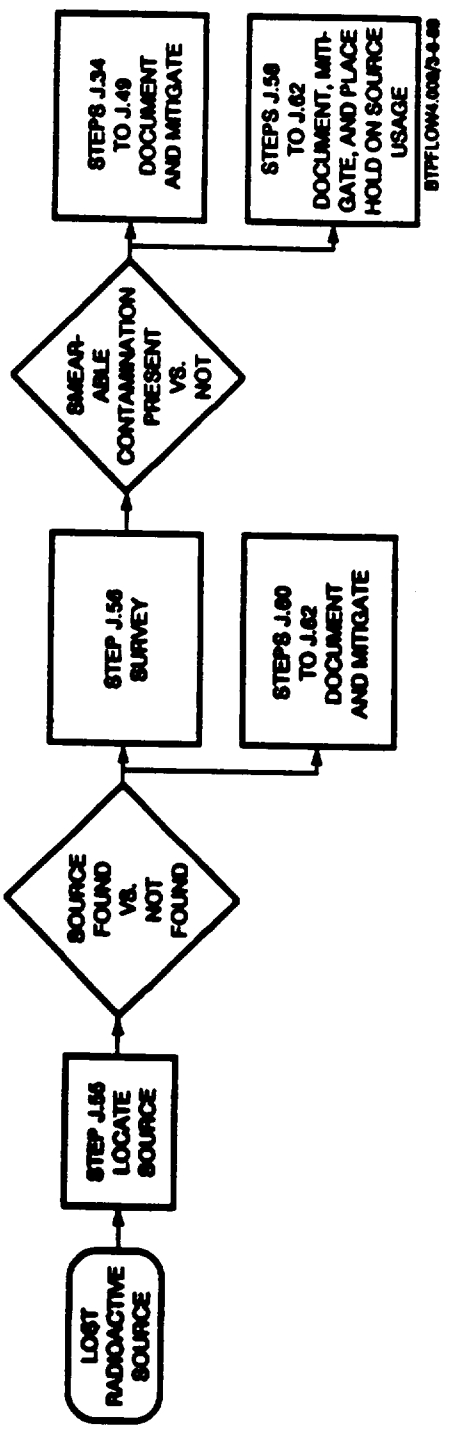


Figure J-6. Lost Source Decision Tree.

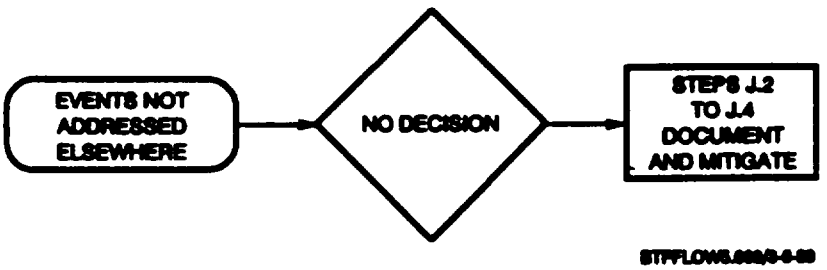


Figure J-7. Radiation Events Not Addressed in Figures J-2 to J-6 Decision Trees.

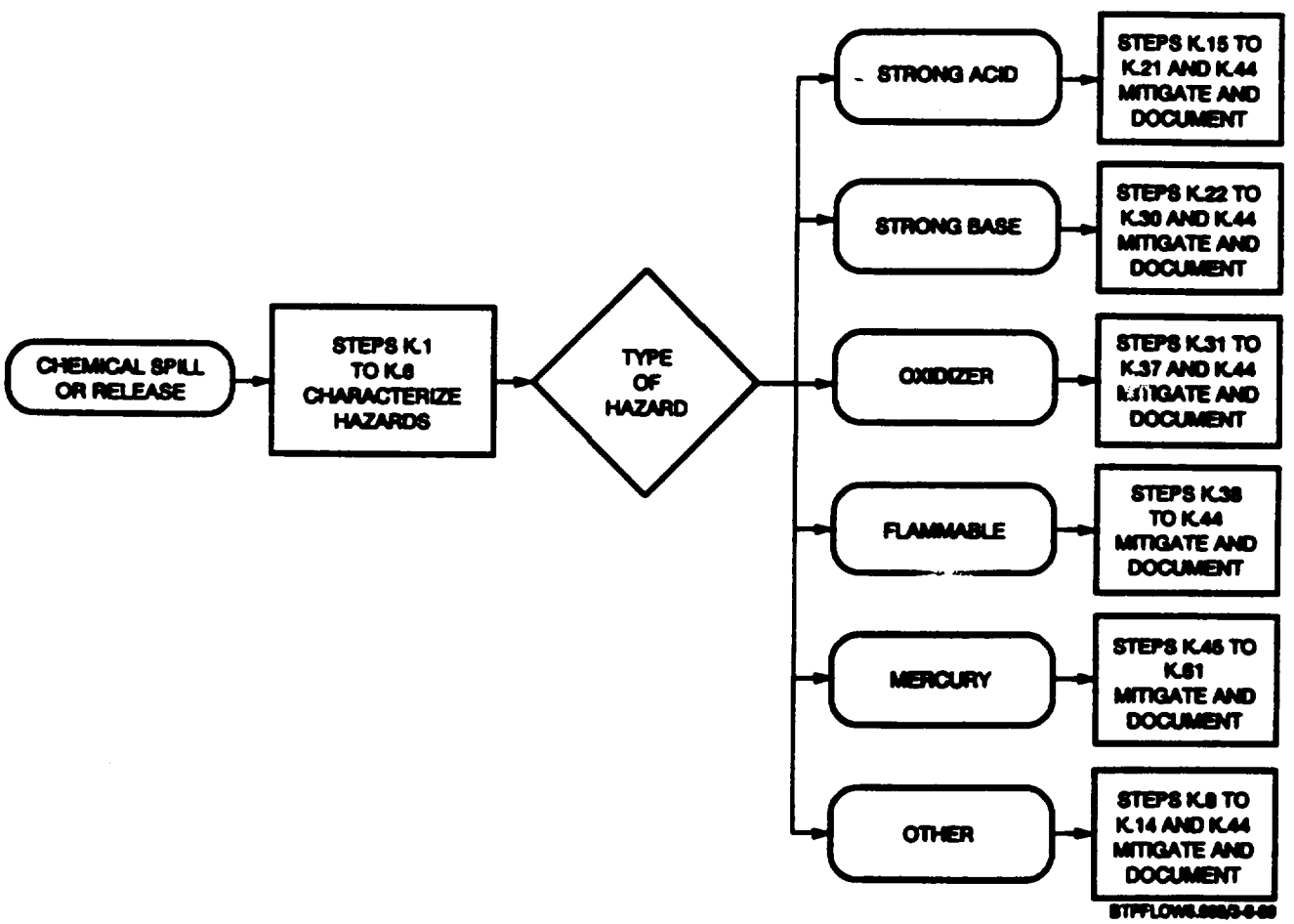
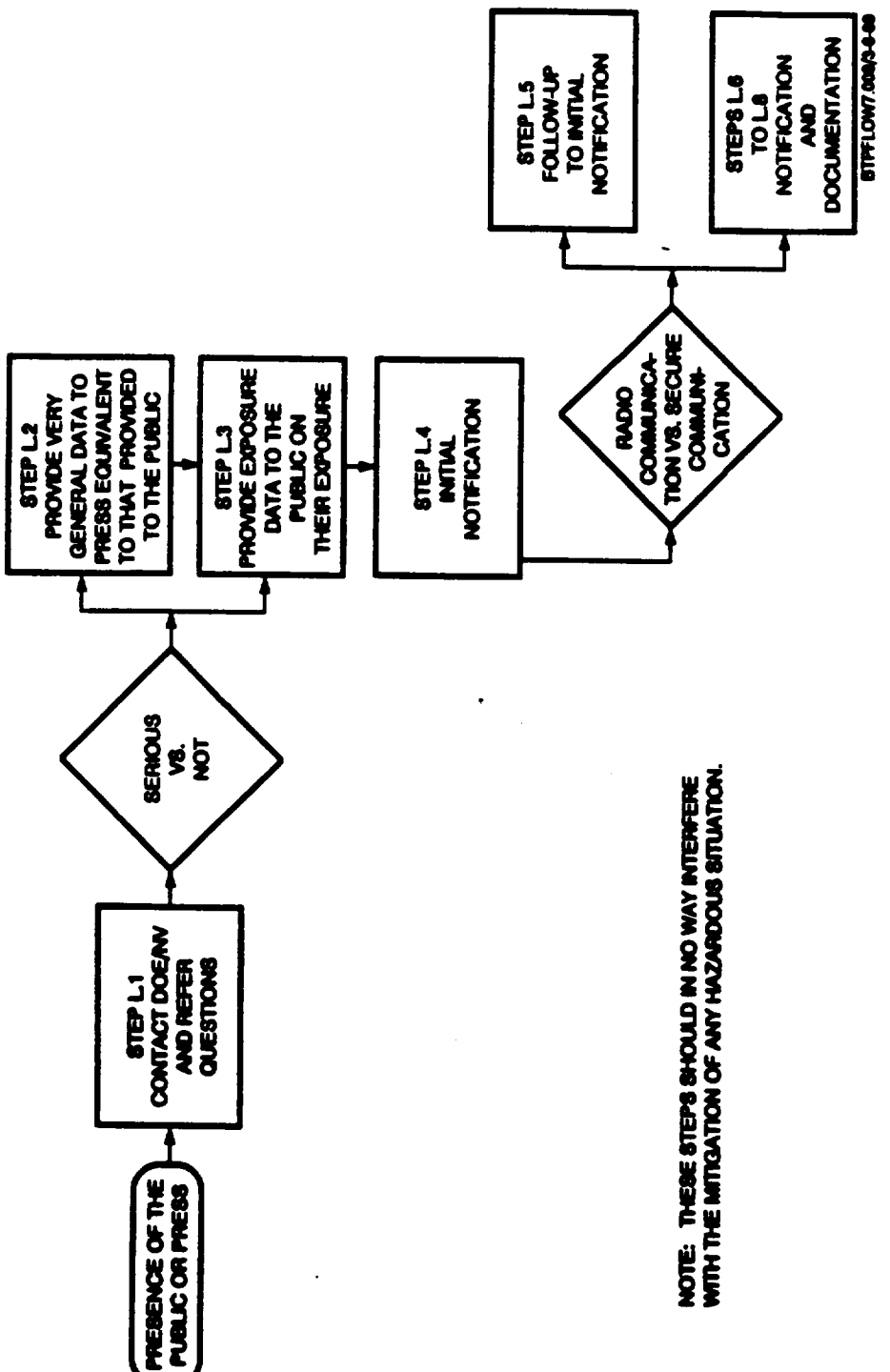


Figure K-1. Decision Tree for Chemical Spill or Release.

Title

Response To Projected Unplanned Events



NOTE: THESE STEPS SHOULD IN NO WAY INTERFERE WITH THE MITIGATION OF ANY HAZARDOUS SITUATION.

Figure L-1. Public/News Media (Press) Notification Decision Tree.