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AMWTP-012
V. 1

CONSTRUCTION SERVICES

PUBLIC READING ROOM
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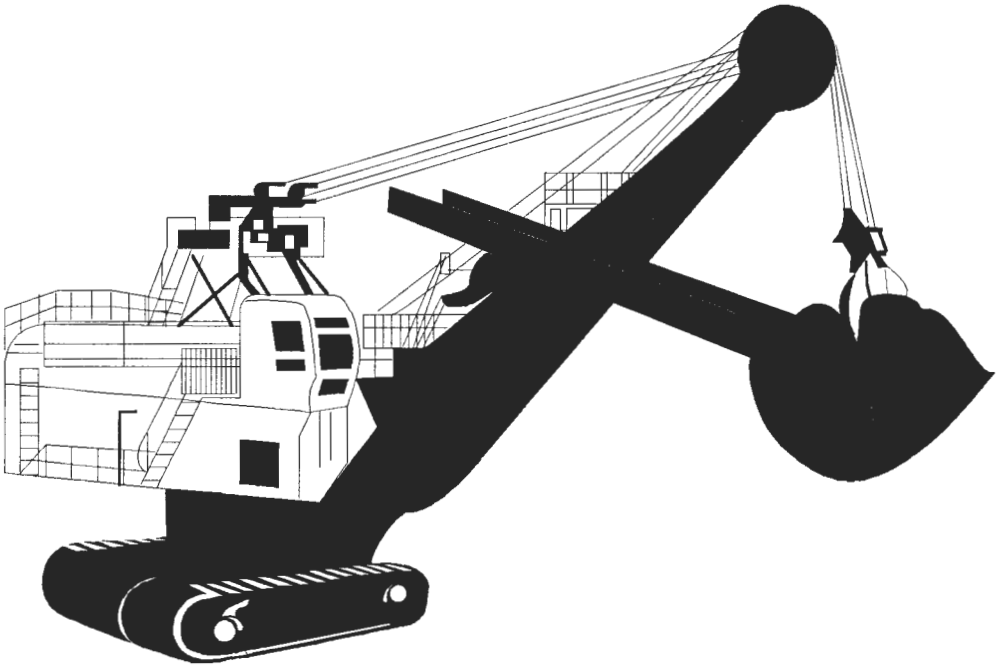
IDAHO OPERATIONS OFFICE

MANUAL NO. 3

SAFETY AND HEALTH PROGRAM



ADVANCED MIXED WASTE TREATMENT PROJECT
Morrison Knudsen Corporation

Table of Contents

SECTION	TITLE	REVISION
3P-1-01	Construction Environment, Safety and Health Management Plan	1
3P-1-02	Emergency Preparedness Plan	2
3P-1-03	Occupational Medical Plan	1
3P-1-04	Waste Management and Minimization Plan for Construction	0
3P-1-05	Project Storm Water Pollution Prevention Plan – Construction Activity	0
3P-3-01	Construction Security Plan	1
3P-4-01	Construction Training Plan	0
SECTION 100	**ADMINISTRATION**	
3A-101	Employee ESH Concerns	0
3A-102	ESH Surveillances	1
3A-103	First Aid and Medical Surveillance Program	1
3A-104	Accident Investigations, Reports, and Recordkeeping	1
IDCN 3A104-01		05/01/00
IDCN 3A104-02		**12/07/00**
3A-105	Access to Exposure and Medical Records	1
3A-106	Reserved	0
3A-107	Emergency Action	1
3A-108	Stopwork/Shutdown and Restart	1
3A-109	Reserved	0
3A-110	Reserved	0
3A-111	ESH Goals and Performance Objectives	1
3A-112	Competent Persons Requirements	1
SECTION 200	**SAFETY**	
3A-201	Job Safety Analysis	0
3A-202	Confined Spaces	0
3A-203	Housekeeping	0
3A-204	Illumination	0

Table of Contents

SECTION	TITLE	REVISION
3A-205	Personal Protective Equipment	0
3A-206	Ladders/Scaffolding	0
3A-207	Walking-Working Surfaces	0
3A-208	Excavation and Trenching	0
3A-209	Crane, Hoisting and Rigging Operations	0
3A-210	Material Handling and Storage	0
3A-211	Motor Vehicles and Mechanical Equipment	0
3A-212	Machinery and Machine Guarding	0
3A-213	Hand and Power Tools	0
3A-214	Electrical Safety	0
3A-215	Energy Source Lockout/Tagout	0
3A-216	Work On or Near Energized Circuits	0
3A-217	Temporary Electrical Wiring	0
3A-218	Signs, Signals and Barricades	0
3A-219	Concrete and Masonry Construction	0
3A-220	Blasting and Use of Explosives	0
3A-221	Mobile Buildings and Structures	0
3A-222	Construction and Vehicle Interference on INEEL Roads	0
3A-223	Fall Protection	0
3A-224	Fire Prevention and Protection	0
3A-225	Fire Watch	0
3A-226	Hot Work Operations	0
3A-227	Hot Work Permitting	0
3A-228	Flammable and Combustible Materials	0
3A-229	Compressed Gas Cylinders	0
SECTION 300	**HEALTH**	
3A-301	Respiratory Protection	1
3A-302	Hearing Conservation	1

Table of Contents

SECTION	TITLE	REVISION
3A-303	Hazard Communication	1
3A-304	Temperature Extremes	1
3A-305	Sanitation	1
3A-306	Drinking Water for Portable Containers	1
3A-307	Bloodborne Pathogen Protection	1
SECTION 400	**ENVIRONMENT**	
3A-401	RCRA Hazardous Waste Management	1
3A-402	Non-Hazardous Waste Management	1
3A-403	Reserved	
3A-404	Waste Minimization and Pollution Prevention Awareness	1
3A-405	Waste Characterization	1
3A-406	Reporting Environmental Incidents and Releases	1
3A-407	Clean Air Act Compliance	1
3A-408	Clean Water Act Compliance	1
3A-409	Spill Avoidance and Response	1
SECTION 500	**RADIATION PROTECTION**	
3A-501	Reserved	
3A-502	ALARA Program	1
3A-503	Fetal Protection Program	1
SECTION 600	**SECURITY**	
3A-601	Site Access Control	1
3A-602	Lock and Key Control	0

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3P-1-01	EFFECTIVE DATE: November 9, 1999
	REVISION: 1	PAGE: 1 OF 3

TITLE: CONSTRUCTION ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PLAN

APPROVAL

ES&H MANAGER — DATE: 11.09.99

QUALITY MANAGER — DATE: 11-9-99

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ORIGINATOR: KELLY POST KP 11/9/99
(Initial/Date)

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FORM 4 (2/1/99)

INTRODUCTION

Morrison Knudsen (MK) is committed to providing a working environment that is safe, healthful, productive, and conforms with all applicable laws, rules, and regulations. We recognize that it is the line managers who must effectively oversee safety and coach workers to become self-motivated Environment, Safety, and Health (ESH) Team Members able to identify and mitigate hazards in the work place.

This edition of the Construction Environment, Safety, and Health Management Plan (CESHMP) provides line managers and workers with the essential requirements to meet our commitment. In addition, this CESHMP interfaces with the *Environment, Safety, and Health Program Operating Plan* (ESHPOP) and DOE/ID-10520, *Tri-Party Memorandum of Agreement*. This plan is intended to be a "living" document and will be revised periodically, as necessary, to indicate management program changes.

AUTHORITY

The CESHMP is based on the requirements found in the Occupational Safety and Health Administration's (OSHA) standards 29 CFR 1926, Safety and Health Regulations for Construction and those standards in 29 CFR 1910, Safety and Health Regulations for General Industry incorporated through 29 CFR 1926. Additional information sources include standards published by non-governmental organizations such as the National Fire Protection Association (NFPA) and American National Standards Institute (ANSI) and Department of Energy Orders, manuals and guidelines.

MORRISON KNUDSEN CORPORATION

ENVIRONMENTAL, SAFETY, & HEALTH POLICY

Employees are our most important asset; their safety and the quality of the environment they work and live in are our greatest responsibility. It is the policy of Morrison Knudsen Corporation and its operating entities to make every effort to provide a safe working environment, to eliminate safety and environmental hazards and to provide adequate personal protective equipment and safety devices where hazards cannot be eliminated. Further, it is our goal to create a safety culture among our employees which fosters an understanding that he or she has the ultimate responsibility to work safely. It is our goal to eliminate both unsafe working conditions and unsafe work practices.

As such, the Corporation and its operating entities will:

- Comply with all applicable federal, state, and/or local regulations and client rules governing safety and environmental quality in all operations;
- Take expedient action to correct unsafe conditions or work practices, as well as be responsive to the interests of our clients and the general public in matters pertaining to environmental regulatory compliance;
- Promote safety and environmental awareness;
- Encourage open communication between line management and labor that will result in the identification of unsafe acts and conditions;
- Periodically review its operations for the purpose of making environmental quality improvements, where such improvements are found to provide significant benefits; and,
- Provide training in hazard awareness and to support the accident and incident reducing techniques necessary to implement this policy.

Further, project and/or mine management is responsible for the development and implementation of plans and procedures to ensure that its operations comply with applicable environmental, safety, and health laws and regulations. As such, this policy is to be administered through the line management organization and is binding upon all employees. Every effort will be made to assure that employees can accomplish their assigned tasks safely. No task is so important, or so urgent, that we cannot take the time to do it safely.

Morrison Knudsen Corporation

Dennis R. Washington

Dennis R. Washington
Chairman, President and Chief Executive Officer

ADVANCED MIXED WASTE
TREATMENT PROJECT
A Morrison Knudsen Company

DOCUMENT TRANSMITTAL

Transmittal No.:			Date:
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ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: CSM 3P-1-02	EFFECTIVE DATE: March 1, 2000
	REVISION: 2	PAGE: 1 OF 6

TITLE: EMERGENCY PREPAREDNESS PLAN

APPROVAL

ES&H MANAGER — 022300 DATE

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KP CONSTRUCTION MANAGER — 2-29-00 DATE

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ORIGINATOR: Claude Pettengill (Initial/Date) 022300	IDCN NUMBERS:

TABLE OF CONTENTS

1.0 INTRODUCTION 3

2.0 AUTHORITY 3

3.0 EMERGENCY PLANNING 4

4.0 EMERGENCY DRILLS 4

5.0 EMERGENCY RESPONSE 4

6.0 EVENT CLASSIFICATION AND NOTIFICATION 5

7.0 EMERGENCY SERVICES 5
- 7.1 Fire Support 5
- 7.2 Medical Services 5
- 7.3 HAZMAT Team 6

8.0 APPRAISALS AND ASSESSMENT PROGRAM 6

9.0 RECORDS MANAGEMENT 6

1.0 INTRODUCTION

This Emergency Preparedness Plan details the program elements required and the responsibilities to implement this emergency management program. The Emergency Preparedness Plan outlines the essential elements of a comprehensive emergency response and preparedness program to be implemented by Morrison Knudsen (MK) during Phase II construction. Typical hazards or emergencies that may be encountered during construction activities include, but are not limited to, the following: confined space; excavation and trenching; hoisting and rigging; energy source lockout/tagout; fall protection; fire/hot work operations; and flammable/combustible materials.

In accordance with the Environment, Safety, and Health Program Operating Plan (ESHPOP) Section D.4, "Worker Safety and Health," the Advanced Mixed Waste Treatment Project (AMWTP) construction personnel will comply with the INEEL M&O contractor's Emergency Plan/Resource Conservation and Recovery Act Contingency Plan as applicable. This Emergency Preparedness Plan complements BNFL Inc. policy to implement integrated safety management as addressed in ESHPOP Section A.2, so that construction activities are accomplished while protecting the public, the worker, and the environment.

The program elements established in this Emergency Preparedness Plan are: Designating authority to administer emergency management functions; Emergency Planning; Emergency Drills; Emergency Response; Event Classification and Notifications; and Emergency Services.

For the purpose of this plan the MK Environment, Safety, and Health (ESH) Manager or his designee will act as the Emergency Preparedness Coordinator.

2.0 AUTHORITY

As stated in DOE/ID-10520, Tri-Part Memorandum of Agreement, Section 6.0., "Emergency Response and Preparedness," the INEEL M&O contractor is responsible for emergencies at the Radioactive Waste Management Complex (RWMC) not within established AMWTP fenced boundaries. BNFL Inc. is responsible for all emergencies within the AMWTP fenced boundaries, including the laydown and parking area.

During Phase II construction, MK serves as the construction manager for BNFL Inc.. MK's Construction Safety and Health Manual contains procedures (e.g., Emergency Action; Accident Investigations, Reports and Record Keeping;

Reporting Environmental Incidents and Releases; and Spill Avoidance and Response) which supplements the INEEL M&O contractor's Emergency Plan by specifying emergency response organization responsibilities.

3.0 EMERGENCY PLANNING

MK's Emergency Preparedness Plan and implementing procedures contained in the Construction Safety and Health Plan integrates with the INEEL M&O contractor's emergency response planning. The approach taken during Phase II construction is to manage, organize, and conduct emergency response organization, offsite response interfaces, emergency classifications, communication, consequence assessment, protective actions, and medical support consistent with applicable requirements.

4.0 EMERGENCY DRILLS

A coordinated program of training and drills is implemented to meet specific emergency response program requirements. MK follows established procedures to respond to onsite emergencies. Initial and refresher training is provided for all AMWTP personnel. AMWTP will participate in at least one RWMC drill annually. During Phase II construction, drill participation will be coordinated between the MK ESH Manager and the INEEL RWMC Emergency Planning Coordinator.

Emergency related information and training on AMWTP specific conditions and hazards will be made available to off-site personnel who may be required to participate in response to emergencies within the AMWTP fenced boundaries.

5.0 EMERGENCY RESPONSE

Emergency response and evacuation access and egress from the construction site will be coordinated with the INEEL M&O contractor.

The AMWTP Construction Safety and Health Plan contains procedures which detail roles and responsibilities during emergency response incidents. As stated in the Tri-Party Memorandum of Agreement MK procedures will be provided to the INEEL M&O contractor to coordinate response actions when RWMC Emergency Notification System (ENS) alarms are activated.

During an evacuation of RWMC or AMWTP, AMWTP personnel will utilize privately owned vehicles to evacuate the site. AMWTP personnel will proceed to the location specified by the Central Facilities Area Emergency Action

Coordinator. AMWTP badges will provide access to Central Facilities Area during emergencies.

MK's Personnel Accountability System is used to account for all personnel authorized to be present on the AMWTP construction site. This accountability information is exchanged with the INEEL M&O contractor Emergency Coordinators.

6.0 EVENT CLASSIFICATION AND NOTIFICATION

AMWTP event classification and notification will be done in accordance with DOE Order 232.1A, "Occurrence Reporting and Processing of Operations Information". MK will coordinate and provide information and notification to DOE-ID and the INEEL M&O contractor in accordance with the AMWTP Construction Safety and Health Plan. During Phase II construction, MK will implement the BNFL "Occurrence Categorization, Notification and Processing" procedure.

AMWTP will coordinate with DOE-ID Communications and INEEL Public Affairs any information pertaining to press releases if necessary.

7.0 EMERGENCY SERVICES

7.1 Fire Support

During Phase II construction MK will coordinate planning, meetings, walk downs and services with the INEEL Fire Department for emergency response to fires and to injured personnel. Services and equipment provided by the INEEL Fire Department are fire suppression, fire apparatus, and emergency medical technicians who stabilize injured personnel and transport them to medical facilities. Services and apparatus MK may need from INEEL Fire Department include emergency response to fight a structural fire, ambulance and emergency medical services, and hazardous material response.

7.2 Medical Services

During Phase II construction, The INEEL M&O contractor provides emergency medical services to MK and other AMWTP employees and visitors. Services include ambulance, use of emergency medical technicians, and use of decontamination, and medical facilities.

7.3 HAZMAT Team

MK will coordinate with the INEEL Fire Department for services to mitigate the spread of spills involving hazardous materials within the AMWTP fenced boundaries as necessary. MK will contact the INEEL Fire Department Dispatch Center or the INEEL Warning Communication Center to summon the INEEL HAZMAT team. MK will be responsible for cleanup of spills and decontamination of equipment. MK will also be responsible for determining if a spill is reportable and will follow BNFL's "Occurrence Categorization, Notification and Processing" procedure.

8.0 APPRAISALS AND ASSESSMENT PROGRAM

The MK ESH Manager and other, selected MK management personnel will conduct an annual appraisal and assessment of the Emergency Preparedness Program. These appraisals and assessments will verify that Phase II construction emergency capabilities are sufficient to implement emergency plans and that appropriate and timely improvements are made in response to needs identified through coordinated emergency planning, resource allocation, training, drills and exercises.

9.0 RECORDS MANAGEMENT

MK Emergency Preparedness Records Management activities are implemented in accordance with the overall MK Records Management Program. Individual records generated by MK emergency preparedness activities are included in the MK Records Management Program Inventory and Disposition Schedule with their applicable retention period and category noted.

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3P-1-03	EFFECTIVE DATE: March 1, 2000
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TITLE: OCCUPATIONAL MEDICAL PLAN

APPROVAL

ES&H MANAGER — DATE: 022300

QUALITY MANAGER — DATE: 02-24-00

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TABLE OF CONTENTS

1.0 INTRODUCTION 3

2.0 AUTHORITY 3

3.0 GENERAL INFORMATION 4
- 3.1 Onsite Occupational Medical Program 4
- 3.2 Maintenance of a Healthful Work Environment 4
- 3.3 Employee Health Evaluations 5
- 3.4 Employee Health Evaluation 5
- 3.5 Diagnosis and Treatment of Injury or Disease 7
- 3.6 Employee Counseling, Health Promotion, and Prevention 8
- 3.7 Medical Records 8
- 3.8 Occupational Medical Facilities and Equipment 10

4.0 QUALITY ASSURANCE/QUALITY IMPROVEMENT 10

1.0 INTRODUCTION

This Occupational Medical Plan details the program elements for the protection of the safety and health of workers and the public to be implemented by Morrison Knudsen (MK) during Phase II construction. Prompt recognition, diagnosis, and treatment of occupational injury or disease is paramount in managing and maintaining worker health.

This Occupational Medical Plan establishes the framework for an effective worker protection program that will reduce or eliminate accidental losses, injuries, and illnesses by providing workers with a safe and healthful workplace. The objectives outlined in this plan are: Protecting employees from health hazards in their work environments; Promote the early detection, treatment, and rehabilitation of employees who are ill, injured, or otherwise impaired; Provide employees, as appropriate, with professional medical evaluation, guidance, counseling, and referrals to specialists in support of optimal physical and mental health; and Protect the privacy of employees and the confidentiality of their medical records.

This Occupational Medical Plan outlines the methods and approaches utilized to implement applicable occupational medical requirements as defined by our contract. This Occupation Medical Plan supplement the Advanced Mixed Waste Treatment Facility (AMWTP) Environment, Safety, And Health Program Operating Program (ESHPOP), the MK Construction Health and Safety Plan, and the DOE/ID-10520, Tri-Party Memorandum of Agreement by detailing the occupational medical services provided to workers during Phase II construction.

2.0 AUTHORITY

In accordance with the ESHPOP section D.4. "Worker Safety and Health" the AMWTP construction personnel use safety and health procedures, safe work controls and practices, and safety training to effectively eliminate or mitigate the safety and health hazards present during the construction of the AMWTP. Phase II safety and health programs for construction workers are presented in the MK Construction Health and Safety Manual, and implemented by line management. The Construction Health and Safety Manual contains applicable regulations from 29 CFR 1926 Subpart D for occupational health and environmental controls for the construction phase. Requirements for safe working conditions include but are not limited to those for illumination; ventilation; general sanitation; medical services and first aid; hazard communication; emergency response; and limiting exposure to noise.

As stated in DOE/ID-10520, Tri-Party Memorandum of Agreement, Section 6.0 "Emergency Preparedness and Response" during Phase II construction, the INEEL M&O contractor emergency medical services are provided to MK and to AMWTP employees and visitors. These services include ambulance, use of emergency medical technicians, and use of decontamination and medical facilities.

3.0 GENERAL INFORMATION

MK's occupational medical program is established for the purpose of helping to provide for the safety and health of workers at the AMWTP through the provision of medical and other health-related services by qualified personnel who possess appropriate certification and training. The scope and nature of the medical services rendered are predicated, in part, on the analysis of existing or potential health hazards to which workers might be exposed, as well as specific job tasks. This can only be accomplished through close cooperation with professionals in industrial hygiene, health physics, safety, and management and through frequent worksite visits by medical staff.

3.1 Onsite Occupational Medical Program

MK's Environmental Safety and Health (ESH) Manager has responsibility for the overall occupational medical program. MK will maintain onsite occupational medical services under the day-to-day administration of a nurse. Formal written occupational medical procedures used to satisfy the applicable requirements of 29 CFR 1926 Subpart D are contained in the MK Construction Health and Safety Manual.

The MK ESH Manager shall maintain the "OSHA 200 Log" for recordable injuries/illnesses and post this annual summary of injury and illnesses in a visible location. The MK ESH Manager, with support from MK Supervision, has responsibility to conduct accident and injury investigations to secure the scene or equipment, to prevent another incident, and to preserve documentation. MK will take appropriate measures to protect employees, review procedures and job controls for adequacy, identify and implement corrective actions to prevent recurrence.

3.2 Maintenance of a Healthful Work Environment

The MK nurse, and MK Environment Health and Safety ESH staff will maintain an ongoing familiarity and awareness of existing or potential work-related health hazards, employee job tasks, and worksite environments. Close cooperation and coordination with BNFL Inc. and INEEL M&O contractor's industrial hygiene, health physics, and safety professionals will be maintained for the purpose of reviewing materials, processes, and procedures with an emphasis on physical, chemical, and biological hazards present in the worksite.

Regular worksite visits are conducted by the MK nurse as requested by ESH staff and, when appropriate, coordinated with BNFL Inc. Industrial Hygiene, Safety, and Health Physics for the purpose of becoming knowledgeable and familiar with the work environment and potential hazards.

Prior to the performance of a periodic health evaluation, MK safety management will provide the nurse a summary of potential exposures to hazardous agents or tasks and all worksite exposures in excess of the Occupational Safety and Health Administration (OSHA)/DOE permissible exposure limits pertaining to the employee to be evaluated.

3.3 Employee Health Evaluations

Employee health evaluations will be used to provide initial and continuing assessment of the employee in order to:

1. Determine whether the employee's physical and mental health are compatible with the safe and reliable performance of assigned job tasks;

2. Detect evidence of illness or injury and determine if there appears to be an occupational relationship;

3. Contribute to employee health maintenance by providing the opportunity for early detection, treatment, and prevention of disease or injury; and

4. Maintain documented records of the physical and mental health experience of employees.

3.4 Employee Health Evaluation

Initial or baseline evaluations will be comprehensive, and follow-up evaluations will be additionally targeted as determined by employee exposure data, job task and hazard analysis information, or other occupationally related factors. Minimum elements of a comprehensive evaluation are:

- medical/occupational history;
- physical examination;
- review and evaluation of findings.

3.4.1 Classes of Health Evaluations

A. Medical Surveillance and Health Monitoring

Standards and requirements for special health evaluations and health monitoring of employees who work in jobs involving specific physical, chemical, or biological hazards will be in accordance with applicable OSHA/DOE standards.

B. Qualification

Evaluations will be conducted to qualify employees for specific job assignments for which specific medical qualification standards exist (e.g., drivers, equipment operators, and respirator wearers).

C. Fitness for Duty

The MK nurse, ESH staff and MK Supervision have the responsibility to make fitness-for-duty determinations.

Employees will be evaluated for the presence of medical conditions that may reasonably impair their safe, reliable, and trustworthy performance of assigned tasks.

D. Substance Abuse

A substance abuse (drug and alcohol) identification and rehabilitation program is integral to MK's comprehensive fitness-for-duty program. Testing provided will be in accordance with acceptable practices and applicable regulations. The goal is to promote a safe and healthy work environment and to rehabilitate employees involved with substance abuse.

E. Return to Work

Occupational

All employees with occupationally related injuries or illnesses will be evaluated before returning to work. The scope and content of this evaluation will be determined by the MK nurse, based upon the nature and extent of the injury or disease, and will be sufficient to ensure that the employee may return to work without undue health risk to self or others.

The employee will obtain written clearance from an approved company physician or MK nurse before returning to work.

Nonoccupational

MK management will ensure that employees will not be allowed to return to work until they receive a health evaluation and written clearance from an approved company physician or MK nurse in the following situations:

- illnesses or injuries causing absence from work for 5 consecutive workdays (or 40 hours) or more;
- procedures or treatments that would negatively affect the employee's ability to perform in a safe and reliable manner; and
- hospitalization.

The employee will provide relevant medical information from their private physician to assist in this determination. The final decision for health-related work recommendations resides with the approved company physician if a disagreement exists regarding return-to-work suitability.

F. Termination Health Evaluations

A health status review will be made available for all terminating employees. This review will include the employee medical record and associated exposure information.

A health evaluation will be conducted on all employees with known occupational illnesses or injuries, employees with documented or presumed exposures to hazardous substances as required by OSHA regulations, or when more than 1 year has elapsed since the last examination.

All terminating employees will complete a signed response for the following questions:

1. Have you had any medical treatment or health changes since your last physical?

2. To your knowledge, have you had any significant chemical, radiation, or physical (such as heat or noise) exposures since your last physical?

3. Do you have any complaints or concerns related to prior illnesses, injuries, or exposures?

4. Do you have any current medical complaints?

3.5 Diagnosis and Treatment of Injury or Disease

3.5.1 Occupational Injury or Disease

The management of occupational injury or disease will be in accordance with the laws and regulations of the State of Idaho.

Diagnosis and treatment of occupational injury or disease will be prompt, with emphasis placed on rehabilitation and return to work at the earliest time compatible with job safety and employee health.

MK management has established procedures to ensure that all employees with occupational injuries or illnesses receive medical clearance before returning to work.

3.5.2 Nonoccupational Injury and Illness

Employees will be encouraged to utilize the services of a private physician or medical facility, where these are available, for care of nonoccupational injuries or illnesses. However, the MK nurse will assist employees who become ill at work. Care will be available for what may be judged a short-term, self-limited condition. The objective is to return the worker to a state of health in the shortest possible time consistent with modern medical therapy. Long-term treatment of nonoccupational injury and illness is not considered to be a routine responsibility of MK's medical program.

3.5.3 Monitored Care

Monitored care of ill or injured employees by MK' nurse and ESH staff is paramount to maximize recovery and safe return to work and to minimize lost time and associated costs.

MK management acknowledges responsibility to advise and assist the nurse or the approved company physician when an employee has been absent because of an illness or injury for more than 5 consecutive workdays (or 40 hours), or has experienced excessive absenteeism. Worker's compensation cases will be monitored when appropriate through frequent return visits and physician-to-physician communication with private physicians where applicable. MK's goal is to assist the employees in their recovery and to facilitate their return to duty at the earliest practicable time. Coordination with managers, employee benefit programs, and human resource staff will be considered when implementing a comprehensive monitored care program.

3.6 Employee Counseling, Health Promotion, and Prevention

The MK nurse responsible for the day-to-day delivery of medical services will consult with an approved company physician as necessary to review and approve the medical aspects of an Employee Assistance Program (EAP), which include physical and mental health, as well as alcohol and other substance abuse rehabilitation programs, when applicable.

Program evaluation will include treatment processes, records, referrals, treatment outcomes, follow-up (aftercare programs), and staffing.

The MK nurse responsible for the day-to-day delivery of medical services will consult with an approved company physician as necessary to review and approve all MK-sponsored or supported wellness programs as essential components of a preventive medicine program. Health counseling will be available to all employees when applicable. Program evaluation will address the training/education opportunities provided, lesson plans, class evaluation records, and referral counseling sessions.

The MK nurse will ensure that training and immunization programs are available for workers potentially at risk of exposure to bloodborne pathogens and that the disposition of biohazardous waste conforms to OSHA regulations and Centers for Disease Control (CDC) guidelines.

3.7 Medical Records

3.7.1 Development and Maintenance

MK occupational medical procedures address the creation and maintenance of a medical record for each employee for which medical services are provided. These

records will be kept from the time of the first examination and will be accurate, current, and complete.

EAP records will be maintained separately by the MK Corporate EAP provider to ensure confidentiality.

3.7.2 Confidentiality

The confidentiality of all employee medical records, including written, microfilmed, or computerized records, will be observed by all persons having official access to them. Disclosure of information will be made only with the employee's written consent, and access to employee medical records should only be granted as permitted by law or Federal regulation. Custody of the medical records will remain with the MK nurse and ESH staff.

3.7.3 Access

Access to employee medical records will be in accordance with:

1. The Privacy Act, as codified in 10 CFR 1008.17(b)(1);

2. Access to Employee Exposure and Medical Records, as codified in 29 CFR 1910.20 (OSHA Standards); and

3. State of Idaho laws and codes.

3.7.4 Identification

Employee medical records will be properly identified and coded in a consistent manner to provide the MK nurse and ESH staff with the following information:

- current job title/work location,
- job certifications or limitations,
- allergies, and
- medical surveillance/work hazards.

This information is necessary to alert medical staff to the identification of potential work-related conditions or fitness-for-duty considerations during examinations and treatments.

3.7.5 Work Restrictions

Appropriate work restrictions will be communicated to MK management. MK management will maintain a work restriction registry, if appropriate.

3.7.6 Retention of Medical Records

The medical records of MK employees are recognized as valuable epidemiological research records (along with other records such as exposure, work history, personnel, and litigation records) and will not be lost or destroyed. Inactive records may be retired to low-cost storage in an approved on-site records holding area or a Federal Records Center. They will be packed and sealed for storage so as to preserve confidentiality in accordance with MK Corporate Records Management Program.

3.8 Occupational Medical Facilities and Equipment

3.8.1 Facilities

MK medical facilities will have sufficient space, lighting, and climate control and will be adequate for the privacy and comfort of employees for examination and emergency treatment. Occupational medical facilities will be located in areas readily accessible to employees and transportation.

3.8.2 Equipment

Selection, supply, and use of medical equipment will be adequate in terms of present-day accepted standards of medical practice, will meet OSHA standards, and will be properly maintained and calibrated.

3.8.3 Pharmaceuticals

Dispensing, storing, and disposing of pharmaceuticals will be in accordance with appropriate Federal, State of Idaho, and local law.

4.0 QUALITY ASSURANCE/QUALITY IMPROVEMENT

MK's medical program will strive to develop, maintain, update, and continuously improve a quality program that exemplifies MK's mission and vision, quality values, and customer focus orientation. MK's medical quality program is intended to address customer service strategies, analyze service delivery systems, and develop customer service standards, with the goal of empowering employees and reinforcing and rewarding excellence

1-07

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: CSM 3P-1-04	EFFECTIVE DATE: June 1, 1999
	REVISION: 0	PAGE: 1 OF 8

TITLE: WASTE MANAGEMENT AND MINIMIZATION PLAN FOR CONSTRUCTION

APPROVAL

Brad D Giles PE, CSP — 3/22/99
ES&H MANAGER — DATE

[signature] — 3/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 3.22.99
CONSTRUCTION MANAGER — DATE

REV.	DATE	REVISION DESCRIPTION
0	06/01/99	ORIGINAL ISSUE

ORIGINATOR: KELLY POST
(Initial/Date) KP 3/22/99

IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 INTRODUCTION 3

2.0 AUTHORITY 3

3.0 GOALS, OBJECTIVES, AND STRATEGY 4

4.0 PROCESS WASTE ASSESSMENTS (PWA) 5

5.0 WASTE MINIMIZATION TECHNIQUES 5
- 5.1 Source Reduction 6
- 5.2 Recycling and Reuse 6
- 5.3 Treatment 7

6.0 TRAINING 7
- 6.1 Pollution Prevention Awareness 7

7.0 RECORDS 8

1.0 INTRODUCTION

The purpose of the Waste Management and Minimization Plan For Construction is to establish an organized, comprehensive, and continual effort to systematically reduce hazardous waste generated by MK during Phase II construction of the Advance Mixed Waste Treatment Project (AMWTP) at the Idaho National Engineering and Environmental Laboratory (INEEL). This plan specifies activities and methods which shall reduce the quantity and toxicity of wastes generated by MK Phase II construction related activities.

The MK program reflects and complements the AMWTP Environment, Safety, And Health Program Operating Plan (ESHPOP), the MK Construction Health and Safety Plan, and the DOE/ID 10520 Tri-Party Memorandum of Agreements goals and objectives for waste management and minimization and represents an ongoing effort to make these activities part of MK's construction philosophy. The MK Construction Health and Safety Manual contains the implementing procedures to be utilized during Phase II construction to satisfy applicable requirements and commitments.

MK recognizes a hierarchy of waste management practices that places the priority on source reduction, followed by recycling, treatment, storage, and disposal, in that order. MK's waste management and minimization program emphasizes the elimination or minimization of waste through source reduction as appropriate for Phase II construction activities. Potential waste materials that cannot be eliminated or minimized will be evaluated for recycling (used, reused, or reclaimed). All waste that is generated will be evaluated for treatment to reduce its volume, toxicity, or mobility before storage or disposal.

2.0 AUTHORITY

In accordance with the ESHPOP section D. 15. "*Waste Management Program*," a variety of waste streams are generated during construction activities. Construction waste management and minimization procedures for Phase II are implemented by the MK Construction Heath and Safety Manual. The Construction Health and Safety Manual contains applicable regulations from Hazardous Waste Management Act (HWMA) for waste management and minimization controls during the construction phase. Radioactive and mixed wastes are not generated during construction.

As stated in DOE/ID-10520 Tri-Party Memorandum of Agreement the INEEL M&O contractor will provide the necessary dumpsters required to separate waste materials into wood, metal, paper/cardboard and debris inside the AMWTP construction boundary. Phase II nonhazardous wastes will be disposed at the INEEL Central Facilities Area (CFA) Landfill. Hazardous wastes will be shipped to an offsite treatment, storage, and disposal facility.

During construction MK will maintain a ninety-day storage area for hazardous wastes. MK will coordinate with BNFL Inc. and others as appropriate for an independent contract for hazardous waste disposal and/or coordinate participation in the INEEL subcontract for hazardous waste services.

For the purposes of this plan the MK Environment Safety and Health (ESH) Manager or his designee will act as the primary point of contact for waste management and minimization activities for construction

3.0 GOALS, OBJECTIVES, AND STRATEGY

The objectives of the Waste Management and Minimization Plan for Construction are as follows:

- Comply with federal and state regulations and applicable DOE guidance for waste minimization, waste reduction, and pollution prevention.
- Foster a philosophy to conserve resources and minimize waste and pollution while achieving site strategic objectives.
- Promote the use of nonhazardous materials in operations to minimize the potential risks to human health and the environment.
- Reduce or eliminate the generation of waste through substitution, process modification, improved housekeeping, and closed-loop recycling.

The MK ES&H Manager, or designate, shall serve as the waste minimization coordinator for the plan and implementing procedures, and shall be responsible for the oversight and interface of waste minimization program activities and reviewing and coordinating waste minimization efforts.

The responsibilities of the Waste Minimization coordinator include the following:

- Communicating program objectives to personnel and subcontractors.

- Facilitating integration and coordinating interaction between waste generators and waste managers on waste minimization issues.
- Sponsoring ongoing employee awareness and training.
- Establishing a waste accounting system.
- Prioritizing waste streams or facility areas for assessment.
- Coordinating waste assessments.
- Recommending options for management implementation.

4.0 PROCESS WASTE ASSESSMENTS (PWA)

Process waste assessments shall be conducted as part of an ongoing program to identify, screen, and analyze options to reduce waste. The assessments will provide a summary of hazardous materials use and waste production and identify processes and operations that need to be improved or replaced to promote waste minimization. The Process Waste Assessments provide a basis for prioritizing the specific modifications to AMWTP processes or other waste minimization options.

The Waste Minimization Coordinator will report assessment data and findings and recommend options for waste minimization to BNFL Inc. as applicable. In identifying waste minimization options, the Waste Minimization Coordinator shall concentrate first on source reduction options, followed by recycling technologies, and then treatment techniques.

5.0 WASTE MINIMIZATION TECHNIQUES

In accordance with DOE-ID, BNFL Inc. and INEEL M&O contractor guidance, MK will implement a hierarchy of waste minimization methods, placing primary importance on source reduction efforts to eliminate or reduce the creation of waste. Potential wastes that cannot be eliminated or minimized shall be evaluated for recycling (i.e., used, reused, or reclaimed). All waste that is generated or has been previously generated will be treated to reduce its volume, toxicity, or mobility before storage or disposal.

Following is a brief discussion of the waste minimization techniques that will be evaluated/employed to minimize the generation of waste: source reduction, recycling and reuse, and treatment.

5.1 Source Reduction

Source reduction is the preferred technique for waste minimization. Whenever possible, MK shall implement procedural changes, technology modifications, raw material substitutions, and product alterations to achieve source reduction.

5.1.1 Construction Activities and Procedural Changes

Processes shall be examined to determine whether a significant reduction of waste at the source can be achieved by improvements in process efficiency. Construction procedures shall be examined to determine whether the elimination or revision of construction procedures can contribute to the reduction of waste. The revision and review of construction procedures shall be fully documented and incorporated as part of the site's employee training program. Techniques such as segregation to separate hazardous waste and recoverable wastes from the total waste stream shall be explored.

5.1.2 Material Substitution

The replacement, reformulation, reduction, or elimination of hazardous materials in maintenance, cleaning, and decontamination processes shall be examined.

5.1.3 Segregation

Different types of wastes are segregated to reduce disposal costs, the amount of waste requiring secure disposal or treatment, and to prevent reaction from taking place. Care shall be taken to avoid mixing hazardous with nonhazardous wastes.

Waste-producing activities, such as decontamination, shall be planned and monitored to minimize mixing different waste types that may produce an untreatable waste.

5.2 Recycling and Reuse

Recycling or reclamation is another process for waste minimization. MK shall recycle or reclaim, when possible, those wastes which cannot be prevented or minimized. Opportunities for reclamation and reuse of waste materials shall be explored whenever feasible.

The Waste Minimization Coordinator shall explore new and existing methods of recycling process waste. If practical, MK will participate in site recycling

programs. Other methods to be considered shall include, but not be limited to, reusing or recycling discarded construction materials.

5.3 Treatment

When possible, all wastes which cannot be eliminated, minimized, recycled, or reclaimed shall be treated to reduce volume, toxicity, or mobility prior to storage or disposal.

Sometimes waste types can be segregated before disposal, thus reducing the volume of materials that are difficult to dispose. MK does not plan to treat hazardous wastes during Phase II construction.

6.0 TRAINING

One of the most important elements of the Waste Management and Minimization Plan for Construction is training. The goal of the training program is to make each employee aware of waste generation, it's impact on the site and the environment, and ways waste can be reduced and pollution prevented.

A general orientation program for all employees will include the waste minimization and pollution prevention program shall addressing the following elements:

- The need for, and benefits to be derived from, waste minimization and pollution prevention.
- Management commitment to waste minimization and site waste minimization practices.
- The contribution each employee can make to an improved environment.

6.1 Pollution Prevention Awareness

Another goal of the program is to incorporate pollution prevention into the decision-making process at every level throughout the organization.

The Pollution Prevention Awareness Program has the following objectives:

- Make employees aware of general environmental activities and hazards at the site and waste minimization program requirements, goals, and accomplishments.

- Inform employees of specific environmental issues.
- Train employees on their responsibilities in pollution prevention.
- Encourage employees to participate in pollution prevention.

7.0 RECORDS

Documentation is established and maintained as necessary by MK during Phase II construction to manage wastes. Types of records generated in the Waste Management and Minimization Program include, but are not limited to:

- Written siting justifications and layouts for satellite accumulation areas and temporary storage areas.
- Inspections and audits
- Hazardous material and waste inventories

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	INTERIM DOCUMENT CHANGE NOTICE	
	1. IDCN #: 3P105-02	2. DATE: 8/31/00
3. DOCUMENT #/REV: 3P-1-05 REV 0		4. PAGE: 1 of 1
5. TITLE: Project Storm Water Pollution Prevention Plan- Construction Activity	6. REQUESTOR: Kelly Post	

7. DESCRIPTION OF CHANGE:

THE PROPOSED CONCRETE BATCH PLANT EAST OF THE AMWTF CONSTRUCTION AREA WILL NOT REQUIRE ADDITIONAL STORM WATER STRUCTURAL CONTROLS MEASURES. STORM WATER RUNOFF FROM THE PLANT WILL NOT THREATEN THE EXISTING WATER BODIES CONSISTING OF THE BIG LOST RIVER AND SEVERAL STORM WATER/DRAINAGE DITCHES. HIGH INFILTRATION OF THE SURROUNDING AREA SOILS AND THE DISTANCE TO SURFACE WATER ELIMINATES THE CHANCE FOR SEDIMENT-LADEN WATERS TO POLLUTE EXISTING WATER BODIES. WHILE THE AREA OF THE PLANT WILL HAVE A GREATER RUNOFF COEFFICIENT COMPARED TO THE NATURAL NON-DISTURBED AREA, IT IS NOT SUFFICIENT ENOUGH TO MERIT CONTROL MEASURES.

8. FILING INSTRUCTIONS:

9. DEPARTMENT MANAGER		DATE: 08/31/00
10. ES&H MANAGER:		DATE: 08/31/00
11. QUALITY MANAGER	for Chris Power	DATE: 08-31-00
12. CONSTRUCTION MANAGER: CKP		DATE: 8/31/00
13. IDCN EFFECTIVE DATE: 8/31/00		

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: CSM 3P-1-05	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 10

TITLE: PROJECT STORM WATER POLLUTION PREVENTION PLAN – CONSTRUCTION ACTIVITY

APPROVAL

Bradley D. Gile, PE, CSP — 3/15/99
ES&H MANAGER — DATE

[signature] — 3/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 3.22.99
CONSTRUCTION MANAGER — DATE

REV.	DATE	REVISION DESCRIPTION
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ORIGINATOR: BASIL TUPYI (Initial/Date)	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

Certification Statement 1

Project Storm Water Pollution Prevention Plan – Construction Activity for the Advance Mixed Waste Treatment Facility, Idaho National Engineering and Environmental Laboratory 1

Project Storm Water Pollution Prevention Plan – Construction Activity for the Advance Mixed Waste Treatment Facility, Idaho National Engineering and Environmental Laboratory 2

1.0 INTRODUCTION 3

2.0 FACILITY DESCRIPTION 3

3.0 EROSION AND SEDIMENT CONTROLS 6

4.0 DOCUMENTATION 7

5.0 CULTURAL CONCERNS 9

6.0 REFERENCES 9

ATTACHMENT A CALCULATION WORKSHEETS FOR DETERMINING RUNOFF COEFFICIENTS FOR STORM WATER RUNOFF BEFORE, DURING, AND AFTER THE CONSTRUCTION OF THE ADVANCED MIXED WASTE TREATMENT FACILITY

1.0 INTRODUCTION

1.1 This is a Project Storm Water Pollution Prevention Plan for construction activities (Project SWPPP-CA) for the Advanced Mixed Waste Treatment Facility (AMWTF). This Project SWPPP-CA will serve as Addendum to Addendum III, Radioactive Waste Management Complex Storm Water Pollution Prevention Plan for Construction Activities, which is part of the *INEEL Storm Water Pollution Prevention Plan for Construction Activities – Generic Plan*, hereafter known as the Generic Plan.

2.0 FACILITY DESCRIPTION

2.1 The AMWTF is intended to treat low-level mixed waste and transuranic waste for shipment and final disposal at the Waste Isolation Pilot Plant (WIPP) in Carlsbad, New Mexico.

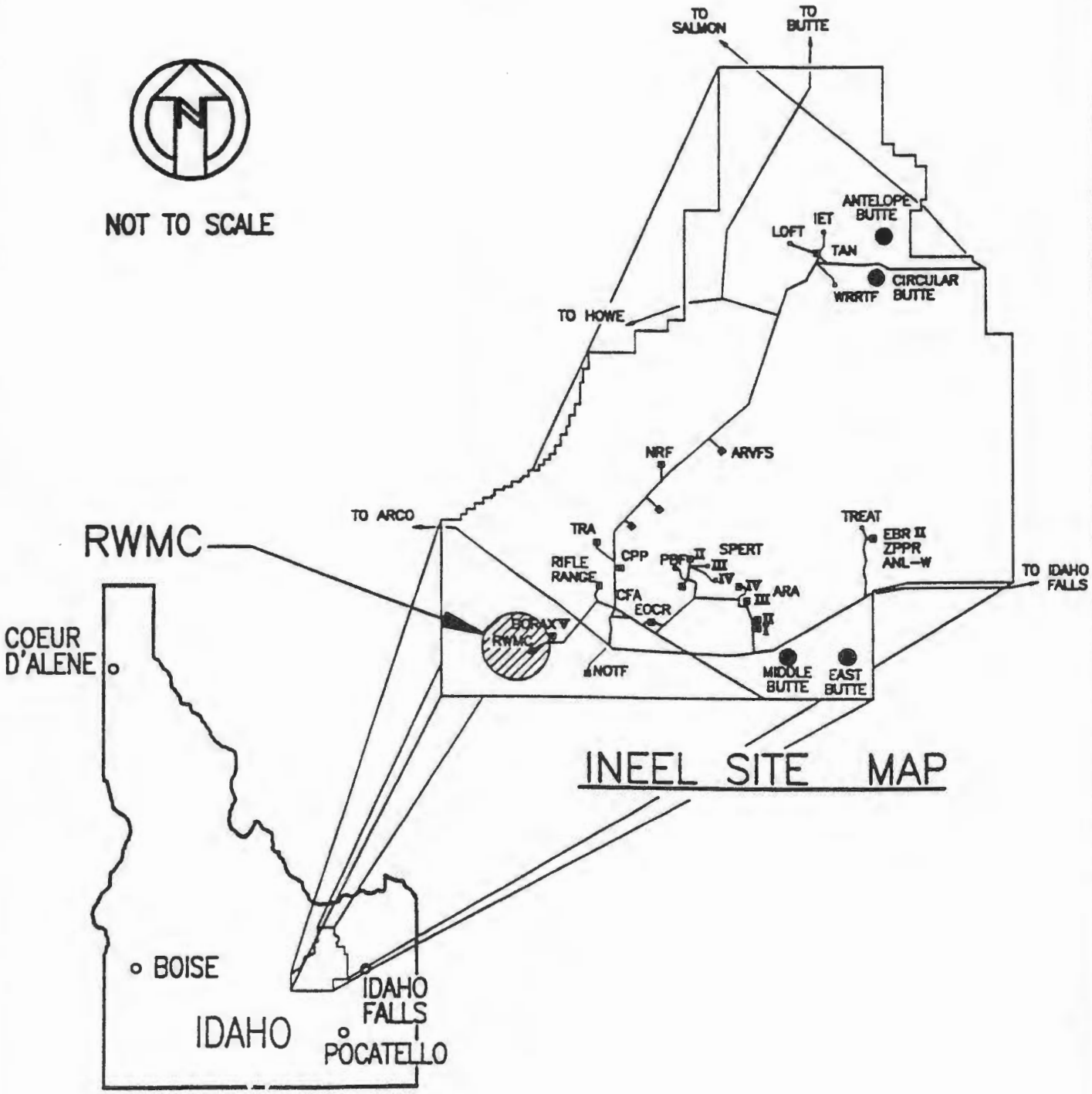
2.2 The AMWTF is to be constructed in the Radioactive Waste Management Complex (RWMC) area, located in the southwest sector of the Idaho National Engineering and Environmental Laboratory (INEEL) as shown in Figure 1. The RWMC is divided into three zones according to land use as reported in the Generic Plan and shown in Figure 2:

- Zone 1 is the Transuranic Storage Area (TSA)
- Zone 2 is the Administrative and Operational Support Area
- Zone 3 is the Subsurface Disposal Area (SDA)

2.3 The AMWTF will be constructed in the TSA and consist of five distinct operational facilities to include:

- Material characterization, segregation, and temporary storage to organize the waste for waste processing.
- Material pretreatment to condition the waste for final waste treatment.
- Waste volume reduction, immobilization, and/or treatment to produce a final waste product which satisfies WIPP's waste disposal acceptance and profiling criteria.
- Waste packaging and certification to ensure that wastes are properly packaged for shipment to the WIPP disposal site.
- Waste loading to properly load and secure waste shipment for ground movement to WIPP.

Figure 1. Advanced Mixed Waste Treatment Facility Site Location Map



RWMC LOCATION MAP

FIGURE 1

Figure 2. Advanced Mixed Waste Treatment Facility Site Layout Map

Figure 2. Advanced Mixed Waste Treatment Facility Site Layout Map

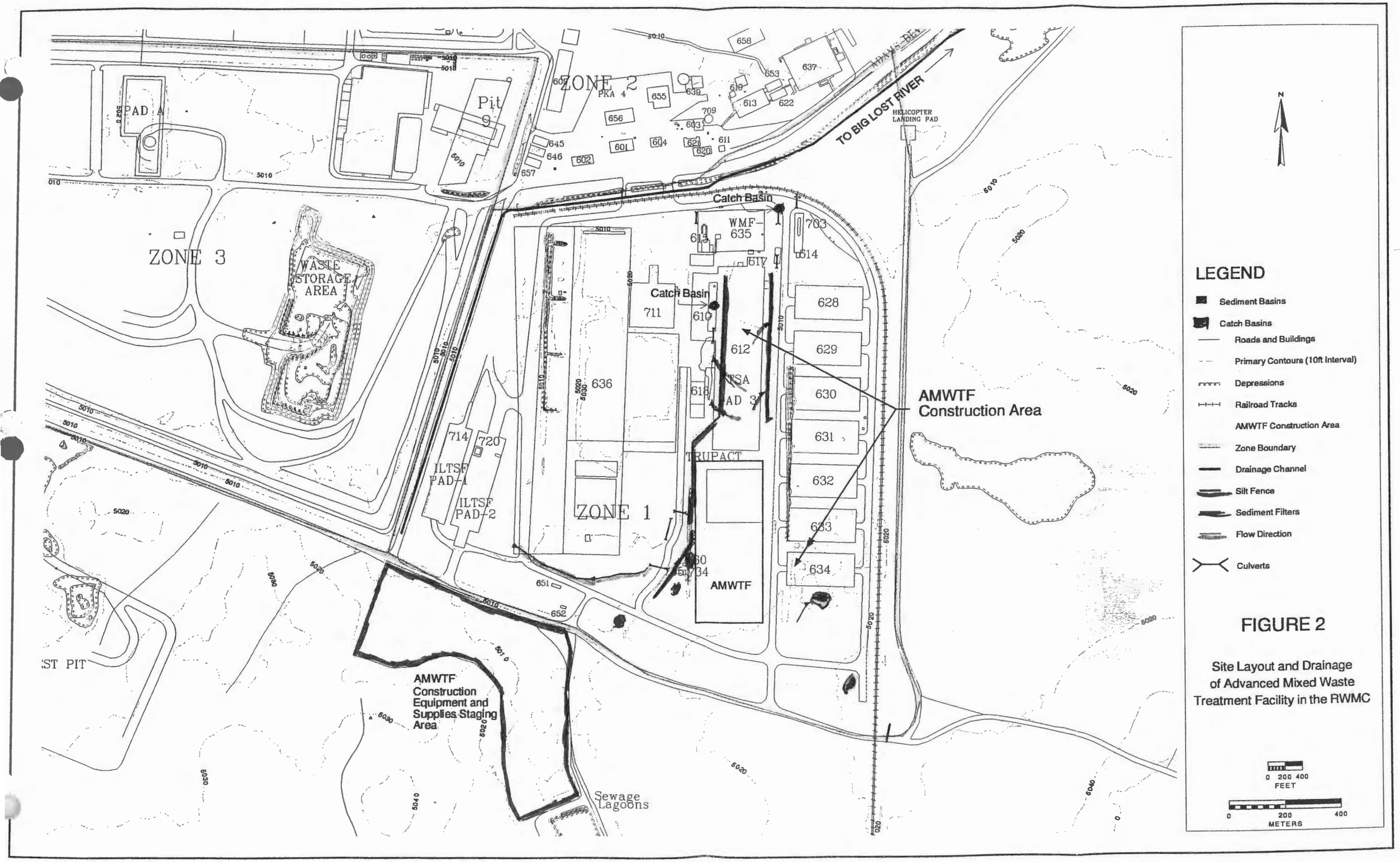


FIGURE 2

Site Layout and Drainage of Advanced Mixed Waste Treatment Facility in the RWMC

2.4 Project construction requirements for the AMWTF that may influence the character of storm water runoff include:

- Site grading, placement of storm water controls, and installation of temporary utilities, fencing, and construction support facilities during June 1999 through September 1999.
- Permanent utility upgrades or expansions and construction of concrete slab and foundations for the AMWTF during October 1999 through October 2000.
- Construction of building housing AMWTF process equipment during October 2000 through October 2001.
- Removal of temporary utilities, fencing, and construction support facilities during October 2001 through November 2001.

2.5 AMWTF trial operation is anticipated during December 2001 through May 2003. Storm water management during the maintenance and operation of the AMWTF will follow the INEEL Storm Water Pollution Prevention Plan for Industrial Activities (DOE-ID 1998b).

3.0 EROSION AND SEDIMENT CONTROLS

3.1 The AMWTF is part of an estimated 4 square miles watershed that drains to the Big Lost River, located approximately 4 miles northeast of the RWMC. The natural gradient of the AMWTF site is generally flat with storm water directed north and westward to a diversion drainage system lying along the north and west boundary of Zone 1, which encloses the AMWTF as shown in Figure 2. However, the drainage system only flows intermittently following flooding events; because most runoff is contained onsite and quickly percolates into the permeable subsoils. Small 12-inch depth surface drainage swales or contour ditches will be placed along the western and northern perimeter of the fenced in construction area for the AMWTF, shown in Figure 2. Sediment basins and silt fences will also be placed in areas noted in Figure 2 to help remove the sediments carried in runoff prior to being discharged into the drainage system discussed above. Sediments accumulated in the sediment basins will be removed when the sediment basin design capacity has been reduced by 50%.

3.2 Attachment A describes the areas to be disturbed and the runoff coefficients for site conditions before, during and after project construction.

3.3 Non-storm water discharges are specifically prohibited with the following exceptions:

- Fire-fighting activity
- Fire hydrant flushings
- Uncontaminated groundwater
- Potable water sources
- Air conditioning condensate
- Exterior building wash down water containing no detergents
- Waters containing no detergents used to wash vehicles for minimizing offsite sediment tracking
- Waters used to control dust or compact soil that do not produce runoff

3.4 Dust control measures to be implemented during construction of the AMWTF include:

- Wetting the construction site and traffic routes with water
- Stockpiling construction debris and backfill material in a manner to minimize fugitive dust such as:
  - constructing rectangular piles with long axis parallel to predominant wind directions
  - installing a silt fence at the base to serve as a wind break and sediment control
  - applying a temporary mulch
  - establishing temporary vegetation

4.0 DOCUMENTATION

4.1 The MK construction manager or designee must verify that a notice has been placed near the main entrance to the construction site with the following information:

- A copy of the Notice of Intent
- The name and telephone number of the construction manager
- A brief description of the project
- The location of the SWPPP

4.2 The construction manager will keep records of the construction progress and delay. The records are used to document implementation of storm

water runoff controls, dust controls, and spill responses. The records should include the dates of the following activities:

- Major surface grading
- Beginning and cessation of temporary and permanent construction activities
- Initiation of stabilization measures

4.3 Modifications to the project SWPPP-CA are required if changes in project design, construction, operation, or maintenance have a significant effect on the potential for discharging pollutants in storm water runoff. The project SWPPP-CA must be modified within 14 calendar days following the discharge of a reportable quantity of hazardous substance or oils to the Big Lost River System. The project SWPPP-CA must also be modified to identify the measures taken to prevent the recurrence of such an incident.

4.4 Spill prevention, containment, and response procedures shall closely follow the procedures in the *INEEL Emergency Plan/RCRA Contingency Plan, Addendum 3, "Radioactive Waste Management Complex"* and the *Subcontractor Requirements Manual* (LIMITCO a and LIMITCO b).

4.5 Storm water pollution control measures at construction sites that have not been stabilized are inspected at least once every 14 calendar days and within 24 hours of every rainfall of 0.5 inch or greater. Storm water pollution control measures at construction sites that have been stabilized and runoff is unlikely, are inspected monthly and within 24 hours of every rainfall of 0.5 inch or greater. The MK construction manager or designee performs inspections with oversight by the INEEL storm water coordinator. The minimum inspection documentation requirements include:

- Summary of the scope of the inspection
- Name and qualifications of the inspector
- Date of inspection
- Major observations relating to the implementation of the project SWPPP-CA
- Identification of any incidents of noncompliance
- Actions taken to correct problems identified during an inspection
- Retain records for at least three years

4.6 Revisions to the SWPPP must be completed within 7 calendar days following the inspection. Inspection forms are found in the Generic Plan, Appendix C.

5.0 CULTURAL CONCERNS

5.1 As noted in the Generic Plan, storm water discharges must be in compliance with the Endangered Species Act. The bald eagle is the only known resident listed species at the INEEL; therefore, habitat along the Big Lost River may need protection if construction activities affect the habitat for the bald eagle along the Big Lost River.

5.2 Instructions related to historic preservation have not been included in the general permit; however, all permittees are responsible for complying with applicable State, Tribal, or local laws for the protection of historic properties. There are no known historic properties on the proposed AMWTF site.

6.0 REFERENCES

6.1 DOE-ID 1993. Sitewide Groundwater Monitoring Plan, EGG-WMO-10383, U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, November

6.2 DOE-ID 1998 a. INEEL Storm Water Pollution Prevention Plan for Construction Activities – Generic Plan, DOE/ID-10425(98), Revision 2. U.S. Department of Energy Idaho Operations Office, Idaho Falls, Idaho, May

6.3 DOE-ID 1998 b. Idaho National Engineering Laboratory Storm Water Pollution Prevention Plan for Industrial Activities, U.S. Department of Energy, Idaho Falls, Idaho, December

6.4 LIMITCO 1998 a. Subcontractor Requirements Manual, Lockheed Martin Idaho Technologies Company, Idaho Falls, Idaho, March

6.5 LIMITCO 1998 b. INEEL Emergency Plan/RCRA Contingency Plan, Addendum 3, Radioactive Waste Management Complex, Manual 16A-3, Lockheed Martin Idaho Technologies Company, Idaho Falls, Idaho, July

ATTACHMENT A

CALCULATION WORKSHEETS FOR DETERMINING RUNOFF COEFFICIENTS FOR STORM WATER RUNOFF BEFORE, DURING, AND AFTER THE CONSTRUCTION OF THE ADVANCED MIXED WASTE TREATMENT FACILITY

MORRISON KNUDSEN CORPORATION

Design Analysis Cover Sheet

Advanced Mixed Waste Treatment Project

W.O. 7536

Complete Only Applicable Items

®

QA:

2. DESIGN ANALYSIS TITLE Estimate of Composite "c" for Construction Erosion Control Analysis			
3. DOCUMENT IDENTIFIER (Including Rev. No.) MK-04-52-001 Rev. 0			4. TOTAL PAGES 6
5. TOTAL ATTACHMENTS 0	6. ATTACHMENT NUMBERS-NO. OF PAGES IN EACH		
	Print Name	Signature	Date
7. Originator	Debbie Angell	D Angell	02-10-99
8. Checker	Dave Crockett	[signature]	2/12/99
9. Lead Design Engineer	Dave Crockett	[signature]	2/12/99
10. Department Manager	Randy Bohachek	[signature]	2/15/99

11. Remarks

REGISTERED PROFESSIONAL ENGINEER 4836 STATE OF IDAHO DAVID E. CROCKETT

[signature]

3/15/99

MORRISON KNUDSEN CORPORATION

Design Analysis Cover Sheet

Advanced Mixed Waste Treatment Project ®

W.O. 7536

Complete Only Applicable Items

2. DESIGN ANALYSIS TITLE
Estimate of Composite "c" for Construction Erosion Control Analysis

3. DOCUMENT IDENTIFIER (Including Rev. No.)
MK-04-52-001 Rev. 0

4. Revision No.	5. Description of Revision
0	Issue for Project Use

1.0 PURPOSE

The purpose of this calculation is to list the areas impacted by construction by land use and to estimate a composite value of a Rational Method runoff coefficient "c" for the construction area surrounding the Advanced Mixed Waste Treatment Facility (AMWTF). A composite "c" shall be estimated for existing conditions, conditions during construction, as well as final conditions.

2.0 QUALITY ASSURANCE

This Design Analysis has been developed in accordance with the following project procedures:

- BNFL PQP 4.1 – Document Control
- BNFL PQP 6.1 – Design Control
- BNFL PQP 6.2 – Quality Level Classification
- MK Project Procedure 5.4 – Calculations/Analysis

3.0 METHOD

The composite "c" shall be estimated by using a ratio of the various areas multiplied by an assumed "c" for the land use type to the total area of the site.

4.0 DESIGN INPUTS

The following guidelines shall be used to support development of this calculation:

1. The areas to be evaluated for each condition shall include the area enclosed by the temporary construction fence and the safety trailer and parking area.

2. All concrete pads, including the electrical substation, the propane tanks, and the form assembly area shall be accounted for during the construction phase, although may not be poured until late in the construction sequencing.

3. Include all asphalt paving that will be installed.

4. All existing buildings that will be removed as well as new facilities and temporary structures shall be accounted for in the appropriate time condition.

The following assumptions were made:

1. For the construction condition, the worst case situation shall be analyzed. This translates into a condition where the concrete slabs for the AMWTF, the electrical substation, and the propane tank yard have been poured and are contributing runoff. At the same time, all temporary office complexes and trailers are installed and gravel surfacing has been placed in the north lay down area, the south parking area as well as the construction area surrounding the AMWTF.

2. Minor alterations to the temporary construction fence alignment will not significantly change the estimated composite "c" values.

3. The following data, from Reference 5.1, shall be used to determine the "c" value for various land uses:

Land Use	Range of "c" Values	"c" for Calculation
Industrial Buildings	0.6 - 0.9	0.8
Light Industrial/Gravel Base	0.5 - 0.8	0.6
Asphalt Paving	0.7 - 0.95	0.9
Concrete	0.8 - 0.95	0.9
Unimproved Ground	0.1 - 0.3	0.3

The following table lists the areas by land use for the existing condition, and lists areas by land use that are impacted during the construction and final phases of the AMWTP. Note that these areas are based on the design as of February 3, 1999.

	Area Description	Area (sf)
Existing Conditions	Building 612	109,685
	Building 634	29,464
	Asphalt Paving	29,989
	Undisturbed Ground (Inside Fence)	374,776
	Undisturbed Ground (Safety Trailer/Parking)	128,047

	Area Description	Area (sf)
Construction Conditions	Building 634	29,464
	Asphalt Paving	75,586
	Construction Office Complex	9,600
	North Laydown Structures	3,960
	Safety/Access Control Structures	1,654
	AMWTF Building Slab	74,635
	Form Work Area Slab	4,500
	Electrical Substation Slab	476

	Propane Tank Area Slab	2,921
	Gravel Area (Inside Fence)	342,772
	Gravel Area (Safety Trailer/Parking)	126,393

	Area Description	**Area (sf)**
Final Conditions	Building 634	29,464
	Asphalt Paving	75,586
	AMWTF Building	74,635
	Electrical Substation Slab	476
	Propane Tank Area Slab	2,921
	Gravel Area (Inside Fence)	361,120
	Gravel Area (Safety Trailer/Parking)	127,759

The above areas shall be used to estimate a composite "c" for the described conditions for the site.

5.0 REFERENCES

1. *Design and Construction of Urban Stormwater Management Systems*. 1992, pages 91 and 92, for the Normal Range of Runoff Coefficients.

6.0 USE OF COMPUTER SOFTWARE

AutoCADD was utilized to electronically estimate the areas of various zones in the AMWTP. All AutoCADD areas were manually checked and electronically verified for accuracy.

7.0 DESIGN ANALYSIS

The composite "c" shall be estimated by using a ratio of each land use type and assigned "c" value to the total area of interest.

Existing Conditions:

$$c = \frac{(109{,}685+29{,}464).8 + (29{,}989).9 + (374{,}776+128{,}047).3}{671{,}961}$$

$c = 0.43$

Construction Conditions:

$$c = \frac{(75{,}586).9 + (1{,}654+9{,}600+3{,}960+29{,}464).8 + (4{,}500+2{,}921+476+74{,}635).9 + (126{,}393+342{,}772).6}{671{,}961}$$

$c = 0.68$

Final Conditions:

$$c = \frac{(75{,}586).9 + (2{,}921+476).9 + (74{,}635+29{,}464).8 + (361{,}120+127{,}759).6}{671{,}961}$$

$c = 0.67$

8.0 CONCLUSION

The maximum stormwater runoff can be expected during the construction phase of the AMWTP, as this period has the highest estimated Rational Method runoff coefficient "c".

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	INTERIM DOCUMENT CHANGE NOTICE	
	1. IDCN #: 3P105-01	2. DATE: 02/23/00
3. DOCUMENT #/REV: CSM 3P-1-05, Rev. 0		4. PAGE 1 OF 1
5. TITLE: Project Storm Water Pollution Prevention Plan – Construction Activity	6. REQUESTOR: Claude Pettengill	

7. DESCRIPTION OF CHANGE:

The last page of the procedure is an unsigned, undated Certification Statement that should have been completed by the BNFL, Inc. General Manager. The statement is unnecessary.

Remove the page.

8. FILING INSTRUCTIONS:

REPLACE the Certification Statement with this IDCN.

9. DEPARTMENT MANAGER	Claude Pettengill	DATE: 022300
10. ESH MANAGER	Claude Pettengill	DATE: 022300
11. QUALITY MANAGER	[illegible]	DATE: 02-23-00
12. CONSTRUCTION MANAGER	for Bob Wisdom	DATE: 2.23.00

13. IDCN EFFECTIVE DATE:

February 23, 2000

Project Storm Water Pollution Prevention Plan – Construction Activity for the Advance Mixed Waste Treatment Facility, Idaho National Engineering and Environmental Laboratory

REVIEWS AND APPROVALS

I certify that the Project Storm Water Pollution Prevention Plan – Construction Activity has been prepared in accordance with good engineering practices as required under storm water pollution prevention regulations.

Registered Professional Engineer Morrison Knudsen Corporation	25 March 1999 Date
Construction Manager Morrison Knudsen Corporation	3.25.99 Date

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: CSM 3P-3-01	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 1	PAGE: 1 OF 6

TITLE: CONSTRUCTION SECURITY PLAN

APPROVAL

William Piirpanen — 4/12/99
ES&H MANAGER — DATE

[signature] — 4/12/99
QUALITY MANAGER — DATE

Bob Wisdom — 4.12.99
CONSTRUCTION MANAGER — DATE

REV.	DATE	REVISION DESCRIPTION
0	02/22/99	ORIGINAL ISSUE
1	04/12/99	MINOR REVISION, INCORPORATED DOE-ID COMMENTS

ORIGINATOR: KELLY POST
(Initial/Date) KP 4/12/99

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MK CONSTRUCTION

CONSTRUCTION SECURITY PLAN

TABLE OF CONTENTS

1.0 INTRODUCTION 3

2.0 AUTHORITY 3

3.0 SITE ACCESS CONTROL 3

4.0 SECURITY AWARENESS AND EDUCATION 4
- 4.1 Initial Security Education Briefing 4
- 4.2 Refresher Briefings 4

5.0 PROPERTY PROTECTION AND CONTROL 4
- 5.1 Access Controls 4
- 5.2 Lock and Key Control 5
- 5.3 Communications Security 5
- 5.4 Violations of Laws, Losses, and Incidents of Security Interest 5

6.0 SUBSTANCE ABUSE PREVENTION PROGRAM 6

7.0 AUDIT AND SELF-ASSESSMENT PROGRAM 6

8.0 RECORDS MANAGEMENT 6

1.0 INTRODUCTION

This Security Plan details the program elements required and the responsibilities to implement a security program. Control of physical access to the RWMC is the responsibility of the Facilities Manager (FM), INEEL M&O Contractor Safeguards and Security Department. Control of physical access to the AMWTP is the responsibility of BNFL/MK through coordination with the FM.

This Construction Security Plan interfaces with the Environment, Safety, and Health Program Operating Plan (ESHPOP) and the DOE/ID – 10520 Tri-Party Memorandum of Agreement. The program elements established in this Security Plan are: Personnel Security Program, Access Control and Issuance of Badges, Visitor Control, Security Awareness and Education, Property Protection and Control, and the Substance Abuse Prevention Program.

For the purpose of this plan the MK Safety Manager or his designee will act as the MK Security Manager

2.0 AUTHORITY

Security is the responsibility of MK under the direction of the Security Manager. The MK Security Manager is responsible for overall security policy and interaction with INEEL M&O Contractor on security matters. MK will maintain a direct liaison with the M&O Contractor Security Manager to ensure protection of government property and implementation of effective site access policies during normal and off-normal conditions.

3.0 SITE ACCESS CONTROL

Site access is controlled by MK Security Procedure titled Site Access Control. Specifically, this procedure addresses issuance of badges and brass passes for individuals, vendor deliveries, visitors, and vehicle access.

AMWTP construction personnel will be issued Building Access Only (BAO) badges for RWMC area and AMWTP badges for AMWTP access.

Employees of BNFL Inc., MK, and subcontractors that require frequent access to controlled areas are issued picture identification badges which must be worn at all times while in administratively controlled areas unless prohibited by health or safety regulations. Access to BNFL Inc. facilities during working hours is controlled by MK employees specifically assigned to assure that only persons with proper authorization are admitted.

The LMITCO foreign national office in accordance with the LMITCO program processes all visits by foreign nationals.

4.0 SECURITY AWARENESS AND EDUCATION

Auditable records shall be maintained of all security briefings.

4.1 Initial Security Education Briefing

All new hires, visitors, and all others requiring access to AMWTP must attend an orientation. Part of the orientation covers MK personnel's responsibility to maintain a high level of awareness of security procedures. This briefing is presented by the Security Manager or a designated representative to acquaint newly hired individuals with local security procedures and to familiarize them with their responsibilities to protect personal, BNFL and Government property from theft, loss, or damage.

AMWTP access clerks will be trained to the AMWTP Site Access Control Procedure.

4.2 Refresher Briefings

Refresher briefings are required for all individuals every two years. This briefing reinforces awareness of the individual's responsibilities and the general requirements of the MK Security Plan.

5.0 PROPERTY PROTECTION AND CONTROL

MK Property Protection and Control program ensures that BNFL Inc. and government property is protected against damage or destruction arising from deliberate acts of arson, civil disorder, riot, sabotage, terrorism, vandalism, or theft in a manner consistent with its value and the impact of its loss. Equipment, processes, or material, the loss or destruction of which would cause unacceptable impact on national security or the health and safety of the public, are protected against applicable threats contained in threat guidance issued by the DOE-ID Office of Security Affairs.

BNFL Inc., during construction, will maintain a seven-foot high temporary security fence around the project perimeter inside the RWMC Security fence.

5.1 Access Controls

MK Security will ensure that vehicular access to the sites complies with INEEL M&O Contractor procedures. Access of vehicles to the site is limited to vehicles on official company business. All vehicles entering the site are subject to search prior to gaining access to, or departing from, the site. Privately-owned or personal vehicles are not

permitted inside the RWMC or AMWTF perimeter fence. The MK Security Procedure titled Site Access Control further defines vehicular access requirements.

Signs prohibiting trespassing shall be posted around the perimeter fencing and at the entrances to all DOE-owned, BNFL Inc. operated facilities. Signs prohibiting the introduction of prohibited articles and authorizing the inspection/search of vehicles, hand-carried items, or persons entering or exiting, shall be posted at all entrances.

MK is responsible for physical security of the BNFL Inc. buildings located within the fenced Property Protection Areas. These security measures include locking buildings, controlling keys, and monitoring after-hours access. INEEL M&O Contractor and MK will establish/coordinate responsibilities for maintaining fencing, lighting, and periodic patrols for BNFL facilities in accordance with DOE/ID-10520, *Tri-Party Memorandum of Agreement*. MK does not maintain a guard force; however, BNFL facilities are located within the fenced Property Protection Area controlled by the DOE security contractor.

BNFL/MK will provide information to the RWMC Main Security guard desk regarding late or off-shift deliveries on a case by case basis.

5.2 Lock and Key Control

Control of locks and keys to facilities is detailed in the MK Security Procedure titled Lock and Key Control. MK will provide RWMC Shift manager and the DOE Security contractor keys to AMWTP project site.

5.3 Communications Security

MK Security shall ensure that all employees are aware of the prohibition regarding installation and use of wiretapping or eavesdropping devices; that such devices are not procured with DOE funds; and that such devices are not constructed or created in any building, installation, or real property owned by the U.S. Government. All employees are instructed to report immediately to their supervisors and the Security Department, the discovery of any wiretapping or eavesdropping device. These devices are not to be removed, disconnected or otherwise tampered with until properly authorized by the Security Department.

5.4 Violations of Laws, Losses, and Incidents of Security Interest

MK employees who become aware of any misuse, abuse, loss, or theft of Government property are obligated to report the violation or infraction immediately to MK Security, DOE Safeguards and Security Division, or the Inspector General's Office. MK will take appropriate action in accordance with the severity of the violation or loss in order to prevent a recurrence.

1) MK Security will notify DOE-ID and the INEEL M&O Contractor of all known theft, loss, or misuse of Government property.

2) MK Security will notify DOE-ID and the INEEL M&O Contractor, of known or suspected threats to the RWMC and/or AMWTP facilities.

3) If the circumstances in 1 and 2 above warrant, MK will initiate an Occurrence Report in accordance with BNFL Inc. "Occurrence Categorization, Notification, and Processing" procedure.

6.0 SUBSTANCE ABUSE PREVENTION PROGRAM

The MK Substance Abuse Prevention Program (SAPP) is detailed in the Substance Abuse Prevention Program - Program and Policies Manual and complies with 10 CFR Subpart 707, the Drug Free Workplace Act of 1988, and Morrison Knudsen Corporation policies. The program applies to all regular full-time, part-time, probationary, casual or contract employees, as well as subcontractor personnel. This program may, at the discretion of MK, be applied to visitors, vendors, and suppliers. Compliance with this program is required by MK as a condition of employment for qualified applicants and for continued employment for other employees. Continuation of access authorization may be dependent upon test results from random drug testing or testing-for-cause. Awareness training is required for all employees and is part of the new hire orientation. Refresher training may be presented to all employees regarding their responsibilities and rights.

7.0 AUDIT AND SELF-ASSESSMENT PROGRAM

Periodic audits of the security program will be conducted by the Security Manager and other MK management personnel. These internal audits will be conducted in accordance with the MK Management Self-Assessment Program. Elements of the security program which are assessed include:

1) Program Management
2) Protection Program Operations
3) Information Security
4) Personnel Security

8.0 RECORDS MANAGEMENT

MK Security record management activities are implemented in accordance with the overall MK Records Management Program. Individual records generated by MK Security activities are included in the MK Records Management Program Inventory and Disposition Schedule with their applicable retention period and category noted.

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: CSM 3P-4.01	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: CONSTRUCTION TRAINING PLAN

APPROVAL

ES&H MANAGER	3/10/99 DATE
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TABLE OF CONTENTS

1.0 INTRODUCTION 3

2.0 AUTHORITY 3

3.0 EMPLOYEE QUALIFICATION AND TRAINING REQUIREMENTS 5
- 3.1 Staff (Non-Manual Personnel) 5
- 3.2 Craft (Manual Personnel) 6

4.0 VERIFICATION OF SUBCONTRACTOR TRAINING 6

5.0 TRAINING METHODS 7
- 5.1 Formal Training 8
- 5.2 Informal Training 8

6.0 TESTING METHODS 9
- 6.1 Performance Checklists 9
- 6.2 Written Examinations 9
- 6.3 Oral Examinations 10

7.0 TRAINING EQUIVALENCY VERIFICATION 10

8.0 TRAINING PROGRAM ASSESSMENTS 10

9.0 RECORDS 11

1.0 INTRODUCTION

The Morrison Knudsen (MK) Construction Training Program reflects and supplements the Advanced Mixed Waste Treatment Project (AMWTP) Environment, Safety, and Health Program Operating Plan (ESHPOP), the MK Construction Safety and Health Plan, and the DOE/ID 10520 Tri-Party Memorandum of Agreements goals and objectives for a comprehensive approach for training construction personnel. The MK Construction Safety and Health Manual contains the implementing procedures to be utilized during Phase II construction to satisfy applicable requirements and commitments.

The MK Construction Training Plan supports the mission to provide efficient, safe, and cost-effective construction activities. The goal of the MK Construction Training Plan is to provide an informed workforce possessing the requisite knowledge and skills to perform their jobs in a safe and productive manner . The MK Construction Training Plan establishes the policies and procedures which govern training activities for MK personnel working at the AMWTP.

The MK Construction Training Plan outlines the essential elements of a comprehensive training program for MK employees, and assurance of necessary training for construction subcontractors. The MK Construction Training Plan addresses the development, implementation, and evaluation of training, including qualification and training requirements; modes of testing; training equivalency verification; training records; and program assessments.

2.0 AUTHORITY

For the purposes of this plan, the MK Safety Manager or his designee will act as the Training Manager. The Training Manager is responsible for implementation of qualification and training with assistance from the Department Managers. Construction training requirements for Phase II are identified and implemented by the MK Construction Safety and Health Manual. MK's Construction Safety and Health Manual contains procedures (e.g., competent persons requirements; job safety analysis; confined spaces; personal protective equipment; excavation and trenching; crane, hoisting and rigging operations; energy source lockout/tagout; fall protection; hot work permitting; hazard communication; etc.) which supplements the ESHPOP, Tri-Party Memorandum of Agreement, DOE Orders, and National Consensus Standards.

2.1 To provide accountability the Training Manager will perform the following functions:

- Provide necessary support to management with training development, implementation, and evaluation;
- Assist Department Managers in job analysis of positions to determine qualification and training requirements;
- Provides review and approval of formal training courses/OJT material;
- Provides notification of Required Reading requirements,
- Provides input on provisions governing verification of construction subcontractor training, provides selected training for subcontractors, and maintains required documentation;
- Establishes and implements the policies governing training program assessments;
- Maintains records to validate the integrity of the training program; and
- Maintains a computer tracking system containing the status of training for MK employees with regard to required training.

2.2 The Department Manager is responsible for:

- Conducting job analysis of their staff positions to determine qualification and training requirements for staff personnel,
- Assuring that their personnel are qualified and trained to established requirements,
- Designating instructors for specific training as needed, and
- Informing other Managers of specific compliance training that might affect personnel in their departments.

2.3 Construction Field Supervisors are responsible for:

- Orienting new employees.
- Ensuring work methods comply with environment, safety, and health procedures.
- Planning for and conducting weekly environment, safety, and health training meetings.

- Providing employees, as necessary, with proper personal protective equipment (PPE), and instructing or ensuring the proper use and maintenance of PPE.

3.0 EMPLOYEE QUALIFICATION AND TRAINING REQUIREMENTS

MK employees will possess a combination of academic training, experience, skills, and physical attributes appropriate to their job assignments so that they are prepared to perform their job in a safe, proficient, and productive manner. Policies covering qualification and training are defined in Section 3.1 for staff and Section 3.2 for craft personnel.

Minimum requirements for construction personnel include the following:

- INEEL and contractor's construction employee ES&H orientation training.
- Attending weekly environment, safety, and health training meetings.

When codes, standards, and specifications require certification of employees, the special skills training needed for certification (e.g., welding, NDE activities, CADwelding, and concrete anchors installation), will be arranged through the Training Department.

3.1 Staff (Non-Manual Personnel)

Qualifications of staff personnel are based on position descriptions. Position descriptions are derived from MK Corporation employee classification criteria. Position descriptions contain the minimum education, experience, any special certifications or licenses required and physical capabilities necessary for the position.

Training requirements are established for staff personnel based on regulatory and procedural requirements. Any programmatic training on job procedures, and training on other program elements or issues impacting quality, environment, safety, and health as identified by the Department Manager will be coordinated through the MK Training Manager.

Training requirements are reviewed and revised by the Department Managers with assistance from the Training Manager or his/her designee annually or as needed to reflect changes in regulatory requirements, procedures, and job responsibilities. Continuing training will be provided as determined by the Department Manager so that job proficiency is maintained.

Support and guidance will be provided to Department Managers by the Training Manager in the initial determination and review of training requirements, and the implementation of program changes.

3.2 Craft (Manual Personnel)

MK craft personnel (Journeyman and Apprentice) are qualified, through their individual craft unions, by the United States Department of Labor, Bureau of Apprenticeship and Training.

Supplemental training requirements for craft persons are established based on regulatory and procedural requirements. Any programmatic training on job procedures, and training on other program elements or issues impacting quality, environment, safety, and health as identified by the General Superintendent will be coordinated through the Training Manager.

Training requirements for craft persons are reviewed and revised by the General Superintendent with assistance from the Training Manager or his/her designee annually to reflect changes in regulatory requirements, procedures, and job responsibilities. Skills enhancement programs for craft persons are offered through their individual craft unions as needed to assure that job proficiency is maintained.

4.0 VERIFICATION OF SUBCONTRACTOR TRAINING

Subcontractor employees are qualified using qualification criteria identical to that which is accepted for MK direct hire manual personnel (qualification criteria established by the Bureau of Apprenticeship and Training, United States Department of Labor for Journeyman and Apprentice).

Verification of qualification of subcontractor craft personnel is performed by the individual craft unions prior to their referral to work at MK. Qualified craft persons are referred to MK and the subcontractor using the referral process recognized in the INEEL Site Stabilization Agreement.

Contractors are required to provide proof and documentation required by MK that the training requirements for their employees to perform the job have been fully met prior to performing the work activities that require the specific training. Subcontractor personnel are considered adequately qualified with proper documentation of at least one of the following:

- The satisfactory result of an audit of subcontract records that relate to qualification of the subcontractor personnel.

- Previous verification (within two years) of the subcontractor's qualification to perform assigned tasks safely and efficiently.

- Successful completion of those segments of the AMWTP Qualification Program that are considered pertinent to accomplishment of the task to be performed.

In addition, MK will verify that contractor employees have been adequately trained to perform the work in a safe and proficient manner through monitoring of subcontractor employee performance. Contractors may be required to shut down, provide retraining, or take other actions as determined by MK if it is determined that their employees are not adequately trained or inadequate documentation has been provided to MK. Minimum requirements for subcontractor construction personnel include the following:

- Attending INEEL M&O contractor's construction employee ES&H orientation training.

- Attending weekly environmental, safety, and health training meetings.

5.0 TRAINING METHODS

Learning objectives and training/evaluation standards are based on the training requirements established during the job analysis discussed in Section 3.0 of this plan. Learning objectives guide the development of training materials, tests, and implementation strategies.

The actual training method to be used depends on several factors, including the nature of tasks and skills to be learned, the number of employees to be trained, time allotted for development, and available resources. With the advice and counsel of the Training Manager, the Department Managers determine the mode of training based on the analysis discussed in Section 3.0 of this plan.

Training is developed and conducted to emphasize correct and/or improved work performance and focus attention on "Doing It Right the First Time."

Various modes of training are employed by MK, including Formal Training and Informal Training/Required Reading Programs.

5.1 Formal Training

Formal Training is conducted by a qualified instructor using approved lesson plan. Instructors are qualified by successfully completing training in the areas of instructor activities and administrative duties.

Classroom lesson plans provide detailed instructions for delivery of course content to assure consistent presentation of the course material to achieve training objectives. Formal lesson plans, checklists, and written examinations will undergo technical review and instructional review and will be approved by the Department Manager and the Training Manager. The development and implementation of formal lesson plans and proficiency examinations will be performed in accordance with MK procedures.

5.1.1 Formal Training is provided to cover instruction on job procedures and other programmatic elements (knowledge based) as determined by the Department Manager. Formal Training may be presented using any one or a combination of the following methods:

- Simulation
- Individualized Instruction
- Classroom (lecture type) Training
- On-the-Job Training
- Computer-based Training (interactive video)
- Self-paced Instruction

Proficiency examinations may be required for this type of training as determined by the Department Manager during the analysis or as mandated by regulatory requirements. Trainee proficiency examinations for formal training can be accomplished using a written test, performance evaluation checklist, or oral examination.

5.2 Informal Training

Informal (Awareness) Training/Required Reading is a training method employed so that employees may be cognizant of issues related to his/her job, but not requiring formal training. Question and answer sessions may be used with Required Reading to facilitate discussion of issues and increase awareness. Required reading will be assigned by the Department Manager based on the results of the analysis discussed in Section 3.0. Coordination and notifications of reading assignments/status will be provided by MK Training. The Required Reading assignments will be administered by the Training Manager. Assurance

of completion of reading assignments is the responsibility of the Department Manager.

6.0 TESTING METHODS

The goal of training is to provide knowledge which leads to improved performance. Performance evaluations may be required for formal training and optional for all other modes of training. Selection of the examination method is based on the course learning objectives established for formal training. The methods of performance evaluations used for formal training include but are not limited to performance evaluation checklists, written examinations, and oral examinations.

6.1 Performance Checklists

Performance checklists are used to evaluate employee hands-on performance of essential tasks as required. Performance checklists are an important element of Formal Training. Performance checklists may be used when any of the following conditions exist:

- Use of special equipment is an integral part of the task to be performed.
- Task training involves safety and health hazards.
- Applicable regulations require a performance examination.
- Hands-on training is necessary for mastery of manual skills.
- Acclimatization to the physical conditions is necessary for successful task performance.

Performance checklists are administered by a qualified instructor, and employee completion of checklist items is documented to verify successful performance.

6.2 Written Examinations

Written examinations may be used with Formal Training and may be used to measure knowledge of facts or procedures. Test items are selected based on the learning objectives and the complexity of the material. Multiple choice, short answer, completion, identification, matching, and essay questions are examples of types of questions that may be used. Other types of questions may be used with the approval of the Training Manager. A proportionate number of questions should be based on each enabling objective to assure test validity. Examinations are administered by qualified instructors or instructional assistants in a manner to ensure that fairness, exam integrity, security, and reliability are maintained.

Examination critiques are conducted to assure that trainees are aware of the correct answers to critical questions.

Formal lesson plans, performance checklists, and written examinations are reviewed and updated on an as needed basis by the Department Manager.

6.3 Oral Examinations

MK defines an oral exam as "an oral presentation of a written exam." Oral exams are administered only when no other type of exam can be administered and when not prohibited by applicable regulatory or safety requirements. Oral exams are administered in such a way as to give no indications of the correct answers or give any advantage to the trainee taking the oral test over trainees taking the written test.

7.0 TRAINING EQUIVALENCY VERIFICATION

If an employee has previously acquired equivalent knowledge and skills through prior training or experience, redundant training is an inefficient use of time and resources. Exemption from specific required training may be granted by the Department Manager or Training Manager on the basis of successful completion of equivalent training courses, education, or work experience. Equivalency verifications should be documented and justification given by the Department Manager to exempt the employee from specific courses or segments of training.

8.0 TRAINING PROGRAM ASSESSMENTS

Training Program Assessments are an essential element in ensuring the quality and effectiveness of the MK Construction Training Plan. The program assessment process provides the necessary input so that training is current and reflects the requirements of the current job. The program assessment process assures that organization and program objectives are being met, and regulatory requirements and program procedures are being effectively implemented.

Program assessment is a continuing process. Construction Training Plan content is continuously monitored and revisions made as a result of changes in policies or procedures, job requirements, regulatory requirements, unusual occurrences, lessons learned, etc. Program assessment techniques typically include course evaluations, instructor evaluations, and independent assessments.

- Course Evaluations. Course evaluations are administered to obtain trainee feedback on objectives, presentation, etc., and to determine adequacy of course content.

- Instructor Evaluations. Instructor evaluations are conducted by the Training Manager or his/her designee on a periodic basis using a standardized checklist to determine instructor competency.

- Independent Assessments. Assessments are performed in accordance with established procedures to verify aspects of the training program which impact the areas of quality, safety, and the environment. Independent assessments are scheduled and conducted to provide coverage of ongoing MK training activities.

Assessments are conducted and implemented as outlined in the MK Quality Assurance Program Plan

9.0 RECORDS

Documentation is established and maintained as necessary to substantiate the validity of the training program and the qualification of trainees and instructors. Record keeping provisions include procedures to ensure confidentiality, security, and preservation of training records. Types of records generated in a training program include, but are not limited to:

- Job title/training requirements/name of employee filling each job
- Attendance sheets/required reading records
- Lesson plans, tests, and checklists

Note: Written job descriptions for each position are maintained by MK Corporate. The job descriptions include the requisite skill, education, or other qualifications, and duties of employees assigned to each position.

Equivalent safety training certifications will be recognized by both the INEEL M&O Contractor and AMWTP. The INEEL M&O Contractor Safety Training organization and the AMWTP Construction Safety/Training organization will implement a process by which safety training records are shared, accessed, and updated with new or revised personnel training information.

Required qualification and training records are kept in a location that can be locked and in a fireproof file cabinet. Information in the trainees' records is made available to the trainee and authorized personnel only. A records management database is used for tracking, updating, and maintaining employee training

status. The database is accessible only to authorized personnel. This database shall be considered the primary records database.

MK Training record management activities are implemented in accordance with the overall MK Records Management Program. Individual records generated by MK Training activities are included in the MK Records Management Program Inventory and Disposition.

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TITLE: EMPLOYEE ESH CONCERNS

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William Piispanen — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

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FORM 4 (2/1/99)

Table of Contents

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 6

8.0 RECORDS 6

9.0 ATTACHMENTS 6

10.0 EXHIBITS 6

1.0 PURPOSE

1.1 The purpose of this procedure is to implement Morrison Knudsen (MK) policy of open communication of employee environment, safety, and health (ESH) concerns and to assure that these concerns are promptly identified and addressed.

2.0 SCOPE

2.1 This procedure applies to MK employees at Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.20, General Safety and Safety Health Provisions

3.2 Reference Documents

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

NONE

5.0 RESPONSIBILITIES

5.1 Employer: Employers are responsible for:

5.1.1 Posting the DOE "Occupational Safety and Health Protection for DOE Contractor Employees at Government-Owned Contractor-Operated Facilities" poster.

5.1.2 Providing, for employee use, copies of the formal Safety and Health Complaint form. The Complaint form is available at each location where the above poster is posted, and at other appropriate locations.

5.2 Employee: All employees are responsible for reporting environmental, safety, and health concerns to their immediate supervisor.

5.3 Supervision: Responsible for the following:

5.3.1 Meeting with employee to hear the concern, investigate the concern, and to fully consider its validity, independent of budget and schedule concerns.

5.3.2 Assuring that no retaliation, harassment, or reprisal results from such communication.

5.3.3 Completing an "Employee ESH Concern Documentation" form (available from the ESH Manager) and submitting it to the ESH Manager.

5.3.4 Arranging for the employee to meet with the next appropriate level of management in the event that the concern cannot be resolved to everyone's mutual satisfaction. If the matter is settled at the supervisor level, this should be so indicated on the "Employee ESH Concern Documentation" form before submittal to the ESH Manager.

5.4 ESH Manager: Responsible for the following:

5.4.1 Keeping employee apprised at all stages of the review, as applicable.

5.4.2 Responding to the employees who have signed the "Employee ESH Concern" form within 10 working days after receipt of the form. The response will be documented using the "Employee ESH Concern Response" form (available from the ESH Manager or at employee bulletin board locations).

5.4.3 Meeting with the employee if requested to do so.

5.4.4 Arranging for additional management involvement if concern cannot be resolved at the earlier stages.

5.4.5 Periodically reinforcing the existence of the policy through all employee meetings, employee bulletins, workplace meetings, and other programs.

6.0 REQUIREMENTS

6.1 Employee ESH Concerns

6.1.1 When employees have an ESH concern, they should discuss it with their immediate supervisor as soon as possible. Employee ESH concerns shall be resolved by management at the earliest practical opportunity. The employee shall be kept apprised by Supervision and/or the ESH Manager at all stages of the review. If the resolution cannot be accomplished within 10 working days, the employee shall be informed of the delay and of the estimated date the response can be expected by the ESH Manager.

6.1.2 If concern cannot be resolved, employees should then ask for an appointment with the cognizant Construction Manager or Project Engineer, as applicable, to discuss the matter. The immediate supervisor will arrange this meeting.

6.1.2.1 All levels of management shall document any ESH concerns brought to their attention by using the "Employee ESH Concern Documentation" form.

6.1.2.2 All original forms should be submitted to the ESH Manager and a copy kept in the originator department file.

6.1.3 If the employee does not feel that the concern has been resolved by his/her immediate supervisor or management, or if the concern is one that the employee would rather talk about with someone else, the employee may ask for an appointment with the ESH Manager.

6.1.4 If the concern still has not been resolved, the ESH Manager shall arrange for a discussion with a higher level of management.

6.2 Employee ESH Concern Form

6.2.1 If employees do not prefer to directly contact any one of the parties identified in Section 6.1, then the employees may submit an "Employee ESH Concern" form (available from the ESH Manager or at employee bulletin board locations) by mail to the ESH Manager.

6.2.2 Employees shall fill out the forms, as indicated. Employees signing the form will receive a personal reply. Those employees who do not sign the form will

not receive a personal reply, but if the results of the investigation are of general interest to other employees, they will be communicated in meetings or on company bulletin boards.

6.2.3 The ESH Manager is responsible for obtaining an answer and responding to employees who have signed the form within 10 working days after receipt of the form. The response will be documented using the "Employee Concern Response" form. The response form should describe all actions including follow-up.

6.3 Employees may report concerns directly to DOE by completing the "Contractor Employee Occupational Safety or Health Complaint" form (available from the ESH Manager or at employee bulletin board locations).

7.0 EXTERNAL INTERFACE

7.1 The DOE will respond to any contractor employee-submitted ESH concerns reported to them on the "Contractor Employee Occupational Safety or Health Complaint" form in accordance with their procedural requirements.

8.0 RECORDS

8.1 The "Employee ESH Concern Documentation" form is completed by the employee's supervisor and transmitted to ESH Manager to document the communication of the concern. The form is maintained by the ESH Manager as a permanent non-Quality Assurance (QA) record.

8.2 The "Employee ESH Concern" form is completed by an employee to document an ESH concern and is maintained by the ESH Manager as a permanent non-QA record.

8.3 The "Employee ESH Concern Response" form is used to respond to an employee in regard to his/her documented ESH concern and is maintained by the ESH Manager as a permanent non-QA record.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

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TITLE: ESH SURVEILLANCES

APPROVAL

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PROJECT QUALITY MANAGER — DATE: 05-3-00

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KP

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 9

8.0 RECORDS 9

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 This procedure establishes an ESH surveillance program to identify workplace hazards, and to evaluate the adequacy of controls, compliance to ESH requirements, and ESH performance.

2.0 SCOPE

2.1 This procedure applies to MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.20, General Safety and Health Provisions

3.2 Reference Documents

Morrison Knudsen "Industrial Hygiene Procedures," April, 1994

Morrison Knudsen "Guidelines for Safety Supervisors and Designated Safety Representatives," November 1994

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

BNFL, Inc. Corporate Procedure PC06-003.1, Office Safety Inspection

4.0 DEFINITIONS

4.1 Acceptance Criteria: The codes, standards, DOE Orders, Directives, etc. identified by MK that contain requirements with which MK must comply.

4.2 Category I: A situation for which a "clear and present" danger (imminent danger) exists to workers, facilities, or members of the public.

4.3 Category II: A significant (serious) risk or substantial non-compliance with Project ESH requirements.

4.4 Category III: A non-compliance with Project requirements or the need for improvement in the margin of safety; but is not of sufficient urgency to require immediate attention.

4.5 Deficiencies: Findings or items that do not meet specified requirements and require corrective action or upgrading. Deficiencies include dangerous conditions or activities which could cause injury, illness, or property damage.

4.6 Housekeeping Inspections: Inspections conducted to ensure tools, equipment, and material are properly stored and that debris is controlled to maintain safe working conditions.

4.7 Repeat Finding: An unsafe condition or practice that has been noted on previous inspections.

4.8 Root Cause: The most logical fundamental cause that, if corrected, would prevent or significantly reduce the probability of recurrence of an undesirable or an adverse condition or event.

4.9 Surveillances: Any review of work activities to determine if conditions and practices are safe and in compliance with AMWTP requirements. Also included are appraisal or audit activities that evaluate line management's implementation of the AMWTP ESH program.

4.10 Willful Violation: An unsafe condition or practice that employees or supervision have recognized, but did not take measures to correct the condition or practice.

4.11 Finding: A noncompliance, deficiency, an item of concern, or non-adherence to written commitments or requirements including exceedance of an established exposure limit or action level.

4.12 Item of Concern: A deficiency to a requirement not addressed in a governing document, or a potential problem area discovered during the course of an appraisal that has sufficient basis for an ESH Finding.

4.13 Observation: An expressed opinion of an appraiser or inspector based upon their expertise in the interpretations and applications of ESH standards and regulations.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for ensuring that this procedure is implemented. Also:

5.1.1 Determines if imminent danger or serious findings (see definitions) require reporting in accordance with BNFL Inc. procedure, "Occurrence Categorization, Notification and Processing" requirements.

5.1.2 Ensures that qualified ESH personnel are assigned to perform surveillances.

5.1.3 Ensures that ESH surveillance personnel maintain their qualifications.

5.1.4 Identifies the acceptance criteria for deficiencies.

5.1.5 Ensures that surveillances are conducted as specified in this procedure.

5.1.6 Ensures that adequate surveillance equipment and tools are provided, maintained, and calibrated as required by the manufacturer's specifications.

5.1.7 Ensures that appropriate analysis of findings are conducted, as warranted.

5.1.8 Assures completion of corrective actions.

5.2 Surveillance Personnel: Responsible for:

5.2.1 Conducting surveillances as specified in this procedure.

5.2.2 Interfacing as needed with construction management, the Subcontract Administrator, and responsible Subcontractor personnel when planning for surveillances.

5.2.3 Maintaining qualification status by reviewing current requirements documents and by completing training to maintain specialty or professional certifications.

5.3 Supervision: Responsible for:

5.3.1 Conducting and documenting surveillances and inspections in accordance with this procedure.

5.3.2 Verifying completion of corrective actions.

6.0 REQUIREMENTS

6.1 Surveillance Frequency: Qualified Surveillance Personnel shall conduct routine surveillances of all AMWTP work sites.

6.1.1 The ESH Manager may change the frequency of routine surveillances based on a judgment of need with the following considerations:

6.1.1.1 Work package information including scope of work details, construction prints, special permits required, and characterization.

6.1.1.2 Work environment hazards identified after walking down the proposed work site.

6.1.1.3 The number and type of potential hazards which could involve imminent danger or serious violations, such as; confined space, excavations, or elevated work locations.

6.1.1.4 The number and type of previous surveillance findings. Increased findings may require more frequent surveillances. Imminent danger findings and several serious findings shall require increased surveillances.

6.1.2 The responsible Department Manager shall ensure shop, office, and storage areas are inspected as required in 6.4 below.

6.2 Conducting Surveillances

6.2.1 ESH personnel conducting surveillances shall contact the supervisor or other individual responsible for the work area before beginning a surveillance of an area.

6.2.2 ESH surveillance Personnel will inform supervision or other responsible individual of the deficiencies noted before leaving an area.

6.2.3 Imminent danger findings shall require the activity or job to be stopped in accordance with procedure 3A-108, "Stopwork/Shutdown and Restart." The responsible members of Management, General Superintendent, or Construction Engineer (for Subcontractors) shall be notified.

6.3 Surveillance Reports

6.3.1 ESH surveillance Personnel shall document findings, observations, etc. on a Safety Surveillance Record (SSR). Each finding shall be numbered and prioritized, and should include the OSHA subpart or other reference. Findings shall be prioritized on the SSR as Category I, II, III or an observation.

6.3.2 Category I findings will be reported to the MK Construction Manager and the ESH Manager or their designees immediately.

6.3.3 Category II findings shall be reported to the MK Construction Manager and the ESH Manager or their designees before the end of the shift.

6.3.4 Category I and Category II findings shall be evaluated for possible occurrence reporting, in accordance with BNFL Inc. procedure, "Occurrence Categorization, Notification and Processing." These findings will be corrected immediately and interim measures taken to ensure employee safety.

6.3.5 Category III findings should be corrected on or before the Estimated Completion Date (ECD) provided by supervision.

6.3.6 A copy of the SSR shall be sent to responsible management no later than the morning of the next business day.

6.3.7 Responsible supervision shall respond in writing to the ESH Manager, detailing the corrective action taken or planned for each item within two (2) working days of the date of the surveillance report.

6.3.7.1 Supervision will include an EDC for each planned corrective action.

6.3.7.2 EDCs shall be reasonable; most should not exceed two (2) workdays from the date of the surveillance report.

6.3.7.3 Supervision shall provide justification for EDCs beyond two (2) workdays.

6.3.8 A copy of external surveillance, audit, and other such ESH program evaluation reports shall be sent to the ESH Manager for inclusion into the surveillance tracking system.

6.3.9 Supervision or other department personnel tasked with compliance or housekeeping inspection may use selected sections of the "Safety Guideline Inspection Checklist" in Appendix III of MK's *Guidelines for Safety Supervisors and Designated Safety Representatives*, or similar checklist approved by the ESH Manager.

6.3.9.1 Copies of the inspections shall be given to the responsible Department Manager and the ESH Manager by the close of business of the next business day.

6.3.9.2 Department Managers shall provide within two (2) working days of the date of the surveillance report, in writing, to the ESH Manager, a description of the corrective action taken or planned for each item. Planned corrective actions must include an EDC as required in 6.3.1 through 6.3.7.3 above.

6.4 Housekeeping and Compliance Inspections

6.4.1 Department Managers or supervision shall assign an employee to conduct housekeeping and compliance inspections in their work area(s) as follows:

6.4.1.1 One housekeeping inspection at least once per shift in shop-like environments or similar work areas. A compliance inspection of these work areas is required monthly.

6.4.1.2 One housekeeping inspection each month in an office type environment. A compliance inspection of these areas is required quarterly. Two (2) of the quarterly inspections must be Office Safety Inspections (OSI) as mandated in BNFL, Inc. Procedure PC06-003.1.

6.4.1.3 An OSI will include each individual office or cubicle.

6.4.1.4 The OSI checklist prescribed by BNFL, Inc. Procedure PC06-003.1 shall be used for conducting inspections. A copy of completed OSI checklists shall be transmitted to the ESH Department..

6.4.1.5 Corrective actions shall be documented as stated in 6.3.7 above.

6.5 Appraisals of the ESH program may be conducted by the MK Project Quality Manager.

6.6 Surveillance/Inspection Finding Tracking System (SIFTS)

6.6.1 The ESH Manager shall establish an information system to track and analyze surveillance, inspection and audit findings, items of concern, and observations.

6.6.2 The implemented system will be used to identify lessons learned, and provide AMWTP management with monthly performance reports.

6.6.3 A lessons learned approach will be used to help prevent recurrence of findings.

6.6.4 Line Management may be requested to participate in trending and cause analyses of deficiencies, and development of lessons learned.

7.0 EXTERNAL INTERFACE

7.1 Findings identified by the INEEL M&O contractor, DOE, or regulatory agencies shall be evaluated by MK and entered into the SIFTS. A response letter will be sent to the applicable agency as required.

8.0 RECORDS

8.1 Surveillance records shall be prepared and maintained in order to document deficiencies and their corrections. Records will be maintained for three years as non-permanent, non-QA records.

8.2 Trending and other analyses reports are prepared to identify and document ESH performance trends and/or the major causes of the deficiencies. These reports are utilized for lessons learned training and information. These reports will be maintained for three years as non-permanent, non-QA records.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-103	EFFECTIVE DATE: March 31, 2000
	REVISION: 1	PAGE: 1 OF 8

TITLE: FIRST AID AND MEDICAL SURVEILLANCE PROGRAM

APPROVAL

Claude Pettengill — ES&H MANAGER — 032200 DATE

Greg Dayh — PROJECT QUALITY MANAGER — 03-22-00 DATE

Bob Windom — CONSTRUCTION MANAGER — 4.3.00 DATE

KP

REV.	DATE	REVISION DESCRIPTION
0	06/01/99	ORIGINAL ISSUE
1	02/24/00	Revision, technical edit

ORIGINATOR: Claude Pettengill (Initial/Date) 032200	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 5

8.0 RECORDS 5

9.0 ATTACHMENTS 5

10.0 EXHIBITS 5

1.0 PURPOSE

1.1 The purpose of this procedure is to ensure injured or sick employees receive appropriate medical care.

2.0 SCOPE

2.1 This procedure is applicable to MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.23, First aid and Medical Attention

29 CFR 1926.50, Medical Services and First Aid

3.2 Reference Documents

3A-107, Emergency Action

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

NONE

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for assuring adequate first aid supplies, facilities, and qualified personnel are available to give prompt first aid or medical care. Responsibilities include emergency transportation for employees who become injured or sick.

5.2 Supervision: Responsible for ensuring injured or ill employees receive prompt first aid or medical care.

5.3 Employees: Responsible for immediately reporting injuries and illnesses to their supervisor, and complying with this procedure and instructions given by medical personnel.

6.0 REQUIREMENTS

6.1 The ESH Manager will coordinate medical care with the selected company physician(s), BNFL Inc.'s Operations Manager, and INEEL's Central Facilities Area dispensary.

6.2 Qualifications of Medical Personnel

6.2.1 Full or part-time physicians contracted by the Subcontractor shall be licensed to provide medical services and possess the credentials required by the American Medical Association.

6.2.2 Nurses hired or contracted by the Subcontractors shall be licensed or registered and fully qualified to provide routine and emergency first aid to injured employees.

6.2.3 First aid providers shall hold a current certificate in first aid issued by the American Red Cross, or other organization providing equivalent training and certification.

6.2.3.1 All project management is encouraged to have every foreman or supervisor first aid-qualified.

6.2.3.2 The Subcontractor must have at least one supervisor or foreman per shift per site holding a current first aid certificate. A designated, trained employee may be substituted.

6.2.3.3 There shall be at least one person per shift trained in accordance with this procedure with adequate first aid supplies at any work location where professional medical treatment could be delayed because of the terrain limiting access to the job site.

6.3 First Aid Kits

6.3.1 First aid kits shall shall consist of a weatherproof container and filled with approved supplies.

6.3.2 First aid kits shall be fully equipped before being sent out on each job site and shall be inventoried weekly to ensure that the expended items are replaced. The assigned driver will inventory vehicle kits.

6.3.3 Weekly checks of MK-provided first aid kits may be documented on the Safety Surveillance Record as part of the daily ESH surveillances, or, at the discretion of the ESH Manager, on a site-specific form. The records will be maintained in the ESH files. Subcontractor-tiers will perform and document weekly checks of first aid kits they provide.

6.3.4 All Subcontractor-tier first aid supplies shall be approved by a consulting physician. Equipment required for preventing bloodborne pathogen exposures may by stored in separate packaging with the first aid kit. Refer to Attachment 1 for a list of approved supplies for MK-provided first aid kits.

6.4 Communication and Transportation

6.4.1 Transportation of injured or sick employees to a medical facility shall be in accordance with Procedure 3A-107, "Emergency Action Plan."

6.4.2 Emergency telephone numbers conspicuously posted near each telephone at the job site.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 The consulting physicians' approval shall be maintained in a site file. Such subcontractor records shall be available for review by MK.

9.0 ATTACHMENTS

9.1 Approved First Aid Supplies

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
Page 1 of 3

APPROVED FIRST AID SUPPLIES

Substitutions may be made with similar or equivalent products.

DESCRIPTION OF SUPPLIES	RECOMMENDED QUANTITY for KITS		
	VEHICLES	OFFICE	PRIMARY
Adhesive Tape: size 1/2" x 5 yds, roll	1		
Adhesive Tape: size 2" x 5 yds, roll		1	1
Bandage, Butterfly: size Medium, box	1	1	1
Bandage, Compress: 3", *MultiFunction	1	*1	*1
Bandage, Dura Strip: size 3/4" x 3", box		1	1
Bandage, Elastic Strip: size 7/8" x 3", box		1	1
Bandage, Fingertip: small box *medium box	1	*1	*1
Bandage, Knuckle: small box *medium box	1	*1	*1
Bandage, Large Patch: size 2" x 3", box			1
Bandage, Plastic Adhesive: size 1" x 3", box	1		
Bandage, Roller: size 1" x 6 yds, roll	1		
Bandage, Roller Gauze: size 2" x 6 yds, roll		1	1
Bandage, Small Strips: size 7/8" x 1-1/2", box		1	1
Bandage, Triangular: size 40"	1	1	1
Dressing, Sterile Gel for Burns: size 4" x 4", box		1	1
Gauze Pads: size 2" x 2", size *3" x 3", box	1	*1	*1
Ice Pack, chemical, sealed: size small, size large	1	1	1
Spray on Bandage: 3 oz. can	1	1	
Telfa Pads: size 1-1/2" x 2", box	1	1	1

ATTACHMENT 9.1
Page 2 of 3

APPROVED FIRST AID SUPPLIES

Substitutions may be made with similar or equivalent products.

DESCRIPTION OFEQUIPMENT	RECOMMENDED QUANTITY for KITS		
	VEHICLES	OFFICE	PRIMARY
Cotton Tip Applicators, 2/pkg		6	6
First Aid Handbook or Guide	1	1	1
Latex Gloves: size medium, pair	1	1	1
Plastic Splint, Fingertip		1	1
Pulmonary Resuscitation Kit - Rescue Breather Shield w/one-way valve	1	1	1
Safety Glasses	1	1	1
Scissors, 4"		1	1
Tweezers Kit, Slanted		1	1
NONPRESCRIPTION MEDICATIONS			
Acetaminophen 325mg Tablets, 2/pkg		100	100
Analgesic w/Aspirin 226.8mg, Acetaminophen 194.4mg, Caffeine 32.4mg: 2/pkg		50	50
Analgesic w/Aspirin 162mg, Acetaminophen 110mg, Salicylamide 152mg, Caffeine 32.4mg: 2/pkg		50	50
Antacid, w/Calcium Carbonate 420mg: 2/pkg		50	50
Antibiotic First Aid Cream		1	1
Antiseptic First Aid Spray for Minor Cuts and Abrasions, 3 oz. cn		1	1
Alcohol Wipes, 1 towellete/pkg	5	10	10
Ammonia Inhalant, Vials	2	10	10
Antiseptic Wipes w/Benzalkonium Chloride: 1 towellete/pkg		10	10
Antiseptic Swabs w/Merthiolate		10	10
3-Antibiotic Ointment, 0.9		1	1

NOTE: Gloves, safety glasses, protective masks, rescue breathers, etc., are required to prevent exposure to bloodborne pathogens. These items may be included in each kit or may be stored in separate packaging with the first aid kit.

ATTACHMENT 9.1
Page 3 of 3

APPROVED FIRST AID SUPPLIES

Substitutions may be made with similar or equivalent products.

DESCRIPTION OF NONPRESCRIPTION MEDICATIONS	RECOMMENDED QUANTITY for KITS		
	VEHICLES	OFFICE	PRIMARY
Buffered Aspirin 325mg, 2/individual pkg		100	100
Decongestant Cold Tablets w/Acetaminophen 325mg, Pseudoephedrine HCL 30mg, Dextromethophren 10 mg : 2/pkg		50	50
Decongestant for Hay Fever/Sinus/Cold w/Acetaminophen 325mg, Phenylpropanolamine 12.5mg : 2/pkg		50	50
Eye Drops w/Tetrahydro, 1/2 oz bottle		1	1
Eye Wash Solution, Sterile Ophthalmic: 4 oz. bottle	1	1	1
First Aid Spray for Clotting Blood: 3 oz. cn		1	1
First Aid Spray for Minor Burn Relief, 3 oz. cn		1	1
Hydrocortisone Cream 0.5%		1	1
Ibuprofen 200mg Tablets, 2/pkg		50	50
Isotonic Sterile Buffered Flushing Solution for Eyes and Skin		1	1
Sterile Neutralizing Solution		1	
Throat Lozenges, Antiseptic		1	1

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	INTERIM DOCUMENT CHANGE NOTICE	
	1. IDCN #: 3A104-02	2. DATE: 12/07/00
3. DOCUMENT #/REV: 3A-104a, Rev. 1		4. PAGE 1 OF 1
5. TITLE: Accident Investigations, Reports, and Recordkeeping	6. REQUESTOR: Claude Pettengill	

7. DESCRIPTION OF CHANGE:

IDCN# 3A104-01 is rescinded. BNFL, Inc. did not approve the required contract changes to compel compliance with BNFL, Inc. corporate procedures.

8. FILING INSTRUCTIONS:

Place this IDCN in front of the title/approval page of Procedure 3A-104.

9. DEPARTMENT MANAGER	Claude Pettengill	DATE: 120700
10. ESH MANAGER	Claude Pettengill	DATE: 120700
11. QUALITY MANAGER	Doug Doyle	DATE: 12-7-00
12. CONSTRUCTION MANAGER	Bob Windom	DATE: 12.7.00
13. IDCN EFFECTIVE DATE: 121100		

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	INTERIM DOCUMENT CHANGE NOTICE	
	1. IDCN #: 3A104-01	2. DATE: April 26, 2000
3. DOCUMENT #/REV: 3A-104 , Rev. 1		4. PAGE 1 OF 1
5. TITLE: Accident Investigations, Reports, and Recordkeeping	6. REQUESTOR: Claude Pettengill	

7. DESCRIPTION OF CHANGE:

Add to paragraph 3.2, Reference Documents: "BNFL, Inc. Corporate Procedure PC-06001.1 Environment, Safety & Health Incident Reporting".

Change paragraph 6.3.1 to read: "The ESH Manager shall classify accidents and injuries according to DOE, BNFL, Inc., and OSHA requirements ...."

Add subparagraph 6.3.1.1: "For reporting to BNFL, Inc., all incidents shall be categorized using Appendix B of BNFL, Inc. Procedure PC06-001.1. The attached copy of Appendix B is provided for convenience."

Add subparagraph 6.3.1.2: "The Initial Incident Report provided in the most current revision of BNFL, Inc. Procedure PC06-001.1 issued by the Subcontract Administrator shall be submitted to BNFL, Inc. management within eight (8) hours of discovery."

Add subparagraph 6.3.1.3: "Initial Incident Reports and follow-up reports shall be distributed to the individuals identified on the AMWTP Emergency Call List."

8. FILING INSTRUCTIONS:

Place this change notice in front of the title/approval page of Procedure 3A-104.

9. DEPARTMENT MANAGER	Claude Pettengill	DATE: 04/26/00
10. ESH MANAGER	Claude Pettengill	DATE: 04/26/00
11. QUALITY MANAGER	Guy Doyle	DATE: 05-02-00
12. CONSTRUCTION MANAGER AP	Bob Wisdom	DATE: 5-10-00
13. IDCN EFFECTIVE DATE:	May 1, 2000	

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	INTERIM DOCUMENT CHANGE NOTICE	
	1. IDCN #: 3A104-01	2. DATE: April 26, 2000
3. DOCUMENT #/REV: 3A-104 , Rev. 1		4. PAGE 1 OF 1
5. TITLE: Accident Investigations, Reports, and Recordkeeping	6. REQUESTOR: Claude Pettengill	

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Add subparagraph 6.3.1.3: "Initial Incident Reports and follow-up reports shall be distributed to the individuals identified on the AMWTP Emergency Call List."

8. FILING INSTRUCTIONS:

Place this change notice in front of the title/approval page of Procedure 3A-104.

9. DEPARTMENT MANAGER	Claude Pettengill	DATE: 04/26/00
10. ESH MANAGER	Claude Pettengill	DATE: 04/26/00
11. QUALITY MANAGER	Amy Doyle	DATE: 05-02-00
12. CONSTRUCTION MANAGER for	Bob Wisdom	DATE: 5-10-00
13. IDCN EFFECTIVE DATE:	May 1, 2000	

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-104	EFFECTIVE DATE: March 31, 2000
	REVISION: 1	PAGE: 1 OF 10

TITLE: ACCIDENT INVESTIGATIONS, REPORTS, AND RECORDKEEPING

APPROVAL

ES&H MANAGER — 03 22 00 DATE

PROJECT QUALITY MANAGER — 03-22-00 DATE

CONSTRUCTION MANAGER — 4.3.00 DATE

REV.	DATE	REVISION DESCRIPTION
0	06/01/99	ORIGINAL ISSUE
1	02/28/00	Revision due to technical edit

ORIGINATOR: Claude Pettengill
(Initial/Date) 032200

IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 10

8.0 RECORDS 10

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 This procedure establishes responsibilities and requirements for investigating and reporting occupational accidents, "near miss" incidents, injuries, and illnesses. This procedure also furnishes guidelines necessary for proper conduct of reporting, investigating, and recording incidents.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses

3.2 Reference Documents

BNFL Inc. "Occurrence Categorization, Notification and Processing"

DOE/System Safety Development Center (SSDC) 7B, DOE Guide to the Classification of Recordable Accidents, January 1987

U. S. Department of Labor, Bureau of Labor Statistics, Recordkeeping Guidelines for Occupational Injuries and Illnesses, September 1986

DOE Order 225.1A, Accident Investigations

DOE Order 231.1, Environment, Safety and Health Reporting

4.0 DEFINITIONS

4.1 First Aid Case: A minor injury requiring a one-time treatment which does not require medical care beyond first aid. Treatment may be rendered by licensed or registered medical professionals.

4.2 Near Miss Incident: An incident that occurs, in which all controls failed, but ***does not*** result in an injury, illness, damage, or other reportable event.

4.3 Medical Emergency: An injury or illness requiring immediate treatment by professional or paraprofessional medical personnel.

4.4 Occupational Illness: Any diagnosed abnormal condition or disorder, other than a job related injury, caused by exposure to environmental factors associated with employment.

4.5 Occupational Injury: Any injury, such as a cut, fracture, or bruise which results from a work-related incident or exposure.

4.6 Property Damage Incident: Property damage or loss of $1000 or more.

4.7 Type A Investigation: A DOE Headquarters Team investigation of any event prescribed in DOE Orders, Notices, etc., or as directed by the Secretary. Such events include fatal or imminently fatal injury or illness involving an employee or a member of the public due to an occurrence associated with DOE operations; any one occurrence (involving either occupational injuries or illness) which results in three or more separate lost workday cases. Estimated property loss or damage of $2,500,000 or more.

4.8 Type B Investigation: A DOE-Idaho (DOE-ID) Team investigation of any event prescribed in DOE Orders, Notices, etc., or as directed by the Secretary or DOE-ID Director. Such events include occupational injuries or illnesses, which results in inpatient hospitalization; an occupational injury or illness resulting in a lost workday case involving more than three days away from work. Estimated property loss or damage $1,000,000 or more.

4.9 Type C Investigation: An MK investigation of all recordable occupational injuries, illnesses, vehicle accidents, and significant property damage incidents (usually in excess of $1000).

4.10 Recordable Injury/Illness: All work related deaths, illnesses, and those work-related injuries which result in loss of consciousness, restriction of work or motion, transfer to another job, lost work days, or require medical treatment beyond first aid such as fractures, sutures, or prescription medication.

4.11 Root Cause: That cause which, if corrected, would prevent recurrence of this and similar accidents or injuries. It is the most logical fundamental cause which can be identified and corrected.

5.0 RESPONSIBILITIES

5.1 Construction Manager: Responsible for providing the necessary resources and training to ensure implementation of this procedure.

5.2 Environment, Safety, and Health (ESH) Manager: Responsible for implementing this procedure, and ensuring and verifying compliance through periodic evaluations.

5.3 Project Engineer: Responsible for determining if Type C investigations are required for other events not defined in 4.9 above.

5.4 General Superintendent and Department Managers: Responsible for complying with the requirements of this procedure and ensuring that employees understand their responsibilities.

5.5 Employees: Shall immediately report all job-related accidents, injuries, illness, and near-miss incidents to their immediate supervisor. Employees are responsible for complying with the applicable requirements of this procedure.

6.0 REQUIREMENTS

6.1 Employees shall report injuries or illnesses as follows:

6.1.1 Employees shall report occupational injuries or illnesses to their immediate supervisor as soon as possible.

NOTE: Able employees who fail to report job-related injuries or illnesses as soon as possible will be disciplined.

6.1.2 Medical emergencies that occur on site, whether job-related or personal, shall be reported by calling the emergency number posted near each phone (9-777 from Office Phones, 777 from WMF 634 phones) or by calling "KID 240" on any hand held radio.

6.1.3 Employees who are evaluated at the INEEL Central Facilities Area Dispensary, other medical facility, or company or private physicians for an occupational injury/illness must submit a physician completed MK CAS 27 Form or equivalent medical release form, prior to returning to work, to the ESH Manager.

6.1.4 The CAS 27 or equivalent (as described in 6.1.3 above) is also required when an employee is absent from work for five or more consecutive work-days for a non-occupational injury or illness, or any surgery that requires restricted duty. Employees will inform their supervisor of physician-prescribed work restrictions. Employees taking prescription medication that may impair their ability to work safely shall inform supervision.

6.1.5 Employees shall comply with any work restrictions imposed by a physician.

6.1.6 Employees shall participate in an accident investigation when requested by Supervision.

6.2 Supervisors of employees who are injured or contract an occupational illness shall:

6.2.1 Immediately inform the ESH Manager of any medical or safety emergency.

6.2.2 Ensure that the injured/ill employee is accompanied, as needed, to the dispensary.

6.2.3 Supervisors shall complete a CAS 27 form as required and forward it to the ESH Manager.

6.2.4 Ensure that employees who experience minor injuries in a radiological control location are monitored prior to exiting the area. Serious injury/illnesses resulting in a possible life-threatening situation warrant emergency actions, and radiological requirements shall be waived during exit from the area. Once the emergency has been addressed, radiological requirements shall be reinstated.

6.2.5 Conduct an investigation of the incident assisted by ESH Manager:

6.2.5.1 Secure the scene or equipment until release by the ESH Manager to prevent another incident, and to preserve evidence that may aid in determining causes.

6.2.5.2 Discuss the event with the injured employee if possible.

6.2.5.3 Talk with witnesses separately and document information.

6.2.5.4 Review procedures and other job control documents for adequacy.

6.2.5.5 Note operating conditions at the time of the incident (i.e., noise, congestion, housekeeping).

6.2.5.6 Determine if personal protective equipment was used and if it was adequate for the job.

6.2.5.7 As applicable, analyze and determine the cause in accordance with BNFL Inc. "Occurrence Categorization, Notification and Processing."

6.2.5.8 Develop interim measures to protect employees until corrective actions are complete.

6.2.5.9 Identify and implement corrective actions that must be taken to prevent a recurrence.

6.2.6 Ensure completion and implementation of corrective actions. Supervision shall communicate corrective action status to the ESH Manager.

6.2.7 Complete MK CAS 24 Form, "Supervisor's Accident Investigation Report" and submit the CAS 24 to the ESH Manager within one working day of the event. Copies may be obtained from ESH Manager. The ESH and Construction Managers shall complete the applicable sections of the form.

6.2.8 Complete items number 12 through 41, as applicable, of the DOE form, "DOE Individual Accident/Incident Report", for recordable vehicle accidents and recordable injury/illness cases. The ESH Manager will transmit this form to the BNFL Inc. Operations Manager within ten working days of the event.

6.2.9 Supervision shall determine if the work restrictions imposed by a physician will affect the employee's normal work duties. If work restrictions will affect the employee's normal duties, supervision shall ensure that work assignments do not conflict with the restrictions. The ESH Manager shall be contacted to assist with the determination.

6.3 The ESH Manager shall provide the following services:

6.3.1 The ESH Manager shall classify accidents and injuries according to DOE and OSHA requirements, and submit an initial incident report to BNFL, Inc. management.

6.3.2 The ESH Manager shall complete the final DOE 5484.3 form, "Individual Accident/Incident Report", for recordable vehicle accidents and recordable injury/illness cases. The completed 5484.3 form is sent to BNFL Inc. and a copy is kept in the ESH Department files.

6.3.3 The ESH Manager shall complete the MK CAS 6 Form, "Accident Data Report" for all MK employee injuries/illnesses, except first aid cases. The completed form is transmitted to the MK Corporate Safety Director and a copy is kept in the ESH Department files.

6.3.4 The ESH Manager shall ensure that corrective actions are tracked to completion.

6.3.5 The ESH Manager shall maintain the "OSHA 200 Log" for recordable injuries/illnesses and post this annual summary of injuries and illnesses during the month of February of the following year in a visible location. The log is kept by ESH for injury analysis.

6.3.6 The ESH and Construction Manager shall review and approve the Supervisor's Accident Investigation Report forms. The ESH Manager retains a copy of the Supervisor's Accident Investigation Report form for accident/injury analysis.

6.4 Supervision shall investigate and document on a CAS 24 all near-miss incidents. Supervision will forward a copy of the completed CAS 24 to the ESH Manager.

6.5 <u>Vehicle Accidents</u>

6.5.1 Accidents involving government-owned or controlled vehicles or company vehicles, including leased or rented vehicles shall be reported as follows:

6.5.1.1 Off-site accidents: the driver will notify the local law enforcement agency and take appropriate action (exchanging names and address with persons involved in the accident and with law enforcement), and report the accident to MK Management as soon as possible. MK Management will complete further notifications to BNFL Inc. and MK ES&H Corporate Management. If the driver is unable to make a report, supervision will gather the details of the accident from others and complete initial notifications.

6.5.1.2 On-site accidents: the driver will notify the Warning Communications Center (WCC), 526-1515, and report the accident

to MK ESH Manager as soon as possible. MK ESH Manager will complete further notifications to BNFL Inc. and MK ES&H Corporate Management. If the driver is unable to make a report, supervision will gather the details of the accident from others and complete initial notifications.

6.5.1.3 Do not offer to settle claims, give statements or sign papers for anyone but MK ESH Director. Do not move the vehicle until the accident investigators (law enforcement or INEEL Traffic Safety Group or MK ESH Manager) tell you too, unless in your judgement the vehicle is creating a traffic hazard.

6.5.1.4 The driver will fill out the MK provided forms found in the glove compartment of MK furnished vehicles. The driver will submit the completed forms to the ESH Manager within one working day after the accident.

6.6 Type A, B, and C Investigations

6.6.1 Type A investigations are conducted by a DOE Headquarters (HQ) team and may include trained DOE-ID employees. All MK and Subcontractor employees are required to cooperate with the investigators.

6.6.2 Type B investigations are conducted by a DOE-ID team and may include trained MK employees. All MK and Subcontractor employees are required to cooperate with the investigators.

6.6.3 Type C investigations involving recordable injuries/illnesses, vehicle accidents, extensive property damage or loss (>=$1,000.00), and other occurrences (as warranted) are conducted by a MK investigation team consisting of the following personnel:

6.6.3.1 ESH Manager.

6.6.3.2 Immediate supervisor.

6.6.3.3 General Superintendent or Lead Office Engineer.

6.6.3.4 Other selected employees, as deemed appropriate.

6.6.4 MK CAS 9 Form, Formal Accident Investigation Packet (as deemed necessary) in addition to DOE 5484.3 form, CAS 24, CAS 6, and other forms (as warranted) will be completed for Type C investigations.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor shall provide emergency medical services.

7.2 Type A and B Investigations are conducted by DOE-HQ and/or DOE-ID.

8.0 RECORDS

8.1 MK CAS 24, "Supervisor`s Accident Investigation Report"; CAS 6, Accident Data Report; CAS 9, Formal Accident Investigation Packet are permanent non-QA records.

8.2 DOE 5484.3 form, "Individual Accident/Incident Report," is a permanent non-QA record. A working copy of this form is maintained by the ESH Manager. The original is transmitted through BNFL to DOE's designated records keeping system.

8.3 The OSHA 200 Log is a permanent non-QA record.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-105	EFFECTIVE DATE: March 31, 2000
	REVISION: 1	PAGE: 1 OF 8

TITLE: ACCESS TO EXPOSURE AND MEDICAL RECORDS

APPROVAL

ES&H MANAGER — DATE: 03 22 00

PROJECT QUALITY MANAGER — DATE: 03-22-00

CONSTRUCTION MANAGER — DATE: 4.3.00

KP

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 6

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 8

9.0 ATTACHMENTS 8

10.0 EXHIBITS 8

1.0 PURPOSE

1.1 The purpose of this procedure is to establish methods for Morrison Knudsen (MK) and subcontractor employees or their designated representatives to examine and copy relevant exposure and medical records.

2.0 SCOPE

2.1 This procedure applies to MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.20, Access to Employee Exposure And Medical Records

3.2 Reference Documents

Morrison Knudsen Records Management Program, January 1996

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Analysis of Exposure Records: Compilation of data or any statistical study based at least in part on information collected from individual employee exposure records or information collected from health insurance claims records, provided that either the analysis has been reported to the employer or no further work is currently being done by the person responsible for preparing the analysis.

4.2 Designated Representative: Any individual or organization to whom an employee gives written authorization to exercise a right to access in accordance with OSHA 29 CFR 1910.20.

4.3 Employee: A current employee, a former employee, or an employee being assigned or transferred to work where there will be exposure to toxic substances or harmful physical agents. In the case of a deceased or legally incapacitated employee, the

employee's legal representative may directly exercise all the employee's rights under this section.

4.4 Employee Exposure Record: A record containing any of the following types of information:

4.4.1 Environmental (workplace) monitoring or measuring of a toxic substance or harmful physical agent including personal, area, grab, wipe, or other form of sampling, as well as related collection and analytical methodologies, calculations, and other background data relevant to interpretation of the results obtained.

4.4.2 Biological monitoring results which directly assess the absorption of a toxic substance or harmful physical agent by body systems (e.g., the level of a chemical in the blood, urine, breath, hair, fingernails, etc.) but does not include results which assess the biological effect of a substance or agent or which assess an employee's use of alcohol or drugs.

4.4.3 Material Safety Data Sheets indicating that the material may pose a hazard to human health.

4.4.4 In the absence of the above, a chemical inventory or any other record which reveals where and when used and the identity (e.g., chemical, common, or trade name) of a toxic substance or harmful physical agent.

4.5 Employee Medical Record: A record concerning the health status of an employee which is made or maintained by a physician, nurse, or other health care personnel or technician, including:

4.5.1 Medical and employment questionnaires or histories (including job description and occupational exposures).

4.5.2 The results of medical examinations (pre-employment, pre-assignment, periodic, or episodic) and laboratory tests (including chest and other X-ray examinations taken for the purposes of establishing a base-line or detecting occupational illness, and all biological monitoring not defined as an "employee exposure record").

4.5.3 Medical opinions, diagnoses, progress notes, and recommendations including descriptions of treatments and prescriptions.

4.5.4 First aid records.

4.5.5 Employee medical complaints.

4.6 Employer: A current employer, a former employer, or a successor employer.

4.7 Exposure: An employee has been subjected to a toxic substance or harmful physical agent in the course of employment through any route of entry (inhalation, ingestion, skin contact or absorption, etc.), and includes past exposure and potential (e.g., accidental or possible) exposure, but does not include situations where the employer can demonstrate that the toxic substance or harmful physical agent is not used, handled, stored, generated, or present in the workplace in any manner different from typical non-occupational situations.

4.8 Health Professional: A physician, occupational health nurse, industrial hygienist, health physicist, toxicologist, or epidemiologist, providing medical or other occupational health services to employees.

4.9 Record: Any item, collection, or grouping of information regardless of the form or process by which it is maintained (e.g., paper document, microfiche, microfilm, X-ray film, or automated data processing).

4.10 Specific Chemical Identity: The chemical name, Chemical Abstracts Service (CAS) Registry Number, or any other information that reveals the precise chemical designation of the substance.

4.11 Specific Written Consent: A written authorization containing the following:

4.11.1 The name and signature of the employee authorizing the release of medical information.

4.11.2 The date of the written authorization.

4.11.3 The name of the individual or organization that is authorized to release the medical information.

4.11.4 The name of the Certified Industrial Hygienist or Physician (individual or organization) that is authorized to receive the released information.

4.11.5 A general description of the medical information that is authorized to be released.

4.11.6 A general description of the purpose for the release of the medical information.

4.11.7 A date or condition upon which the written authorization will expire (if less than one year).

4.12 Toxic Substance or Harmful Physical Agent: Any chemical substance, biological agent (bacteria, virus, fungus, etc.), or physical stress (noise, heat, cold, vibration, repetitive motion, ionizing and non-ionizing radiation, hypo-or hyperbaric pressure, etc.) which:

4.12.1 Is listed in the latest printed addition of the National Institute for Occupational Safety and Health (NIOSH) Registry of Toxic Effects of Chemical Substances (RTECS).

4.12.2 Has yielded positive evidence of an acute or chronic health hazard in testing conducted by, or known to, the employer.

4.12.3 Is the subject of a Material Safety Data Sheet kept by or known to the employer indicating that the material may pose a hazard to human health.

4.13 Trade Secret: Any confidential formula, pattern, process, device, or information or compilation of information that is used in an employer's business and that gives the employer an opportunity to obtain an advantage over competitors who do not know or use it.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for referring employees and designated representatives who have requested access to records to the ESH Manager.

5.2 Employees, Certified Industrial Hygienist, or Physician: Referring questions or requests for access to records to Supervision or the ESH Manager.

5.3 ESH Manager: Ensuring that employees are informed initially in General Employee Training and annually thereafter of their rights to access records.

6.0 REQUIREMENTS

6.1 Preservation of Records: Exposure records will be maintained in accordance with the Morrison Knudsen Records Management Program, January 1996

6.2 Access to Records

6.2.1 Employees, Certified Industrial Hygienist, or Physician desiring access to exposure (including analysis using exposure records) and/or medical records must submit a written request (see 4.11) to the ESH Manager.

6.2.2 Supervisors shall refer inquiries on access to records to the ESH Manager.

6.2.3 The ESH Manager shall assure that each employee or their designated representative is allowed access to applicable records within 15 working days. The ESH Manager shall apprise the employee or designated representative if access cannot be provided within 15 days, and state the reason for delay and the earliest date the record will available.

6.2.4 Whenever access to medical records is requested, a physician representing MK may review the request and make recommendations concerning the access to the medical record in accordance with 29 CFR 1910.20.

6.2.5 Whenever access to employee medical information, an analysis of medical records or other records is requested which reports personal identifiers or information which could be reasonably used to identify an employee(s), the ESH Manager will assure the personal identifiers are removed prior to access.

6.2.6 The ESH Manager will ensure DOE, Occupational Safety and Health Administration (OSHA) Access, the State of Idaho, and other's with statutory access are provided access, as necessary.

6.2.7 At first employment and annually thereafter, employees shall be informed of their rights to access exposure and medical records in accordance with 29 CFR 1910.20.

7.0 EXTERNAL INTERFACE

7.1 MK will provide information on analysis of exposure records to BNFL Inc., as requested.

7.2 MK will provide records access to OSHA or the Idaho Department of Health and Welfare in accordance with 29 CFR 1910.20 requirements.

8.0 RECORDS

8.1 Requests for access and response to requests may be maintained as non-permanent, non-quality assurance (QA) records by the ESH Manager.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-107	EFFECTIVE DATE: May 31, 2000
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TITLE: EMERGENCY ACTION

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE....3
2.0 SCOPE....3
3.0 REFERENCES....3
4.0 DEFINITIONS....3
5.0 RESPONSIBILITIES....5
6.0 REQUIREMENTS....10
7.0 EXTERNAL INTERFACE....15
8.0 RECORDS....15
9.0 ATTACHMENTS....16
10.0 EXHIBITS....16

1.0 PURPOSE

1.2 This procedure supplements the INEEL M&O contractor's Emergency Action Plan by specifying Morrison Knudsen (MK) responsibilities to ensure that the public, environment, and employees are minimally impacted by emergency response operations associated with this project.

2.0 SCOPE

2.1 This procedure applies to MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

2.2 Impacts to national security are not specifically included in this AMWTP procedure because the AMWTP does not use or generate classified information or processes.

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.35, Employee Emergency Action Plans

3.2 References

BNFL, Inc. Occurrence Categorization, Notification and Processing

BNFL, Inc. Corporate Procedure PC06-001.1, Environment, Safety & Health Incident Reporting

DOE Order 151.1, Comprehensive Emergency Management System

MK Emergency Preparedness Plan

INEEL M&O Contractor's Emergency Action Procedures

4.0 DEFINITIONS

4.1 Drill: A monitored, practical exercise designed to test skills and knowledge, evaluate individual and group responses, and/or maintain, develop, or improve a specific emergency response capability.

4.2 Emergency: An unwanted event that has or could endanger or adversely affect people, property, or the environment. These include interruption of operations due to civil or natural phenomenon, security incidents, and medical events.

4.3 Emergency Management: The act of planning and preparing to assure effective coordination and readiness of resources to limit the negatives impacts to people, property, or the environment from an unwanted event.

4.4 Emergency Response: The deployment of resources, according to preparedness plans and procedures to limit the negative effects of an unwanted event.

4.5 Emergency Response Organization (ERO): Designated organizations responsible for implementing emergency plans and procedures, and managing or employing resources to minimize the result of any emergency.

4.6 Explosion: An explosion is a sudden release of energy, characterized by a shock wave and flying debris.

4.7 Hazard: A process, condition, or material, debris, etc. that has the potential to adversely impact the health and safety of personnel, the public, or the environment. Hazards are divided into three classes:

4.7.1 Low - hazards which present minor onsite and negligible offsite impacts to people, property, or the environment;

4.7.2 Moderate - hazards which represent considerable potential onsite impacts to the people, property, or the environment, but at most only minor offsite impacts to people, property, or the environment; and

4.7.3 High - hazards with the potential for onsite and offsite impacts to large numbers of persons or with the potential for major impacts to the environment.

4.8 Hazardous Materials: A solid, liquid, or gaseous material that is toxic, flammable, radioactive, corrosive, or reactive. These materials, present in sufficient quantity, could pose a threat to life, property, or the environment.

4.9 Release of Hazardous Material: A number of hazardous materials are used in and around construction sites, including process streams belonging to INEEL M&O contractor. In addition, chemicals and fuels in various quantities are used and stored throughout INEEL. These materials could be accidentally released during

handling or as a result of a more general casualty, such as a fire or explosion or a tank/container failure.

4.10 Uncontrolled Fire: Any fire beyond the incipient stage. These fires represent one of the most severe threats to personnel, equipment, and facilities.

5.0 RESPONSIBILITIES

5.1 Construction Manager is responsible for:

5.1.1 Overall executive direction of the MK Emergency Action Plan and of MK's response to emergencies.

5.1.2 Overall authority and responsibility in an emergency for the health and welfare of all MK personnel, visitors, Subcontractors, and of MK facilities and equipment.

5.1.3 Overall authority and responsibility to ensure adequate support and resources are available to implement this procedure.

5.1.4 Authorizing activation of the MK Emergency Control Center (See Attachment 9.1 for a description) when there is no site-wide alarm.

5.1.5 Delegating authority for day-to-day emergency preparedness activities to the Environment, Safety, and Health (ESH) Manager.

5.2 ESH Manager is responsible for:

5.2.1 Day-to-day emergency preparedness activities, including,

5.2.2 Preparing and maintaining the Emergency Call List, and maintaining the MK ERO roster and issuing updates; and,

5.2.3 Ensuring preparedness plans and procedures are current, and appropriate training is provided to MK ERO personnel;

5.2.4 Assigning personnel to the proper color-coded assembly area.

5.2.5 Coordinating and directing necessary liaison with DOE-ID, DOE-ID contractors, Federal, state and local agencies specifically tasked to provide onsite and offsite capability to implement emergency responses.

5.3 General Superintendent is responsible for:

5.3.1 Staffing (including alternates) the Shift Response Teams and ensuring team members are appropriately trained to respond to on site events, and to provide support when requested by the INEEL M&O Contractor EAM. The General Superintendent will also ensure the proper response equipment is available for SRT use during an emergency. The General Superintendent should coordinate team formation and training with the ESH Manager. See Attachment 9.2 for an example of a basic SRT organization.

5.3.2 The General Superintendent shall ensure on-scene command and control is provided.

5.3.3 Coordinating SRT training and equipment needs with the ESH Manager.

5.3.4 Assigning, training, and directing Emergency Area Wardens (EAW) and Area Monitors (AM) for all construction environments and the warehouse area. Only Superintendents, Supervisors, Foremen, or selected craft personnel shall be assigned EAW and AM duties.

5.3.5 Transmitting all SRT, EAW and AM personnel assignments to the ESH Manager.

5.4 Business Manager is responsible for:

5.4.1 Assigning, training, and directing AMs for the Main Office Complex.

5.4.2 Transmitting AM personnel assignments to the ESH Manager.

5.5 Project Engineer is responsible for:

5.5.1 Assigning, training, and directing AMs for the Field Engineering Trailer.

5.5.2 Transmitting AM personnel assignments to the ESH Manager.

5.6 Project Quality Manager is responsible for:

5.6.1 Assigning, training, and directing AMs for the Quality Trailer, and all on-site QC/QA vendor laboratories and office areas.

5.6.2 Transmitting AM personnel assignments to the ESH Manager.

5.7 The Accountability Clerk shall:

5.7.1 Printout a copy of the accountability log one (1) hour after the start of the shift. This copy shall be used, along with visitor logs, for personnel accountability by the EAW and EC in the event of a power failure.

5.7.2 Printout a copy of the log on first indication (alarm sounds, notified orally, etc.) that an evacuation is in progress. Ensure the copy, along with visitor logs, are given to the EC.

5.8 Emergency Coordinator (EC): The ESH Manager is the primary EC. Alternates (in order of succession) are the Project Engineer, and the Shift Superintendent (see Attachment 9.3, Emergency Response Organization Chart). The EC is responsible for:

5.8.1 As required, the MK EC shall activate the Emergency Control Center (ECC) and ensure designated Emergency Response Organization personnel report to the ECC. The MK EC or alternate shall obtain emergency response information from MK Supervision and the INEEL M&O contractor Emergency Action Manager (EAM). Personnel Accountability shall be reported to the MK EC and the INEEL M&O contractor EAM.

5.8.2 Ensure a MK representative reports to the INEEL M&O contractor Emergency Control Center as requested.

5.8.3 The MK EC shall ensure that MK personnel and Subcontractors comply with the directions of INEEL M&O contractor's EAM.

5.8.4 The MK EC will confer with the Operations and Engineering management to determine occurrence categories, and if applicable, emergency class if and when emergency response is required for operations.

5.8.5 Coordinates response activities with the General Superintendent to assess accountability of personnel, the availability of equipment and Shift Response Team members to meet resource needs.

5.8.6 Advising the Construction Manager of ESH consequences of the emergency and makes recommendations of or institutes actions to be taken.

5.8.7 Coordinating ESH personnel to confirm the event, determine the magnitude of the event and perform surveys/tests.

5.8.8 Should complete evacuation be required, direct AMWPT personnel to drive their personal vehicles to the central facilities main gate, and proceed to the location location specified by the Central Facilities Area (CFA) Emergency Action Manager. AMWTP badges will provide access to the CFA during emergencies.

5.9 Emergency Area Wardens and Area Monitors:

5.9.1 The primary responsibility of EAWs and AMs is to assure personnel accountability and safety during an evacuation or take cover event, and communicating this information to the EC.

5.9.2 One (1) EAW will be assigned to each shift. The EAW will collect accountability reports from each AM, report the head count results (i.e., MK personnel, Subcontractor personnel, and visitors) and suspected missing personnel to the EC, and work with the EC and AMs to locate missing personnel.

5.9.3 During an evacuation or take cover situation, the EAW and AMs shall:

Evacuations:

1. Under the direction of the EC, the EAW will provide instruction and information to personnel.

2. The EAW shall use the assigned 2-way, hand-held radio for emergency communication with the EC.

3. AMs will ensure all personnel have been evacuated from the building/area of responsibility. Check all areas including storage rooms and restrooms. Be the last person to exit the area, and via their assigned 2-way, hand-held radio, report that their area of responsibility is clear to the EAW.

4. AMs will proceed to the evacuation staging area after exiting the building/area, conduct a head count for their area, and report the head count results.

5. EAWs and AMs will have similar duties to perform should evacuation to the Central Facilities Area occur.

Take Cover:

Upon activation of a take cover signal, the AMs are responsible for ensuring that the building HVAC system has been shut off, and all doors and windows have been shut.

AMs will obtain volunteers to monitor all possible exits and not allow anyone to leave the building.

AMs shall identify all personnel in their building and report the results on request.

5.9.4 The EAW shall obtain personnel accountability reports from AMs and will report this information to the MK EC when requested.

5.9.5 The EAW shall ensure personnel working in areas or buildings not equipped with emergency voice paging or alarm system, are informed of evacuation or take-cover events via telephone or radio or other reliable means.

5.10 Employees are responsible for:

5.10.1 AMWTP employees working in or visiting other INEEL areas shall obey their escort's instructions and voice paging messages to mitigate any personal danger, and comply with other INEEL M&O contractors' direction (i.e., staging and take-cover areas, and how and when to report to their respective Emergency Area Warden).

5.10.2 The employee discovering a life threatening or facility threatening emergency shall immediately, if possible:

5.10.2.1 Stop unsafe acts by verbal instruction or neutralize unsafe conditions,

5.10.2.2 Report the act or condition to their supervisor, the MK General or Shift Superintendent, and/or ESH Department.

5.10.3 Responding promptly and correctly, as trained, to each type of alarm.

5.10.3.1 When the building fire alarm or evacuation signal sounds, all personnel shall quickly and orderly evacuate the building by the most direct route as indicated on the posted evacuation routes within individual buildings and facilities. It is the employee's responsibility to know the evacuation route out of the building or facility where he or she is working.

5.10.3.2 When personnel hear an order to evacuate, they will proceed to their color-coded assembly area (color-code is indicated on their badge) and await instructions.

5.10.3.3 In the event of a "Take Cover Signal" all employees shall immediately take cover in the closest building or office trailer. Employees shall comply with the instructions given by the AM. If no AM is present, employees shall make a reasonable effort to contact the MK EAW or AM for accountability purposes.

5.11 Subcontractors shall follow MK and, as warranted, the INEEL M&O contractor's emergency procedures during emergency conditions.

5.11.1 The subcontractor must comply with all applicable requirements of this procedure.

5.11.2 Subcontractors shall be responsible for accountability of their personnel in both evacuation and take cover situations and shall report their status to the MK Emergency Area Warden.

5.12 Emergency Phone Numbers are posted near each telephone.

6.0 REQUIREMENTS

6.1 Organizational Response to Emergencies

6.1.1 MK's response to INEEL facility emergencies is based upon the emergency classification declared by the INEEL M&O contractor Emergency Action Manager and his subsequent instructions. MK implements emergency actions for the health and safety of MK personnel and supports resource requests by the INEEL M&O contractor Emergency Action Manager. The MK EC coordinates personnel accountability of MK personnel and its Subcontractors. The Emergency Coordinator at the MK Emergency Control Center dispatches the resources as requested by the INEEL M&O contractor Emergency Action Manager.

6.1.2 If either the AMWTP or INEEL M&O activates a command post for an emergency condition, the other party will be notified. The general AMWTP command post location will be the ES&H Manager's office. On request, the INEEL M&O contractor's RWMC command post in WMF-637 and the services of RWMC personnel to operate the post will be made available to the AMWTP.

6.1.3 The AMWTP Emergency Call List is maintained separate from this procedure (see Attachment 9.4 for an example). It includes AMWTP Emergency Response Organization contacts, names, positions, and phone and radio numbers. The list is updated as needed and distributed to other Emergency Response Organizations.

6.1.4 INEEL M&O contractor Emergency Response Organization Point-of-Contact List is maintained in the Warning Communications Center.

6.1.5 AMWTP event classification and notification will be done in accordance with BNFL Inc. procedure, "Occurrence Categorization, Notification and Processing."

6.2 Alarms and Emergency Response

6.2.1 Fire Alarms

A fire alarm may be announced over a voice paging system, verbally transmitted in the immediate vicinity, or activated by an alarm system pull box.

6.2.1.1 The person initiating a fire alarm must take the following actions:

1. Inform coworkers in the vicinity to immediately begin evacuation, and activate the nearest manual fire alarm box or direct a coworker to do so, if one is located in the area.

2. Call the INEEL Fire Department (9-777 from MK office trailers, 777 from WMF 634) or radio the MK Base Station and report the location of the fire, number of injured personnel and any additional information that might assist the Fire Department.

6.2.1.2 Emergency Control Center Activation. The Emergency Control Center is not automatically activated for fire alarms. However, should conditions warrant, the Emergency Control Center will be activated by the Emergency Coordinator.

6.2.1.3 Personnel Response

1. When a fire alarm is announced or sounded, personnel will immediately evacuate to the south gate staging area, or to an alternate assembly area when directed. Never assume it is a false alarm, and follow the established evacuation routes.

2. Personnel designated and trained in First Aid and CPR shall treat to the injured.

3. ONLY trained personnel may attempt to extinguish the fire, if there is a fire extinguisher present, and ONLY if they choose to do so.

4. Personnel will be allowed back into a facility only after approval from the INEEL Fire Department. This will be announced by supervision.

6.2.2 Take-cover:

6.2.2.1 The INEEL take-cover signal is a steady-tone siren, and is sounded by the INEEL M&O contractor when personnel are best protected from a hazardous condition by seeking shelter inside buildings.

6.2.2.2 An announcement over the voice paging system will be made immediately after every take-cover signal, stating the location of the emergency and providing necessary information and instructions. An "all clear" message will be announced over the voice paging system when the problem is corrected.

6.2.2.3 The MK Emergency Control Center will be activated by the Emergency Coordinator at the initiation of the take-cover signal.

6.2.2.4 Personnel Response

1. All personnel shall immediately seek shelter in the nearest building or office trailer not involved in the emergency. Personnel shall remain inside of the building until directed otherwise.

2. All doors and windows shall be shut. Personnel shall not eat, drink, chew, or smoke.

3. All ventilation equipment, including fans and forced air heaters in non-process related buildings, shall be turned off.

6.2.2.5 During emergencies that cross over facility boundaries, emergency response coordination will take place at the RWMC command post located in WMF-637 (operations control building). Both the RWMC and the AMWTP will provide an emergency coordinator to assist in emergency response activities

6.2.3 Evacuation Alarm

6.2.3.1 The evacuation signal is an alternating-tone siren (varies in loudness - five to ten seconds loud, five to ten seconds low).

6.2.3.2 Evacuation Alarm Signal

1. The INEEL M&O contractor sounds the evacuation alarm when evacuation is necessary.

2. The evacuation alarm will sound automatically when a criticality alarm occurs.

6.2.3.3 The MK Emergency Control Center will not be activated. The MK Emergency Coordinator will be in contact with the Warning Communications Center.

6.2.3.4 Personnel Response. All personnel (except emergency response personnel) are to immediately proceed to the designated, color-coded staging areas. When directed by the EC or other designated supervision, AMWTP personnel will utilize privately owned vehicles to evacuate the site and proceed to the Central Facilities Area (CFA) location specified by the CFA Emergency Action Manager. AMWTP badges will provide access to the CFA during emergencies. The designated evacuation routes (roads) to the CFA are seasonal. See Attachment 9.5 for the summer and winter routes.

6.2.3.5 Emergency Action Warden. Perform duties as specified in Section 5.7 of this procedure.

6.2.3.6 Area Monitor. Perform duties as outlined in Section 5.7 of this procedure.

6.3 Criticality Alarm

6.3.1 A criticality alarm may occur at certain facilities and MK personnel shall respond as directed by the INEEL M&O contractor Emergency Action Manager. Criticalities are addressed in the INEEL M&O contractors' Emergency Action Program.

6.4 Site-Specific Evacuation Maps

6.4.1 Evacuation maps identifying staging areas shall be reviewed by all employees and posted prior to the start of work. Maps will show evacuation routes, staging areas, and other information.

6.4.2 Emergency response and evacuation access and egress from the construction site will be through the primary access gate at the southeast corner of the fenced construction area. The secondary evacuation route is through the north gate.

6.5 Training

6.5.1 The MK ESH Manager shall ensure that all AMWTP workers (MK, Subcontractor, visitors, etc.) receive appropriate emergency response training.

6.5.2 All employees shall receive initial emergency action training during General Employee Training, their Department's new-employee orientation or subcontractor health and safety indoctrination, and annually thereafter.

6.5.3 Managers/Supervisors shall ensure their employees are trained in emergency action requirements.

6.5.4 Emergency response training shall include types of emergency actions, types of signals, duties of emergency action personnel, evacuation routes and location of staging areas, and notification requirements.

6.5.5 MK personnel assigned to the Emergency Response Organization, as a minimum, receive formal training to this procedure and, as applicable, training to the INEEL M&O contractor's Emergency Action Plan.

6.5.6 The General Superintendent shall ensure all personnel assigned to Shift Response Teams receive appropriate training. Topics should include communications, scene management, hazard assessment and neutralization techniques, general principles of fire fighting, first aid and CPR, and personnel protection.

6.5.7 Additional training requires all members of the Emergency Response Organization to participate in at least one drill or exercise annually. The MK ESH Manager shall maintain all records documenting the training of MK Emergency Response Organization personnel to this procedure and their participation in all drills/exercises.

6.6 Drills/Exercises

6.6.1 All MK personnel and Subcontractors will participate in at least one annual emergency drill. Subcontractor requests for exemption from drills shall be presented in writing to the ESH Manager prior to the planned event, or as directed by the ESH Manager if leaving work could create an unsafe condition. The ESH Manager shall coordinate requests for exemption through the INEEL M&O contractor.

6.6.2 Additional exercises may be conducted by INEEL M&O contractor, following written guidelines that establish exercise requirements, which require AMWTP participation.

6.6.3 MK ERO personnel will participate in at least one INEEL M&O contractor exercise/drill annually.

7.0 EXTERNAL INTERFACE

7.1 Controlled copies of this procedure shall be distributed to the INEEL M&O contractor and other organizations and agencies at the ESH Manager's discretion. Additional copies shall be distributed to MK Emergency Response Organization personnel.

7.2 Site-specific emergency response/access training for MK employees, Subcontractors and visitors will be coordinated between the INEEL M&O contractor and the MK ESH Manager.

7.3 Interface with INEEL M&O contractor Emergency Management personnel during drills, exercises or emergencies shall be the responsibility of the MK ESH Manager or designee, the designated EAW's, and the MK management representative at the INEEL M&O contractor's ECC. The MK EC will notify RWMC of actual or potential emergency conditions. For planned drills, the MK EC will provide seven days notification to RWMC.

8.0 RECORDS

8.1 All reports generated as a result of responses to emergency situations shall be numbered sequentially and maintained as a case file for a minimum of five years.

8.2 Lessons Learned from each exercise or emergency shall be used to update this procedure.

8.3 Training records will be retained by MK and the INEEL M&O contractor respective Training Departments.

8.4 The Emergency Area Wardens shall forward the completed the Personnel Accountability List with comments/critique of drills/exercises to the MK ESH Manager.

8.5 The MK ESH Manager, the General Superintendent, and other personnel designated by the Construction Manager shall assess the needs of the Emergency Response Organization, MK employees, and Subcontractors annually.

9.0 ATTACHMENTS

9.1 Description of Emergency Response Centers

9.2 Typical Shift Response Team Organization

9.3 AMWTP Emergency Response Organization

9.4 Example Emergency Call List

9.5 Seasonal Evacuation Routes to the Central Facilities Area

10.0 EXHIBITS

NONE

ATTACHMENT 9.1

DESCRIPTION OF EMERGENCY CONTROL CENTER (ECC)

Emergency Control Centers are pre-determined spaces equipped with radios, telephones, maps, response procedures and other devices to assist in controlling emergencies. They provide an area where ERO personnel can resolve immediate problems presented by an emergency. ECCs are maintained by both MK and the M&O contractor.

These centers provide interface capabilities with DOE-ID and are a central point to issue press releases and orchestrate emergency response planning.

Within the INEEL Radioactive Waste Management Complex (RWMC) M&O contractor's ECC, space and equipment are provided for MK representatives when emergencies cross site boundaries. INEEL RWMC M&O contractor ECC is located in WMF-637, Operations Control Building.

The appointed MK management representative will report to the RWMC ECC, when warranted. MK's representative provides a communication link between the RWMC Emergency Action Manager (EAM) or INEEL M&O EAM and MK's EC.

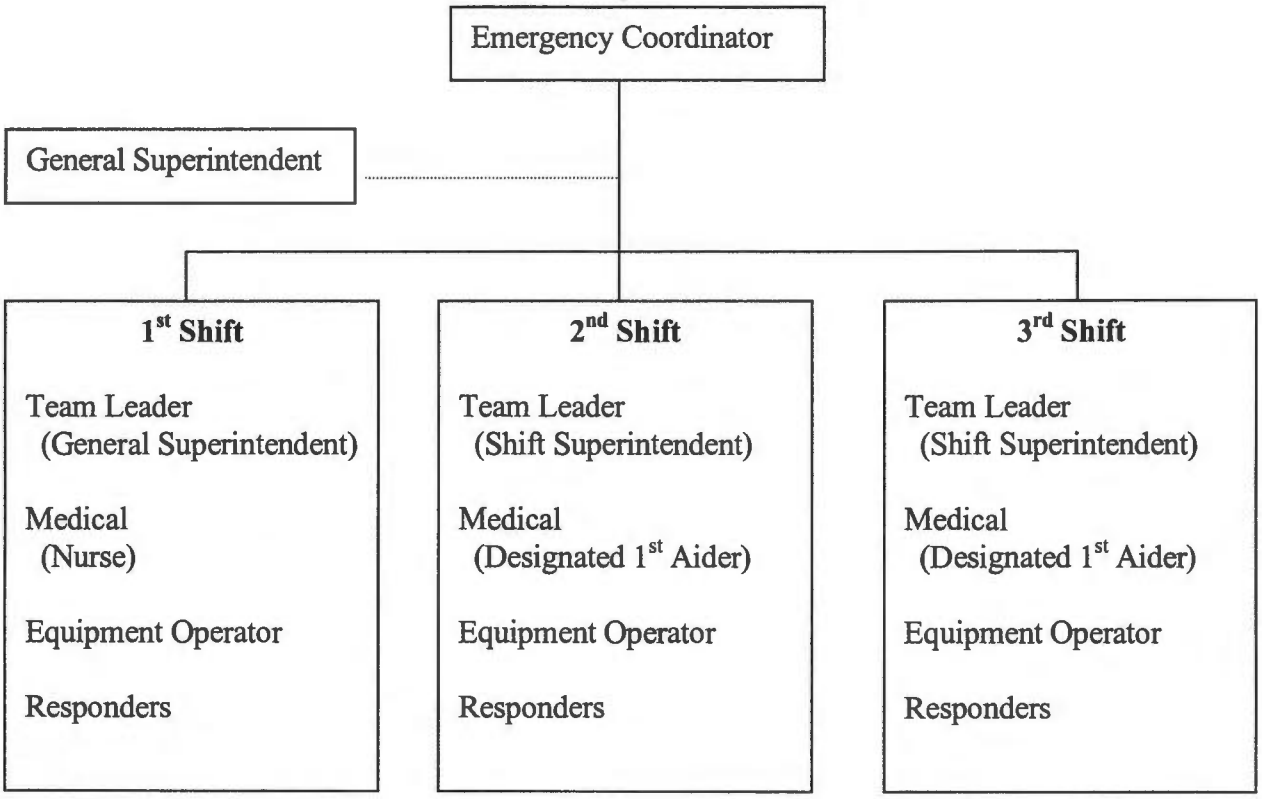
The MK ECC is located in the ESH Trailer at the south gate to the AMWTP site at the SE corner of the RWMC. When activated, the MK ECC has two primary objectives: 1) to establish and maintain a communication link with the RWMC EAM or INEEL M&O EAM, and offer available equipment to meet DOE-ID and INEEL M&O contractor resource needs; and 2) to assure accountability and safety of MK and MK subcontractor personnel.

The MK ECC phone and facsimile numbers are shown below and listed on the Emergency Call List.

Line 1:	526-3460
Line 2:	526-
Fax:	526-

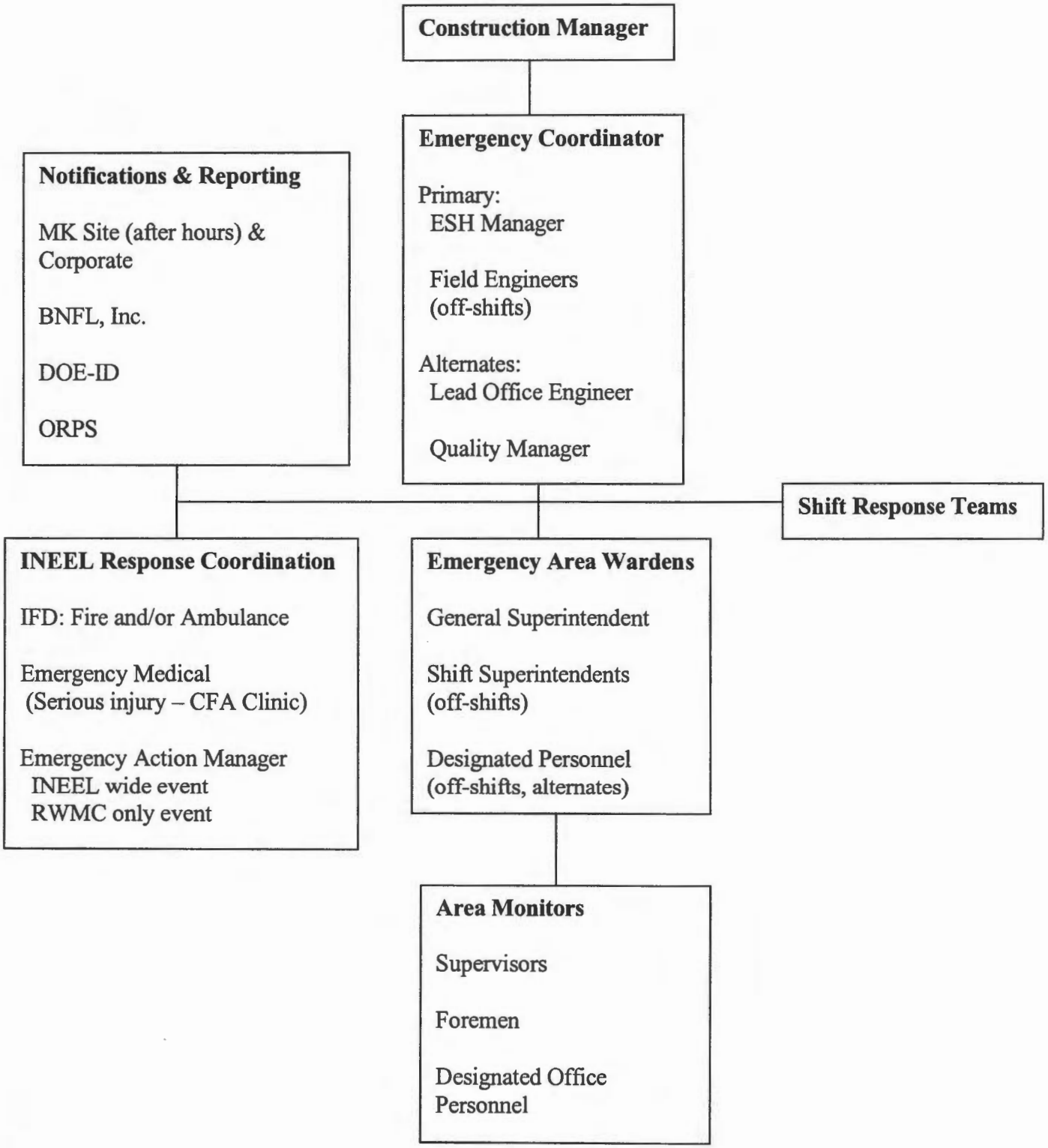
ATTACHMENT 9.2

TYPICAL SHIFT RESPONSE TEAM ORGANIZATION



ATTACHMENT 9.3

AMWTP EMERGENCY RESPONSE ORGANIZATION



ATTACHMENT 9.4

EMERGENCY CALL LIST

First Line Notification

For all emergency and non-emergency events that have the potential to impact the AMWTP construction site – both during normal work hours and off-shift hours – the AMWTP ESH Manager should be notified. Upon notification, the AMWTP ESH Manager will inform the OSC whether it is necessary to initiate notifications to the pager groups.

Contact	Title	Home Phone	Work Phone	FAX No.	Cellular No.

Pager Group 1

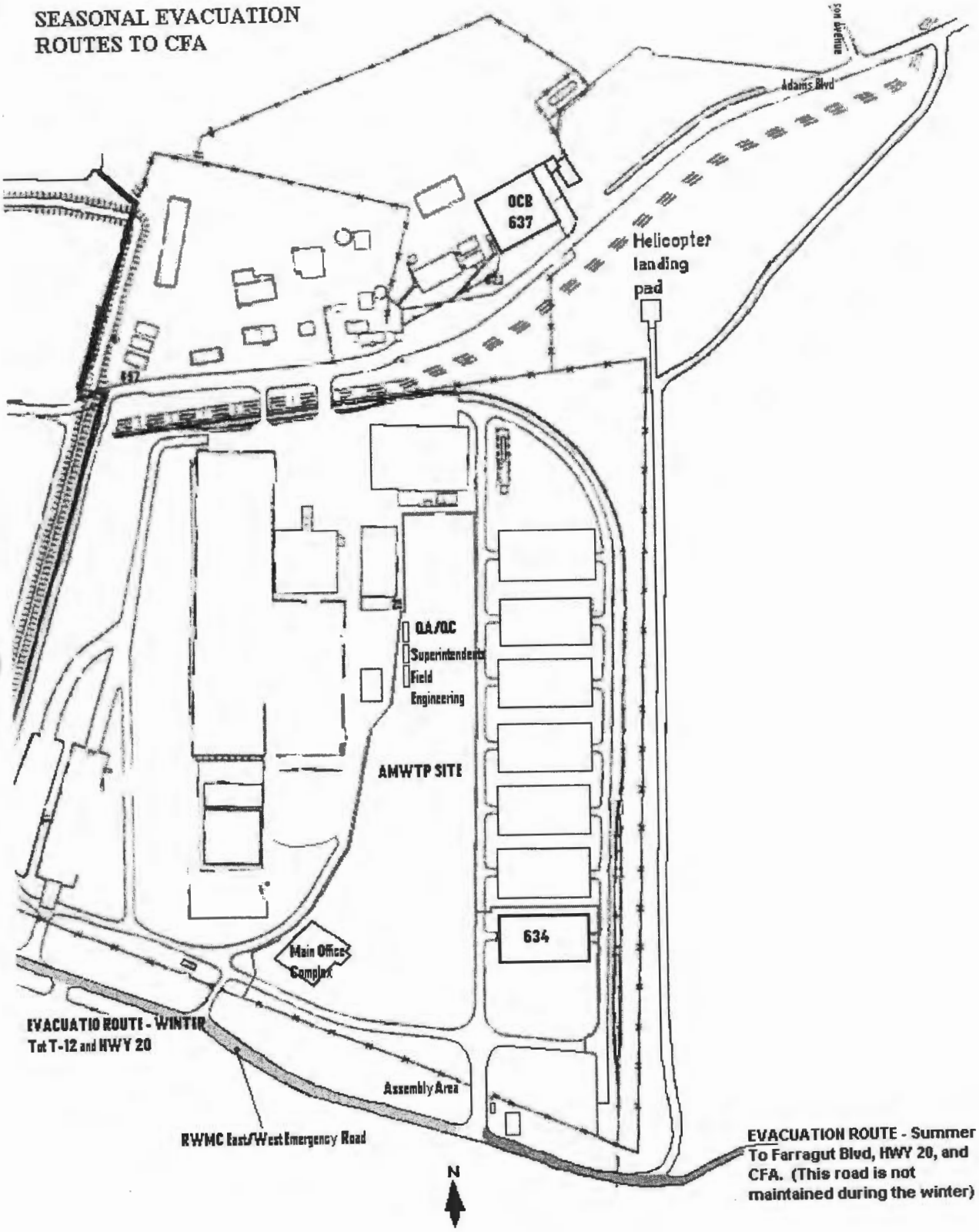
If directed by the AMWTP ESH Manager, the following personnel should be the first point of contact for all events including security breaches of the AMWTP construction site and off-hour non-emergency situations that require action on the part of AMWTP.

Contact	Title	Home Phone	Work Phone	FAX No.	Cellular No.

Example

ATTACHMENT 9.5

SEASONAL EVACUATION ROUTES TO CFA



ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-108	EFFECTIVE DATE: May 15, 2000
	REVISION: 1	PAGE: 1 OF 9

TITLE: STOPWORK/SHUTDOWN AND RESTART

APPROVAL

ES&H MANAGER — DATE: 04/26/00

PROJECT QUALITY MANAGER — DATE: 05-3-00

KP CONSTRUCTION MANAGER — DATE: 5-10-00

REV.	DATE	REVISION DESCRIPTION
0	06/01/99	ORIGINAL ISSUE
1	03/01/00	Minor Revision

ORIGINATOR: Claude Pettengill (Initial/Date)	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 8

8.0 RECORDS 8

9.0 ATTACHMENTS 9

10.0 EXHIBITS 9

1.0 PURPOSE

1.1 The purpose of this procedure is to define Stopwork/Shutdown Authority, to specify the conditions that warrant a Stopwork/Shutdown Notification, and to provide employees with those actions necessary to stopwork and restart once the conditions of the stopwork/shutdown have been cleared.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) employees at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Construction Standards

3.2 Reference Documents

Morrison Knudsen Guidelines for Safety Supervisors and Designated Safety Representatives, July 1998

BNFL Inc. Occurrence Categorization, Notification and Processing

Morrison Knudsen Records Management Program, January 1996

3A-102, ESH Surveillances

3A-112, Competent Persons Requirements

4.0 DEFINITIONS

4.1 Competent Person: Refer to procedure 3A-112, "Competent Persons Requirements."

4.2 Corrective Action Plan: A written document submitted by the responsible Subcontractor or Department Manager, outlining the corrective measures to be taken to abate the safety violation(s) and to prevent recurrence of the problem(s).

4.3 Restart Approval: Written directions, signed by the ESH Manager to restart construction operation(s) following a stopwork and/or shutdown notification.

4.4 Shutdown Authority: Management authority to shutdown a job immediately.

4.5 Shutdown Order: A written order used by the competent person for the cessation of facility operations, or shutdown of a task, activity, etc.

4.6 Stopwork Authority: Authority delegated to all employees to stop a particular phase of work when there is a clear and present danger to workers, facilities, or members of the public.

4.7 Stopwork Order: A verbal or written instruction issued by MK, BNFL Inc., DOE, and/or INEEL M&O contractor personnel to suspend some or all activities of a particular construction activity or activities which creates or may create an imminent danger to workers, the public, the facility or the environment during a construction project. Stopwork Orders may also be issued by supervision when a condition exists that may have an unaccountable impact on safety, a serious willful violation of AMWTP ESH requirements exists, or the safety performance of an organizational unit, crew, or subcontractor is unacceptable.

5.0 RESPONSIBILITIES

5.1 All Employees must:

5.1.1 Comply with all ESH rules and regulations applicable to their work.

5.1.2 Report all environmental, safety and health hazards to their supervisors when initially observed.

5.1.3 Stop work when there is a clear and present danger to workers, facilities, or members of the public. Any employee has the authority to issue a verbal Stopwork Order to halt that part of the task presenting the danger until corrective action has been taken.

5.1.4 Attend applicable ESH training classes.

5.1.5 Obey all Stopwork and/or Shutdown Orders.

5.2 ESH Manager: Responsible for:

5.2.1 Administering this procedure.

5.2.2 Issuing a stopwork order should an operation be affected by an imminent danger (Category I Safety Violation).

5.2.3 Presenting ESH training classes to each employee. Training records shall be maintained by the MK ESH Manager.

5.2.4 Assigning MK personnel to conduct a Root Cause Analysis in accordance with BNFL Inc. procedure Occurrence Categorization, Notification and Processing.

5.2.5 Issuing a stopwork order when warranted.

5.3 Line Management Personnel shall:

5.3.1 Take necessary, interim, corrective measures to protect the environment, property, the public, and employees from all imminent dangers and other risks associated with the stopwork/shutdown order.

5.3.2 Keeping employees advised of Corrective Action Plans and progress.

5.3.3 Ensure that employees are not reprimanded or subjected to other disciplinary actions or harassment for using their stopwork authority.

6.0 REQUIREMENTS

6.1 Identification and Evaluation

6.1.1 Any employee discovering what they perceive to be an imminent danger situation shall immediately stop the unsafe act(s) by verbal instruction and notify their Supervisor.

6.1.2 Verbal Stopwork Orders are to be evaluated by ESH and line management personnel, and a determination made as to the need for a written (formal) Stopwork Order.

6.1.2.1 If it is determined that a formal Stopwork Order is warranted, it shall be issued by the ESH Manager, Construction Manager, General Superintendent, or their designees.

6.1.2.2 If it is determined that a formal Stopwork Order is not warranted, the ESH Manager or designee will issue a Restart Work Order noting that upon further evaluation work may resume.

6.1.2.3 Written feedback will be provided by the ESH Manager and Project Engineer to the employee who verbally issued a Stopwork Order, when requested by the employee.

6.1.3 The ESH Manager may issue a "Safety Violation Notice" form (CAS-21) based on evaluation of the unsafe acts/conditions, timeliness of corrective responses, and other criteria associated with the written Stopwork Order.

6.2 Issuance of Stopwork Order

6.2.1 Any employee may verbally issue a Stopwork Order to the Work Activity Supervisor or competent person.

6.2.2 The ESH Manager, Construction Manager, General Superintendent, or designess will issue the formal Stopwork Order(s) as deemed necessary based on the ESH evaluation of the affected activity, operation or facility.

6.2.3 Formal Stopwork Orders affecting Subcontractor work are to be issued to the Subcontractor by the Subcontract Administrator.

6.3 Response to Stopwork Orders

6.3.1 Responsible members of management are to immediately halt all operations affected by:

6.3.1.1 a verbal Stopwork Order given by an employee who perceives an imminent danger., or

6.3.1.2 a written Stopwork Order issued by the ESH Manager, Construction Manager, General Superintendent, or designees.

6.3.2 The responsible manager shall immediately develop a written Corrective Action Plan to abate the noted deficiencies. The Corrective Action Plan shall be submitted to the ESH Manager.

6.3.3 ESH Manager shall approve the Corrective Action Plan after review to ensure appropriate steps are specified for deficiency prevention, and milestone dates are provided for abatement.

6.3.4 Using the approved Corrective Action Plan, the Project Engineer, General Superintendent, or Subcontractor Representative shall implement necessary actions. The Project Engineer, General Superintendent, or Subcontractor Representative shall sign, date and return the completed Corrective Action Plan to the ESH Manager.

6.3.5 The responsible manager, General Superintendent, and the ESH Manager shall verify completion of each item listed in the Corrective Action Plan.

6.4 Readiness Review

6.4.1 A thorough readiness review shall be completed by the ESH Department prior to restarting the work after either a verbal or formal stopwork order has been cleared.

6.4.2 The readiness review will include the following:

6.4.2.1 Work prerequisites have been met.

6.4.2.2 Detailed ESH requirements have been reviewed for adequacy and appropriateness.

6.4.2.3 Personnel have been trained and qualified.

6.4.2.4 The proper equipment, material, and resources are available.

6.5 Restart Order

6.5.1 The Project Engineer or Subcontractor Representative shall clear deficiencies and sign the ESH Stopwork/Shutdown and Restart Order.

6.5.1.1 The operations affected by the Stopwork Order may not be resumed until the ESH Manager approves the Restart Order.

6.5.2 The ESH Manager, Project Engineer, and Construction Manager shall sign the Restart Order upon being satisfied the Corrective Action Plan is being complied with and no unsafe conditions exist.

6.5.3 The Restart Order shall be given to the General Superintendent/Subcontract Administrator to start work.

6.6 Training

6.6.1 All MK employees shall be made aware of specific rules and regulations applicable to their work and of the general safety and health policies.

6.6.2 All employees shall be informed that:

6.6.2.1 They are individually responsible for protecting themselves and their co-workers against accidents and injuries.

6.6.2.2 They must report all environmental, safety and health hazards at once to their supervisor.

6.6.2.3 They will not be subject to reprimands, repercussions, or other disciplinary actions when the stopwork authority is used.

6.6.2.4 They will be advised in the corrective action, readiness review, and restart phases of this procedure to assist in ensuring that all concerns have been satisfactorily addressed.

6.6.3 Each employee shall be instructed on the stopwork procedure.

6.6.4 Training shall be presented to each employee at initial hire.

7.0 EXTERNAL INTERFACE

7.1 Stopwork Orders initiated by DOE-ID or the INEEL M&O contractor shall be coordinated by MK's ESH Manager.

8.0 RECORDS

8.1 A copy of all completed ESH Stopwork/Shutdown and Restart Orders, ESH Surveillance Reports, and the approved Corrective Action Plan shall be maintained by the ESH Manager for one year. All documents shall be processed and maintained in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-111	EFFECTIVE DATE: March 31, 2000
	REVISION: 1	PAGE: 1 OF 5

TITLE: ESH GOALS AND PERFORMANCE OBJECTIVES

APPROVAL

ES&H MANAGER — DATE: 032200

PROJECT QUALITY MANAGER — DATE: 03-22-00

KP CONSTRUCTION MANAGER — DATE: 4.3.00

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ORIGINATOR: Claude Pettengill
(Initial/Date) 032200

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 4

7.0 RECORDS 5

8.0 EXTERNAL INTERFACE 5

9.0 ATTACHMENTS 5

10.0 EXHIBITS 5

1.0 PURPOSE

1.1 This procedure establishes the Environment Safety and Health (ESH) goals and performance objectives program to measure ESH performance. These indicators will be used to identify trends and lessons learned, recognize excellent performance, increase employee awareness, and assess the Project's ESH performance.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.20, General Safety and Health Provisions

3.2 Reference Documents

BNFL Inc. Occurrence Categorization, Notification and Processing

BNFL Inc. Preliminary Safety Analysis Report, June 1998 (will be replaced by Final SAR after review)

Morrison Knudsen Safety Procedures and Guidelines Manual, July 1998

DOE Order 210.1, Performance Indicators and Analysis of Operations Information

4.0 DEFINITIONS

NONE

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for developing annual MK ESH goals and performance objectives, and using performance indicators to assess attainment of these goals and performance objectives.

5.2 Supervision:

5.2.1 Develops ESH goals and performance objectives for employees reporting to them and for incorporating those goals and objectives into the job description supplements required by Morrison Knudsen Safety Procedures and Guidelines Manual.

5.2.2 Reviews employee progress toward these goals during the annual employee review.

5.3 Construction Manager: Coordinates the development of individual ESH performance goals and objectives for all employees, including personal safety plans.

5.4 Employees:

5.4.1 Being knowledgeable of MK, project and employee ESH goals and performance objectives.

5.4.2 Working toward achievement of these goals and performance objectives.

6.0 REQUIREMENTS

6.1 MK ESH goals and performance objectives, as well as ESH goals and performance objectives shall be developed annually. Supervision shall consider the ESH Performance during annual employee review.

6.2 Annual ESH goals and performance objectives shall be publicized. The methods employed may include management briefings, calendars, employee safety meetings, signs, or other promotional campaigns.

6.3 The ESH Manager shall track progress toward reaching the Project's ESH goals and performance objectives. Supervision shall track progress toward achieving their respective ESH goals and performance objectives.

6.4 ESH goals and objectives may include, but are not limited to, the following indicators:

- A site Total Recordable Case Rate below National or DOE Complex rates.
- A site Total Lost Work Day Case Rate below National or DOE Complex rates.
- A site Severity Rate below National or DOE Complex rates.

6.5 ESH performance indicators shall be computed (for both MK and Subcontractors) and monthly reports distributed to project management.

6.6 Subcontractor performance indicators shall include the performance of their lower-tier Subcontractors.

6.7 An annual schedule of topics to be discussed during safety meetings should be developed by ESH, such that ESH program areas are adequately covered.

6.8 The effectiveness of the ESH goals and performance objective program, and the level of employee awareness should be assessed at least annually by selected supervision.

7.0 RECORDS

7.1 The monthly reports required by this procedure will be maintained for three years as non-Quality Assurance records.

8.0 EXTERNAL INTERFACE

8.1 Statistical reports may be provided to BNFL, Inc. and external organizations

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-112	EFFECTIVE DATE: May 15, 2000
	REVISION: 1	PAGE: 1 OF 5

TITLE: COMPETENT PERSON REQUIREMENTS

APPROVAL

ES&H MANAGER — DATE: 04/26 00

PROJECT QUALITY MANAGER — DATE: 05-3-00

Bob Wisdom
CONSTRUCTION MANAGER — DATE: 5.10.00
KP

REV.	DATE	REVISION DESCRIPTION
0	06/01/99	ORIGINAL ISSUE
1	03/08/00	Minor revision

ORIGINATOR: Claude Pettengill (Initial/Date) 04/26 00	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE....3
2.0 SCOPE....3
3.0 REFERENCES....3
4.0 DEFINITIONS....3
5.0 RESPONSIBILITIES....3
6.0 REQUIREMENTS....4
7.0 EXTERNAL INTERFACE....4
8.0 RECORDS....5
9.0 ATTACHMENTS....5
10.0 EXHIBITS....5

1.0 PURPOSE

1.1 This procedure delineates Competent Person responsibilities as defined by OSHA.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Construction Standards

3.2 Reference Documents

NONE

4.0 DEFINITIONS

4.1 Competent Person: In accordance with 29 CFR 1926.32 (f), a "Competent Person" is "one who is capable of identifying existing and predictable hazards in the surroundings or working conditions, which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them".

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for establishing minimum qualification criteria for competent persons and review of individual competent person qualifications. The criteria shall be distributed through the General Superintendent to aid supervision in designating competent persons.

5.2 Supervision (General Superintendent and other Supervisors): Responsible for designating "Competent Persons" as defined in this procedure.

5.3 Competent Persons:

5.3.1 Observes job conditions which may be unsanitary, hazardous, or dangerous to employees, and shall take prompt corrective measures to eliminate them.

5.3.2 Maintains current training status (e.g., eight-hour refresher classes for asbestos work, external, in-house, or on-the-job as appropriate).

6.0 REQUIREMENTS

6.1 ESH Manager shall:

6.1.1 Periodically monitor competent person list, training records, and job conditions for compliance with this procedure.

6.1.2 Review competent person qualifications and sign competent person card to be issued by supervision.

6.2 Supervision shall:

6.2.1 Appoint individuals as "Competent Persons" who have training and experience in the areas for which they have designated responsibility.

6.2.2 Maintain a list of all designated "Competent Persons" with areas of competency identified.

6.2.3 Maintain qualification records to be available on request.

6.2.4 Issue competent person cards bearing the supervisor's and ESH Manager's signatures.

6.3 Competent Persons are authorized to control, eliminate, or correct unsanitary conditions, hazards or dangerous conditions, which will or may cause employee illness or injury.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-201	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 6

TITLE: JOB SAFETY ANALYSIS

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

[signature] — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

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(Initial/Date) KP 2/22/99

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 5

8.0 RECORDS 5

9.0 ATTACHMENTS 5

10.0 EXHIBITS 5

1.0 PURPOSE

1.1 The purpose of this procedure is to establish the requirements for preparing a Job Safety Analysis Plan.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Safety and Health Regulations for Construction

3.2 Reference Documents

DOE 76-45/19, SSDC-19, Job Safety Analysis

OSHA Document 3071, Job Hazard Analysis

4.0 DEFINITIONS

4.1 Job Safety Analysis: A method by which supervisors and employees can analyze upcoming construction activities and identify existing and potential hazards associated with each job activity, and establish controls for the hazards prior to start of the work activity.

5.0 RESPONSIBILITIES

5.1 Environment, Safety and Health (ESH) Manager: Responsible for reviewing Job Safety Analysis Plans prior to commencement of the work.

5.2 Supervision: Responsible for implementing this procedure as required by project/contract documents.

6.0 REQUIREMENTS

6.1 General Requirement

6.1.1 A written "Job Safety Analysis Plan" for each phase of construction is required to be submitted to the MK ESH Manager at the initial pre-construction meeting five to ten working days prior to the start of the construction activity.

6.1.2 Additional Job Safety Analysis Plans may be required to be submitted to MK ESH Manager, at the discretion of the Project Engineer, prior to the start of selected construction activities.

6.1.3 If the scope of work changes and/or unforeseen conditions occur, Supervision will revise the Job Safety Analysis Plan as soon as possible in accordance with this procedure.

6.1.4 The Job Safety Analysis Plan shall be reviewed and approved by the MK Project Engineer prior to submittal to the MK ESH Manager for final approval. This also applies to revised Job Safety Analysis Plans.

6.1.5 Supervision shall review the Job Safety Analysis Plan with employees assigned to the project prior to their involvement in the construction activity.

6.1.6 The Job Safety Analysis Plan will be made available at the job site by Supervision (see paragraphs 6.2.5, 6.2.6, and 6.2.7 of this procedure).

6.2 Job Safety Analysis Plan Preparation

6.2.1 Supervision shall prepare a detailed Job Safety Analysis for every phase of the construction activity.

6.2.2 The form to be used for preparation of a Job Safety Analysis Plan is the "Job Hazard Analysis" form included as Attachment 1.

6.2.3 All Job Safety Analysis Plans shall be prepared to preclude confusion and misunderstanding.

6.2.4 Consideration shall be given to movement, work area, on going operations by others, specific hazards, safety rules, and recognition of abnormal or unexpected problems.

6.2.5 Each Job Safety Analysis Plan shall be prepared by the Construction Engineer responsible for the employees conducting the work. The plan will reviewed by ESH Manager and the supervisor prior to starting the work.

6.2.6 Each employee working on the project must understand the hazards of the activity and will comply with the provisions of the work activity and Job Safety Analysis Plan.

6.2.7 A completed copy of the "Job Safety Analysis Plan" will be available for review by the employees and site safety personnel.

6.2.8 At the pre-construction/construction coordination meeting Supervision shall have a completed Job Safety Analysis Plan for construction activity scheduled to start for review and final approval by MK ESH Manager.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 The "Job Safety Analysis Plan" shall be submitted to the MK ESH Manager as noted above or as vendor data when required by contract documents.

8.2 The "Job Safety Analysis Plan" shall be maintained as a record by the Construction Engineer and kept at the construction site. These documents are subject to assessment by the MK ESH Manager.

9.0 ATTACHMENTS

9.1 Job Hazard Analysis

10.0 EXHIBITS

NONE

ATTACHMENT 9.1

MORRISON KNUDSEN CORPORATION
JOB HAZARD ANALYSIS

Date: Page _____ of _____	Time/Date of Implementation:
Contract No.:	Phase:
Contractor/Subcontractor:	Location:
Supervisor Signature:	Contractor/Representative Signature:

ACTIVITY	UNSAFE CONDITION ACTION OR OTHER HAZARD	PREVENTATIVE OR CORRECTIVE ACTION THAT WILL BE TAKEN

Approval: _____ Superintendent _____ Safety Coordinator _____ Project Manager/Engineer

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-202	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 24

TITLE: CONFINED SPACES

APPROVAL

William Piispanen — ES&H MANAGER — DATE 2/22/99

QUALITY MANAGER — DATE 2/22/99

Bob Verdon — CONSTRUCTION MANAGER — DATE 2.22.99

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TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 7

6.0 REQUIREMENTS 10

7.0 EXTERNAL INTERFACE 18

8.0 RECORDS 18

9.0 ATTACHMENTS 19

10.0 EXHIBITS 19

1.0 PURPOSE

1.1 The objective of this procedure is to set forth minimum requirements and procedures to protect the safety and health of employees who work in, about, and in connection with confined spaces.

2.0 SCOPE

2.1 These requirements are applicable to Morrison Knudsen (MK) construction activities involving entry into, work inside, or exiting from a confined space at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.146 OSHA, Permit Required Confined Spaces

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995

Morrison Knudsen Records Management Program, January 1996

3A-215, Energy Source Lockout/Tagout

3A-301, Respiratory Protection

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Air Monitor: An individual trained and knowledgeable in confined space entry. Minimum qualifications for such training will be determined by the MK Environment, Safety, and Health (ESH) Department. An Air Monitor will conduct air monitoring as appropriate.

4.2 Authorized Attendant: An employee whose sole work assignment is to monitor Authorized Entrants' activities and conditions within a confined space.

4.3 Acceptable Entry Conditions: The conditions that must exist in a permit space to allow entry and to ensure that employees involved with a permit-required confined space entry can safely enter into and work within the space.

4.4 Authorized Entrant: Any employee authorized to enter a confined space.

4.5 Blanking or Blinding: Absolute closure of a pipe, line, or duct.

4.6 Confined Space: Enclosure having **all** of the following:

4.6.1 Limited means for entry and exit, by reason of location, size, or number of openings. Is large enough and so configured that an employee can bodily enter and perform assigned work.

4.6.2 Unfavorable natural ventilation which could contain or produce dangerous air contaminants, flammable or explosive atmospheres, and/or oxygen deficiency.

4.6.3 A primary function other than human occupancy. Confined spaces may include, but are not limited to, storage tanks, compartments of ships, process vessels, pits, silos, vats, degreasers, reaction vessels, boilers, ventilation and exhaust ducts, sewers, tunnels, underground utility vaults, bins, tubs, tank trucks, pipelines, and excavations greater than four feet in depth.

4.7 Double Block and Bleed: A method used to isolate a confined space from a line, duct, or pipe by physically closing, tagging and locking out two in-line valves on a piping system, and opening a "vented-to-atmosphere" valve between them.

4.8 Emergency: Any occurrence including any failure of hazard control or monitoring equipment or events internal or external to the confined space which could endanger Authorized Entrants.

4.9 Emergency Response Personnel: Two or more qualified Contractor employees who are specifically trained to perform rescue operations and who are physically able to do so while using all the personal protective and emergency rescue equipment that may be required.

4.10 Enclosed Space: A space that meets one, two or three characteristics of a confined space, but not all four. A confined space entry work permit may or may not be required, depending on the evaluation and initial testing of the space by a qualified person. Work activities that may introduce additional hazards to be performed are also considered.

4.11 Engulfment: The surrounding and/or capturing of a person by divided particulate matter or liquid.

4.12 Entry: Ingress into a confined space which is defined as breaking the plane of the confined space opening with any part of the body and includes all periods of time in which the confined space is occupied.

4.13 Entry Permit: A written document for authorized employee entry into a confined space under defined conditions for a stated purpose during a specified period of time.

4.14 Flammable Atmosphere: An atmosphere containing a flammable gas or vapor concentration at or greater than 10 percent of a test gas or vapor's lower exposure limit (LEL).

4.15 High Hazard Entry: A confined space that is below the IDLH level but has been found to contain or have the following:

4.15.1 A high potential to contain a hazardous atmosphere ,flammable, oxygen - deficient or enriched, or concentration greater than the threshold limit value (TLV) or permissible exposure limit (PEL), or a material that could potentially engulf an Authorized Entrant;

4.15.2 An internal configuration such that an Authorized Entrant could be trapped by inwardly tapering walls or a floor that slopes or tapers to a smaller cross-section; or

4.15.3 Any other unacceptable safety or health hazards such as but not limited to excessive noise, heat stress, connecting steam lines, non-ionizing or ionizing radiation (e.g., dose equivalent of 100 mrem/hr or above for external exposure, airborne concentrations greater than 10 x derived air concentration (DAC) or surface contamination which exceed 100 x DOE surface contamination guidelines). Any confined space shall be considered a high hazard permit space if hazardous work (e.g., use of any compressed gas other than breathing grade air, use of solvents, heat producing processes such as welding, soldering, or grinding) is to be conducted in the space unless otherwise specified by the ESH Manager.

4.16 Hot Work: Work within a confined space that produces arcs, sparks, flames, heat, or other sources of ignition.

4.17 Immediately Dangerous to Life or Health (IDLH) Atmosphere: An atmosphere which contains sufficient concentration of gasses or vapors where such exposure to an individual will bring about immediate injury or death. The use of air-purifying respirators are prohibited in IDLH Atmospheres. Any condition that poses an

immediate or delayed threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space.

4.18 Lower Explosive Limit/Lower Flammable Limit (LEL/LFL) and Upper Explosive Limit/Upper Flammable Limit (UEL/UFL): The lower explosive limit is the minimum concentration of a flammable gas or vapor in air (usually expressed in percent by volume at sea level), which will ignite if an ignition source is present. Concentrations below this limit are too lean to burn. The highest concentration that can be ignited is its UEL. Above that concentration, the mixture is too rich to burn.

4.19 Line Breaking: The intentional opening of a pipe, line, or duct that is or has been carrying radioactive, flammable, corrosive, or toxic material; an inert gas, or any fluid at a pressure or temperature capable of causing injury.

4.20 Lockout/Tagout: The placement of a lock/tag on the energy isolating device in accordance with an established procedure, indicating that the energy isolating device will not be operated until removal of the lock/tag in accordance with an established procedure.

4.21 Low Hazard Entry: A confined space in which there is an extremely low likelihood that an IDLH or engulfment hazard could be present; and found to have acceptable safety health conditions (i.e., the atmosphere is considered low in concentration of toxic, flammable, oxygen-deficient or oxygen-enriched, atmospheres, and there are no other safety or health hazards). Activities that are to be conducted in the space shall be reviewed to determine their impact on the classification of the space.

4.22 Oxygen Deficient Atmosphere: An atmosphere containing less than 19.5 percent oxygen by volume. Normal air is 20.9 percent oxygen.

4.23 Oxygen Enriched Atmosphere: An atmosphere containing more than 23.5 percent oxygen by volume.

4.24 Permissible Exposure Limit (PEL): Limit which is the allowable air contaminant level established by the U.S. Department of Labor, Occupational Safety and Health Administration.

4.25 Plan of Day (POD): A meeting conducted prior to work each day. Plan of Day should be documented on the Supervior's or Engineering Daily Activity Report or similar supervision report.

4.26 Purging: The method by which gases, vapors, or other airborne impurities are displaced from a confined space. This may involve such measures as mechanical ventilation, steam ventilation, or introducing another gas such as nitrogen or carbon dioxide to inert flammable vapors.

4.27 Retrieval Line: A line or rope secured at one end to a worker's body harness, wristlets, or other secure point with the other end secured to an anchor point or lifting device located outside the entry portal of the confined space. The anchor point shall not be a motor vehicle. Retrieval lines must be of sufficient strength to remove an Authorized Entrant when necessary.

4.28 Threshold Limit Value (TLV): Refers to the maximum concentrations of substances and conditions under which it is believed that nearly all workers may be repeatedly exposed day after day without adverse effect.

4.28.1 TLVs shall be used as guidelines only, and shall be considered as one of many contributing factors in evaluating the overall degree of hazard for confined space work.

4.28.2 For the purposes of this procedure, TLVs and PELs have the same definition.

4.29 Toxic Atmosphere: An atmosphere found to contain a concentration of chemical or biological material which exceeds published known safe levels. Unknown atmospheres shall be considered toxic. Radiative contamination levels shall be considered in determining atmosphere toxicity.

4.30 Winch: A hand powered retrieval mechanism to provide for a less laborious removal of personnel from within a confined space.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for implementing, or supporting Supervision in implementing, specific tasks as follows:

5.1.1 Evaluating, categorizing, and hazardous atmosphere testing of each confined space prior to entry. Re-evaluation, additional characterization and hazardous atmosphere testing will be conducted as necessary.

5.1.2 Authorizing the "Confined Space Entry Permit" (Attachment 3).

5.1.3 Establishing ventilation requirements, if any.

5.1.4 Establishing air monitoring parameters based on expected contaminants.

5.1.5 Establishing special rescue measures, if any.

5.1.6 Updating equipment or procedures based on new information obtained from current guidelines or regulations.

5.1.7 Determining the level of safety and personal protective equipment required for personnel working in confined spaces.

5.1.8 Conducting regular site inspections to ensure work practices are in accordance with the requirements set forth in this procedure.

5.1.9 Investigating confined space incidents such as accidents, injuries, and/or over exposures and implementing corrective actions.

5.1.10 Ensuring appropriate confined space review by applicable group personnel.

5.1.11 Ensuring maintenance and calibration of confined space monitoring equipment.

5.1.12 Developing and implementing a documented initial training program for confined space Authorized Entrants, Authorized Attendants, and Supervision in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

5.1.13 Providing refresher training as needed.

5.1.14 Maintaining records for MK employees. Subcontractors will maintain, on-site, a file of subcontractor personnel training.

5.2 Supervision: Responsible for:

5.2.1 Ensuring ESH review of all confined spaces when necessary prior to entry.

5.2.2 Enforcing the confined space procedures and permit requirements.

5.2.3 Completing a Confined Space Entry Permit and ensuring it is authorized by the ESH Manager (or designee).

5.2.4 Ensuring Confined Space Entry Permits are posted and that a confined space Authorized Attendant is present during all entry activities.

5.2.5 Ensuring that all personnel have received proper training in confined space entry procedures and proper use of safety retrieval equipment in an emergency.

5.2.6 Ensuring that all necessary safety retrieval equipment for confined spaces is provided, on-site, operational, and properly deployed prior to entry.

5.2.7 Ensuring that appropriate measures are implemented so that confined spaces will not be inadvertently entered by employees, in the area. Measures include posting of confined spaces and the use of barricades.

5.2.8 Conducting entry-specific briefing to all Authorized Entrants prior to entry.

5.2.9 Consulting with the ESH Manager as necessary to determine additional requirements for confined space entry.

5.2.10 Ensuring all personnel listed on the permit and personnel signing or initialing the permit shall follow the guidelines of this procedure, Contractor procedures, and 29 CFR 1910.146.

5.3 Authorized Attendant: Refer to Attachment 1 for a detailed list of responsibilities for the Authorized Attendant.

5.4 Authorized Entrants: Responsible for:

5.4.1 Reviewing and to be knowledgeable of all provisions of the Confined Space Work Permit.

5.4.2 Understanding the hazards which may be faced during entry, recognizing the signs and symptoms of exposure and knowing the consequences of exposure.

5.4.3 Maintaining effective and continuous contact with the Authorized Attendant and notifying the Authorized Attendant when they are to evacuate a confined space.

5.4.4 Understanding the proper use of personal protective equipment, safety retrieval equipment, external barriers, and confined space hazard control measures.

5.4.5 Evacuating the confined space immediately when:

1. The Authorized Attendant orders evacuation
2. An alarm is activated, or
3. When additional hazards are suspected.

5.4.6 Reviewing entry permit and permit attachments prior to entry with Supervision and Authorized Attendant to resolve concerns and questions.

5.4.7 Notifying Authorized Attendant if additional hazards are suspected or detected in the confined space.

6.0 REQUIREMENTS

6.1 Hazard Identification: Before employees are permitted to enter a confined space, the hazards shall be identified and evaluated by Supervision in the Plan of Day meeting. The severity of hazards will be determined in order to classify the confined space entry as a low hazard entry or high hazard entry. Hazard evaluation criteria are included, but not limited to, those as shown on Attachment 2. The confined space will be evaluated when the conduct of work is suspected of introducing new hazards into the space. The results of this evaluation are documented on the confined space permit by Supervision and approved by the ESH Manager.

6.2 Atmospheric Testing

6.2.1 The Air Monitor shall perform atmosphere testing, and ensure proper authorization of the Confined Space Entry Permit for all confined space entries.

6.2.2 Atmosphere testing shall include, as a minimum, those for oxygen, flammability, and toxicity, as applicable. Radiation will be monitored by the Contractor as required. For low hazard entry, the frequency of testing will be specified on the permit. For high hazard entry, constant monitoring during periods of occupancy will be maintained. If applicable, retesting of the spaces shall be performed after flushing or purging of the confined space atmosphere. All testing will be representative for the entire work area of the confined space and shall include worst case areas and situations. Frequency of retesting will be the decision of the ESH Manager (or designee) and Authorized Attendant. The Contractor will be contacted as necessary to assist in evaluation and testing. Atmosphere testing results shall be recorded on the Confined Space Work Permit.

6.2.3 When testing for atmospheric hazards, test first for oxygen, then for combustible gases and vapors, and then for toxic gases and vapors.

6.3 Physical Hazard Control

6.3.1 In addition to atmospheric testing, the Air Monitor and Authorized Attendant shall take positive steps to ensure that employees are protected from other physical hazards, which would include, but are not limited to the following:

1. Entry and egress hazards and obstructions

2. Discharge of gasses, liquids, or solids into the confined space

3. Structural failure of the confined space
4. Falling objects
5. Falls through or from the roof, or from scaffolds, stairs, or ladders
6. Slipping and tripping hazards
7. Biological hazards accumulated in stagnant space
8. Slipping on wet, oily surfaces or colliding with objects in inadequately lighted interiors
9. Burns from heated installations or fire
10. Engulfment hazards
11. Physical stress (strains, fractures, etc.)
12. Insufficient or faulty personal protective equipment
13. Ionizing/non-ionizing radiation
14. Insufficient or faulty operations equipment and tools
15. Immediately after entrance covers are removed on a confined space, the opening shall be guarded in such a manner to prevent an accidental fall through the opening and protect personnel in the confined spaces from external hazards.
16. Heat Stress
17. Noise in excess of 85 DBA
18. Electrical hazards
19. Temperature extremes which may require additional protection or shorter work periods
20. Explosion
21. Emergency egress hazards
22. Lockout/tagout

6.4 Isolation

6.4.1 Before employees are permitted to enter a confined space, Supervision and Authorized Attendant shall take positive steps to:

1. De-pressurize the confined space.

2. Prevent accidental introduction into the confined space of hazardous materials through interconnecting equipment such as piping, ducts, vents, drains, or other means.

3. De-energize, lockout and tagout machinery in accordance with DOE INEEL procedures, mixers, agitators, or other equipment containing moving parts that are in a confined space.

4. Before a method of isolation is selected, Supervision shall consider the hazards that may exist or develop from temperature, pressure, flammability, or toxicity of the material in the piping, including reactions with cleaning or purging agents.

6.5 Ventilation

6.5.1 Before employees are permitted to enter a confined space, the space shall be mechanically ventilated, if deemed necessary by the MK ESH Manager.

6.5.2 Prior to ventilating a confined space, Supervision shall take positive steps to ensure that no pyrophoric materials or work practices that will ignite flammable vapor in the presence of air are present in the confined space.

6.5.3 When required, confined spaces shall be mechanically ventilated to prevent accumulation of:

1. Flammables in the atmosphere at concentrations above 10 percent of the LEL

2. Concentrations of combustible dusts

3. Toxic contaminants in the atmosphere above the TLV

4. Oxygen enriched or deficient atmospheres

6.5.4 Air or steam driven air movers shall be used to ventilate confined spaces. Use of electric powered ventilators and all portable power equipment, cords and lighting must be approved by the ESH Manager.

6.5.5 Only uncontaminated ambient air shall be used to ventilate a confined space.

6.5.6 The Authorized Attendant shall check periodically to ensure that contaminated air from a confined space is exhausted to a location where it presents no hazard.

6.5.7 Whenever possible, air movers shall be used with ducting to increase the efficiency of ventilation in the confined space and to prevent recirculation of contaminated air due to ventilation "short circuiting".

6.5.8 When two or more air movers are used for ventilation, all such units should be operated in the same flow direction to maximize efficiency.

6.5.9 Low hazard confined spaces may be entered without mechanical ventilation at the discretion of the MK ESH Manager.

6.5.10 Ventilated atmosphere shall be tested with the ventilation off and on.

6.5.11 Use of ventilation will not justify reclassification of the confined space.

6.6 Labeling and Posting

6.6.1 The Confined Space Entry Permit shall be posted as close to the point of entry as possible, and shall remain there for job duration. Permits will be retained by the ESH Manager.

6.6.2 All entrances to any confined space that could be entered shall be conspicuously posted and visible from all approaches by MK or Subcontractor responsible individual responsible for the entry. Signs shall include but not necessarily be limited to the following information:

- Danger
- Confined Space
- Enter by Permit Only
- Authorized Personnel Only

6.6.3 When a specific work practice is performed or specified safety equipment is necessary, an additional statement should be added, in large letters, to the warning sign, such as:

- Hazardous Atmosphere
- Respirator Required for Entry and/or Lifeline Required for Entry

6.6.4 Signs shall be legible at all times.

6.7 Protective Equipment

6.7.1 No entry will be permitted into confined spaces that have been found to contain atmospheres which are flammable, oxygen deficient or immediately dangerous to life and health. Emergency rescue entry by properly equipped and trained personnel is permitted if no expeditious alternative rescue method is available. Entry into an atmosphere classified "Immediately Dangerous To Life or Health (IDLH)" requires authorization of the ESH Director, the Project Engineer and the Contractor.

6.7.2 High Hazard Confined Space - When the atmosphere of the confined space to be entered is found to contain contaminants at concentrations above the TLV and PEL, and the concentration cannot be reduced by engineering controls (mechanical ventilation), protective equipment will be utilized in accordance to applicable standards and regulations.

1. Employees entering the confined space shall be equipped with airline respirators operated in the pressure-demand mode with a five minute minimum escape air pack. The breathing air (minimum Grade E) will be supplied from air compressors or compressed air cylinders. Negative pressure air-purifying respirators with appropriate filtering cartridges and five minute escape packs, may be utilized in non-IDLH atmospheres when contaminant levels do not exceed the PEL or TLV. The final decision on respiratory protection will be determined by the Contractor and the ESH Manager. A sign-in/sign-out log will be used. MK respirator wearers must be trained in accordance with procedure 3A-301, "Respiratory Protection".

2. Employees entering the confined space shall be equipped with body harness and lifelines as follows:

   A. When entry must be made, the body harness (reference ANSI Z117.1) shall be a Class III full-body parachute type that will suspend a person in an upright position. A man-rated hoisting device with fall arrest capability will be provided for lifting employees out of the space (ANSI Z117.1, 1995). The retrieval equipment will be supplied by the Contractor. The equipment must be inspected by the user prior to donning.

3. The Authorized Attendant shall stand by on the outside of the confined space ready to give assistance in case of an emergency until relieved. The Authorized Attendant shall not enter the confined space, but will notify rescue personnel. The Authorized Attendant will be present all times during confined space entry.

4. The Contractor shall provide two or more sets of approved, maintained, self-contained breathing apparatus ready for donning by emergency personnel.

5. The Authorized Attendant shall have available lifeline and harness and all other protective gear required for entry.

6. All Authorized Entrants shall use applicable protective equipment, such as head and eye protection, gloves, boots, and impervious clothing, as required by the nature of the potential hazards and atmospheric contaminants. Protective clothing types shall be specified by the ESH Manager on the permit.

6.7.3 Low Hazard Confined Space - When the atmosphere of the confined space is found to be below the action level of the most toxic contaminant present, and are acceptable LEL and oxygen levels, no special modification of the work procedure should be necessary, except as indicated below:

1. The nature of the work, such as mechanical cleaning of the tank surfaces, may require the use of respiratory protection, head and eye protection, gloves, boots, and impervious clothing.

2. Other physical stresses such as temperature extremes and excessive noise may require the use of specialized safety equipment in any confined space.

3. Change in work activities which may introduce hazardous chemicals or adjacent work which may pose hazardous conditions.

6.8 Illumination

6.8.1 When temporary lighting is used in confined spaces, the following requirements shall be met:

1. All lighting shall be intrinsically safe and approved for the location.

2. Extension cords used for temporary lighting shall be equipped with ground fault circuit interrupter (GFCI) connectors or meet requirements of assured grounding program. Switches shall be intrinsically safe and approved for the location.

3. Temporary lighting shall be equipped with adequate guards to prevent accidental contact with the bulb.

4. The lighting shall not be suspended by the electric cords, unless they are designed for this method of suspension.

5. Electric cords shall be kept clear of working spaces and walkways or other locations in which they may be exposed to damage or tripping hazard.

6. Temporary lighting and electric cords shall be inspected regularly for signs of damage to insulation and wiring.

6.9 Compressed Gas/Flame Producing Equipment

6.9.1 Cylinders of compressed gas of any type will not be taken into confined spaces. Self-contained breathing apparatus equipment is the only exception.

6.9.2 Welding equipment is not to be used in confined spaces containing or potentially containing flammable gases, vapors, combustible dusts, or combustible materials unless the confined space is properly ventilated.

6.9.3 Confined space Authorized Entrants are not to carry matches or cigarette lighters into spaces containing or possibly containing flammable gases, vapors or combustible dusts.

6.10 Communication

6.10.1 Supervision will decide the most appropriate and effective means of appropriate communication between the Authorized Entrants inside a confined space and the Authorized Attendant must be provided and used whenever atmospheric conditions of the confined space require the use of air-supplied respiratory protective equipment, lifelines and harnesses, or whenever employees inside a confined space are out of sight of the Authorized Attendant. This communication shall be either direct visual (from outside), direct verbal (normal voice), or provide radio.

6.10.2 All affected employees shall be trained in the use of such communication system and the system shall be tested before each use to confirm its effective operation prior to entry.

6.11 Training

6.11.1 All personnel assigned to work in or around confined spaces shall be trained in accordance with ANSI Z117.1-1995, and Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

1. Training should be repeated as necessary to ensure an acceptable level of personnel competence to safely perform confined space entry work.

2. All training shall be fully documented and records maintained in accordance with the requirements of Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

3. When emergency rescue equipment is required, employees shall be trained in its use.

6.12 A "Plan of the Day (POD)" meeting shall be conducted prior to entry with all Authorized Entrants and associated personnel participating.

6.13 Medical Evaluations

6.13.1 Medical evaluations will be conducted of all confined space Authorized Entrants in accordance with ANSI Z117.1-1995. These evaluations will, at a minimum, evaluate the physical and psychological suitability of the persons doing confined space work.

6.14 Entry into Diked Areas

6.14.1 Diked storage areas with dikes less than six feet in height may be entered without providing ventilation or performing atmospheric testing prior to entry for performance of routine operations providing that:

1. If line breaking is to be done in the diked area, a line breaking procedure will be established and followed.

2. Maintenance activities requiring cutting, welding, or hotwork shall require testing for the presence of flammable vapors in diked areas which may store flammable materials.

6.15 Rescue

6.15.1 The MK ESH Manager shall identify any special rescue measures in the "special instructions" section of the permit.

6.15.2 Evacuation - Under the following circumstances the Authorized Attendant shall call the worker(s) out of the confined space.

1. If the Authorized Attendant has to leave for any reason.

2. If an emergency signal or alarm is sounded.

3. If the Authorized Attendant detects or suspects presence of any harmful substance.

4. If the Authorized Attendant detects or suspects a breakdown in communications.

5. Upon entry of unauthorized personnel.

6. Upon malfunctioning of hazardous atmosphere monitoring equipment.

7. Upon detecting of previously unidentified hazards not addressed on entry permit.

6.15.3 Emergency Rescue - The Authorized Attendant shall initiate the following when rescue becomes necessary:

1. Only emergency rescue personnel are authorized to enter the confined space in an emergency.

2. The Authorized Attendant shall notify the Warning Communication Center (WCC) by radio net "10", phone 777, or by going for help.

3. The Authorized Attendant shall initiate rescue operations from outside of the confined space utilizing retrieval lines attached to the Authorized Entrants.

4. Upon arrival at the emergency site, the emergency squad will receive a situation report from the Authorized Attendant.

5. The Emergency Squad will enter the confined space with fully equipped life-support equipment to conduct the rescue.

6. Any injured employee will receive emergency treatment at the site and then if necessary, be transported to the Contractor's Health Services Center or appropriate off-site medical facility.

6.15.4 Supervision shall prearrange for rescue when required by the Confined Space Entry Permit in the "special instructions" section of the permit.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor provides emergency response personnel as required.

8.0 RECORDS

8.1 The purpose of the entry permit is to authorize work for specific dates and record air monitoring results. This record is maintained as a permanent, non-Quality Assurance (QA) record in accordance with Morrison Knudsen Records Management Program.

8.2 ESH Manager will maintain a copy of all confined space entry permits, to be maintained for one year.

8.3 ESH Manager will maintain a copy of the POD for the confined space entry, to be maintained for a period of one year.

9.0 ATTACHMENTS

9.1 Duties of Authorized Attendant

9.2 Confined Space Hazard Determination

9.3 Confined Space Entry Permit

10.0 EXHIBITS

NONE

DUTIES OF AUTHORIZED ATTENDANT

I. DUTIES OF AUTHORIZED ATTENDANT

A. Authorized Attendant never assigned to more than one confined space and dedicated to that task alone.

1. Reviewing the entry permit with the supervisor-in-charge and/or service supervisor and participates in the pre-entry briefing.

2. Monitoring activities inside and outside the confined space during work operations to ensure that it is safe for Authorized Entrants to remain in the space. Remains at entry point unless relieved by another Authorized Attendant.

3. Maintaining an ongoing and precise accounting of all Authorized Entrants in the confined space.

B. Recognizing and identifying potential confined space dangers such as physical, health (knowing the consequences and signs/symptoms of exposure), environmental, and external hazards.

1. Ensuring barriers are installed, as necessary, to protect authorized employees from hazards external to the confined space such as vehicles, water runoff, unauthorized personnel, etc.

C. Maintaining effective and continuous contact with Authorized Entrants through visual and/or audible methods. Knowing Emergency Response procedures.

1. Ordering Authorized Entrants to evacuate a confined space immediately when:

- An alarm from an air-testing or any other safety-related device is activated,
- The Authorized Attendant observes a condition which is not allowed on the entry permit,
- The Authorized Attendant detects behavioral effects of hazard exposure,
- The Authorized Attendant must leave the work station, or
- Additional hazards are suspected.

DUTIES OF AUTHORIZED ATTENDANTS
(Continued)

a. Takes the following actions, as necessary, when unauthorized persons approach or enter a confined space while entry is underway:

b. Warns the unauthorized person(s) away from or out of the space.

c. Requests the unauthorized person(s) to exit immediately if they have entered the space.

d. Informs the Authorized Entrants, service supervisor, and supervisor-in-charge if unauthorized persons have entered the space.

D. Summons rescue or other emergency services upon the determination that hazards internal or external to the confined space warrant an emergency escape from the space.

E. Ensures that appropriate communication methods for summoning emergency/rescue personnel is established prior to personnel entry into a confined space.

ATTACHMENT 9.2
PAGE 1 OF 2

CONFINED SPACE HAZARD DETERMINATION

I. Hazard Information

A. Hazards shall be identified for each confined space. The hazard evaluation is based on overall risk associated with entry. The evaluation shall be coordinated by Supervision. The hazard identification process shall include, but not be limited to a review of the following:

1. Possible atmospheric contamination by toxic or flammable vapors, or oxygen deficiency or excess.

2. Possible physical hazards.

3. The possibility of liquids, gases, or solids being generated during occupancy.

4. The isolation of occupants from rescue personnel.

B. The past and current usage of the confined space which may adversely affect the atmosphere of the confined space should be reviewed. The usage review should include, but not be limited to, a review of the following:

1. Material Safety Data Sheets (MSDS) on materials currently or previously held in the confined space.

2. Protective coatings which could trap materials, decompose, or deteriorate during work in the confined space.

3. Decomposition of residues or reaction with cleaning agents or heat from welding, brazing, or cutting (flame or abrasive) operations.

4. Operation of engine-powered equipment in or adjacent to the confined space.

C. The physical characteristics, configuration, and location of the confined space should be reviewed.

II. Hazard Evaluation

A. Scope of Hazard Exposure: Consideration should be given to how many and/or which employees are exposed or may be affected.

CONFINED SPACE HAZARD COMMUNICATIONS (Continued)

B. Magnitude of the Hazard: Consideration should be given to how much energy may be released, how toxic are the chemicals, quantity of materials which could be inadvertently introduced, etc.

C. Likelihood of hazard occurrence: Consideration should be given to the range of probability for the hazard to occur, i.e., certain to impossible.

D. Introduction of new hazards during work activity.

E. Consequences of the hazard occurrence: Consideration should be given to the most likely outcome(s) if the hazard occurs, i.e., space asphyxiation, etc.

F. Strategies for controlling the hazards: Control strategies, such as forced ventilation, use of personnel protective equipment, space monitoring, and isolation should be formulated to control the hazard.

G. Determine the source of the contaminant: If the source of the contaminant cannot be determined, precautions shall be adequate to deal with the worst possible condition which the contaminant could present in the confined space.

H. If there is the possibility that the confined space atmosphere can become IDLH while the work is in progress, procedures and equipment shall be provided to allow the employee to safely exit the confined space.

CONFINED SPACE ENTRY PERMIT

GENERAL INFORMATION Permit No._____

Space to be Entered:_____

Location/Description:_____

Purpose of Entry:_____

Authorized Duration of Permit: Date:_____ to _____
Time:_____ to_____

PERMIT SPACE HAZARDS (Indicate specific hazards with initials.)

_____ Oxygen deficiency (less than 19.5%)
_____ Oxygen enriched (greater than 23.5%)
_____ Flammable gases or vapors (greater than 10% of LFL)
_____ Airborne combustible dust (meets or exceeds LFL)
_____ Toxic gases or vapors (greater than PEL or TLV)
_____ Mechanical Hazards
_____ Electrical Hazards
_____ Chemical Hazards (material harmful to skin, eyes, respiratory tact, etc.)
_____ Engulfment
_____ Other:_____

EQUIPMENT REQUIRED FOR ENTRY AND WORK
Specify as required:
Personal Protective Equipment:_____
Respiratory Protection:_____
Atmospheric Testing/Monitoring:_____
Communication:_____
First Aid/CPR Responders:_____

PREPARATION FOR ENTRY (Check after steps have been taken.)

☐ Notification of affected groups of service interruption.
☐ Isolation Methods: ☐ Lockout/Tagout ☐ Blank/Blind
☐ Purge/Clean ☐ Inert ☐ Ventilate
☐ Atmospheric Test ☐ Barriers ☐ Other:_____
☐ Personnel Awareness:
☐ Pre-entry briefing on specific hazards and control methods
☐ Notify contractors of permit and hazard conditions
☐ Other:_____
☐ Additional Notifications required:_____

Problems encountered
To be used by attendants and entrants:

ROUTES OF EXPOSURE

☐ Inhalation ☐ Ingestion ☐ Skin Absorption

Rescue Personnel/Service	Rescue Equipment	Phone Number	Contact Method

AUTHORIZED ENTRANTS (List by name or attach roster)

Atmospheric Testing Frequency:_____

AUTHORIZED ATTENDANTS (List by name or attach roster)

TESTING	Acceptable Conditions	Result : am/pm	Result : am/pm	Result : am/pm	Result : am/pm	Result : am/pm	Result : am/pm
Time							
Oxygen level	>19.5% & <23.5%						
Flammability	<10% LEL/LFL						
H_2S	<10 ppm						
Toxic-(Specify)							
Cl_2	<0.5 ppm						
CO	<35 ppm						
SO_2	<2 ppm						
Heat	°F or °C						
Other							
Tester Initials							

AUTHORIZATION BY ENTRY SUPERVISORS

I verify review of this permit and verify that all necessary precautions have been taken to provide for a safe entry into and work in this confined space.

Printed Name	Signature	Date	Time

THIS PERMIT MUST BE POSTED AT THE CONFINED SPACE AND IS GOOD ONLY ON INDICATED DATES

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-203	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 5

TITLE: HOUSEKEEPING

APPROVAL

William Piispanen — ES&H MANAGER — 2/22/99 DATE

QUALITY MANAGER — 2/22/99 DATE

CONSTRUCTION MANAGER — 2.22.99 DATE

REV.	DATE	REVISION DESCRIPTION
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 5

8.0 RECORDS 5

9.0 ATTACHMENTS 5

10.0 EXHIBITS 5

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with guidelines for housekeeping required to maintain a clean and orderly workplace.

2.0 SCOPE

2.1 This procedure is applicable to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.22 and 1910.141, Housekeeping

29 CFR 1926.25, Housekeeping

3.2 Reference Documents

29 CFR 1910 Subpart E

3A-102, ESH Surveillances

3A-305, Sanitation

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Wet Process: Process or operation in the workplace which normally results in surfaces upon which employees may walk or stand becoming wet.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for ensuring inspection and surveillance, and providing assistance for implementation of housekeeping requirements according to the procedure.

5.2 Supervision: Responsible for ensuring provisions of the procedure are followed throughout each work period. Supervision is to request assistance from ESH for evaluation and interpretation of housekeeping requirements as necessary.

5.3 Employees: Responsible to keep their workplaces clean and orderly and follow all provisions of the housekeeping procedure.

6.0 REQUIREMENTS

6.1 General

6.1.1 Housekeeping - All places of employment shall be kept clean to the extent that the nature of the work allows.

6.1.1.1 The floor of every workroom shall be maintained in a clean and, so far as possible, a dry condition. Where wet processes are used, drainage shall be maintained, and false floors, platforms, mats, or other dry standing places shall be provided where practicable.

6.1.1.2 Every floor, working place, and passageway shall be kept free from protruding nails, splinters, holes, loose boards, or other construction debris.

6.1.1.3 Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard.

6.1.1.4 Containers shall be provided for collection and separation of trash, recycled waste and hazardous waste. These disposal containers shall be covered and emptied frequently at regular intervals in accordance with procedure 3A-305, "Sanitation." All containers shall be labeled with the type waste and contractor's name.

6.2 Construction

6.2.1 All scrap lumber, metal, nails or other construction debris shall be kept clear from work areas, walkways and stairways, in and around buildings or other structures as far as practical.

6.2.1.1 Safe removal of construction debris shall be provided at the end of each work shift.

6.2.1.2 Expendable items, loose tools and spare parts shall be stored or removed at the end of each work shift.

6.2.1.3 Equipment and supplies shall be adequately protected from weather, damage from movement of equipment or potential of fire or explosion.

6.2.1.4 Structural steel, poles, pipe, bar stock, and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent spreading or tilting.

6.2.1.5 Combustible and non-combustible waste shall be separated.

6.2.1.6 No accumulation of waste shall be permitted if the accumulation is unsafe, a fire hazard, or it interferes with fire access to the construction operations of existing facilities.

6.3 Inspection and Surveillance

6.3.1 Inspection and Surveillance for compliance to housekeeping requirements will be conducted and documented in accordance with procedure 3A-102, "ESH Surveillances".

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-204	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 6

TITLE: ILLUMINATION

APPROVAL

William Piispanen — ES&H MANAGER — DATE 2/22/99

[illegible] — QUALITY MANAGER — DATE 2/22/99

Bob Weston — CONSTRUCTION MANAGER — DATE 2.2.99

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 5

8.0 RECORDS 5

9.0 ATTACHMENTS 5

10.0 EXHIBITS 5

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with guidelines for illumination of the workplace.

2.0 SCOPE

2.1 This procedure is applicable to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.37, Means of Egress, General

29 CFR 1926.56, Illumination

3.2 Reference Documents

3A-102, ESH Surveillances

3A-217, Temporary Electrical Wiring

American National Standards Institute ANSI/IES RP7-1983, Practice for Industrial Lighting

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Foot-candle: A unit of measurement for the amount of light falling on a surface.

4.2 General Lighting: Lighting which produces uniform illumination throughout the area.

4.3 Illumination: To light up, make clear.

4.4 Intensity: An indication of how much light a source gives off in a given direction.

4.5 Supplementary Lighting: Lighting used to provide higher illumination levels, or to restore general lighting levels in case of failure or insufficiency, within a restricted or localized area.

5.0 RESPONSIBILITIES

5.1 Environmental, Safety, and Health (ESH) Manager: Responsible for general management and oversight of this procedure.

5.2 Safety Specialist: Responsible for monitoring compliance with provisions of this procedure by conducting periodic inspections and surveillance.

5.3 Supervision: Responsible for ensuring that adequate illumination, in accordance with the provisions of this procedure, is maintained within the workplace.

5.4 Employees: Responsible for notifying Supervision of areas suspected not to be in compliance with provisions of this procedure.

6.0 REQUIREMENTS

6.1 General: Construction areas, ramps, runways, corridors, offices, shops and storage areas shall be lighted to not less than the minimum illumination intensities listed in "General Construction - Minimum Illumination Requirements" (Attachment 1) while any work is in progress.

6.2 Other Areas: Recommended values of illumination for areas or operations not listed in Attachment 1 are found in the American National Standard ANSI/IES RP7-1983, "Practice for Industrial Lighting".

6.3 Exits: Every exit sign shall be suitably illuminated by a reliable light source giving a value of not less than 5 foot candles on the illuminated surface in accordance with 29 CFR 1910.37.

6.4 Measurement: Quantity of illumination will be measured in foot candles with a direct reading light meter calibrated in accordance to manufacturer specifications. Frequency of monitoring will be at the discretion of the ESH Manager.

6.5 Corrective Action: When the quantity of illumination is deemed to be in violation of this procedure, supplementary electrical lighting in accordance with procedure 3A-217, "Temporary Electrical Wiring," will be installed until the general lighting conditions are considered sufficient.

6.6 Inspections and surveillance for monitoring compliance to this procedure will be conducted and documented in accordance with procedure 3A-102, "ESH Surveillances".

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

9.1 General Construction - Minimum Illumination Requirements

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
PAGE 1 OF 1

GENERAL CONSTRUCTION

Minimum Illumination Requirements

INTENSITY (Foot-Candles)	AREA OF OPERATION
5	General construction area lighting
3	General construction areas, Concrete placement, Excavation, and Waste areas
	Accessways Active storage areas Loading platforms Refueling and field maintenance areas
5	Warehouses Corridors Hallways Exitways
	Tunnels Shafts General underground work areas (exception: A minimum of ten foot-candles is required at tunnel and shaft headings during drilling, mucking and scaling. Bureau of Mines approved cap lights are acceptable for use in the tunnel headings.)
10	General construction plants and shops: batch plants Screening plants Mechanical and electrical equipment rooms Carpenter shops Rigging lofts and active storerooms Barracks and living quarters Lockers and dressing rooms Mess halls Indoor toilets and workrooms
30	First-aid stations Infirmaries Offices
60-80	Optional light intensity for shops performing fine finishing work and blueprint review

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-205	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 10

TITLE: PERSONAL PROTECTIVE EQUIPMENT

APPROVAL

William Piispanen — ES&H MANAGER — 2/22/99 DATE

QUALITY MANAGER — 2/22/99 DATE

Bob Wisdom — CONSTRUCTION MANAGER — 2.22.99 DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3
2.0 SCOPE 3
3.0 REFERENCES 3
4.0 DEFINITIONS 4
5.0 RESPONSIBILITIES 4
6.0 REQUIREMENTS 5
7.0 EXTERNAL INTERFACE 9
8.0 RECORDS 9
9.0 ATTACHMENTS 9
10.0 EXHIBITS 9

1.0 PURPOSE

1.1 This procedure establishes requirements for protecting employees from potentially harmful substances or physical hazards.

2.0 SCOPE

2.1 This procedure is applicable to all Morrison Knudsen (MK) construction activities where potential exposure to chemical hazards, radiological hazards, or physical hazards/stresses may be encountered in a manner capable of causing injury, illness, or impairment at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Occupational Safety and Health Standards

29 CFR 1926, Safety and Health Regulations for Construction Standards

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 17

3A-201, Job Safety Analysis

3A-301, Respiratory Protection

3A-302, Hearing Conservation

3A-207, Walking-Working Surfaces

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

American National Standard Institute's:

- Standards for Occupational and Educational Eye and Face Protection, Z87.1-1989
- Standard Safety Requirements for Industrial Head Protection, Z89.1-1997

- Standards for Men's Safety Toed Footwear, Z41-1991
- Standards for Electrical Hazards, J 6 Series

Guidelines for the Selection of Chemical Protective Clothing, American Conference of Governmental Industrial Hygienists, 1985

4.0 DEFINITIONS

4.1 Personal Protective Equipment (PPE): Includes, but is not limited to, protective clothing, boots, respirators, face shields, safety glasses and goggles, hard hats, and gloves.

5.0 RESPONSIBILITIES

5.1 Environmental, Safety and Health (ESH) Manager: Responsible for providing support to supervisors in evaluating work tasks and specifying Personal Protective Equipment requirements.

5.2 Supervision: Responsible for the following:

5.2.1 Ensuring that Personal Protective Equipment is used in accordance with the requirements of this procedure and in accordance with procedure 3A-201, "Job Safety Analysis".

5.2.2 Enforcing the proper use and maintenance of Personal Protective Equipment.

5.2.3 Requesting assistance from the MK ESH Manager for evaluation of the use of Personal Protective Equipment and the interpretation of applicable regulatory requirements as needed.

5.2.4 Assuring employees are trained in the proper use and maintenance of Personal Protective Equipment, as applicable.

5.2.5 Assuring that work areas which require the use of Personal Protective Equipment are posted and/or identified, as applicable.

5.2.6 Assuring Personal Protective Equipment required to perform work in a safe manner will be readily available to all affected personnel.

5.3 Employees: All employees are responsible for the following:

5.3.1 Complying with all provisions of this procedure, applicable regulations, and Personal Protective Equipment requirements on the Construction Safe Work Permit.

5.3.2 Maintaining assigned Personal Protective Equipment in good condition and reporting Personal Protective Equipment which is damaged or defective to Supervision.

5.3.3 Storing Personal Protective Equipment in designated areas as directed by Supervision.

5.3.4 Using Personal Protective Equipment as trained and not altering its design or compromising its integrity in any fashion.

6.0 REQUIREMENTS

Engineering and administrative controls are the preferred methods of protecting employees from hazards. Personal Protective Equipment is to be used only where engineering and administrative controls are not practical.

6.1 Eye and Face Protection: The use of approved protective eye equipment and face protection equipment is required for all construction and work activities and shall:

6.1.1 Meet the requirements in the "ANSI Standard for Occupational and Educational Eye and Face Protection, Z87.1-1989".

6.1.2 Provide adequate protection from hazards for which the protectors are designed.

6.1.3 Provide comfort and not interfere with movement of wearer.

6.1.4 Be disinfected and easily cleaned.

6.1.5 Goggles, spectacles, face shield, or other eye protection worn by employees requiring corrective glasses shall meet the same requirements.

6.1.6 Eye protection shall be worn at all times for every work and/or construction activity.

6.1.7 Selection

6.1.7.1 Minimum eye protection shall be ANSI Z87.1-1989 approved safety glasses with approved side shields.

6.1.7.2 Exhibit 1 from 29 CFR 1926.102 and Material Safety Data Sheet information shall be used as a guide in determining the appropriate eye and face protection.

6.2 Respiratory Protection

6.2.1 Approved respiratory protection shall be used to protect employees from the acute and/or chronic health effects of hazardous atmospheres potentially encountered in the environment and as specified in procedure 3A-301, "Respiratory Protection".

6.3 Head Protection: The use of approved hard hats is required to protect workers from falling and flying objects. The hard hats shall meet requirements established in "American National Standard Safety Requirements for Industrial Head Protection", Z89.1-1997.

6.3.1 General Requirements

6.3.1.1 All hard hats shall be worn in such a manner that the hat brim is positioned in front at all times with the exception of when fitted with a welding hood attachment.

6.3.2 Specific Requirements - Hard hats shall be worn at all times:

6.3.2.1 In all construction/work areas.

6.3.2.2 Exceptions are office areas, which include walking between administrative buildings or from a vehicle to an administrative building (provided a construction area or shop is not traveled through), radiation zones and where there are no overhead hazards, rest rooms, lunchrooms, cabs of trucks, and when vision may be impaired for crane operators during a lift (but only if there are no overhead hazards present due to falling objects).

NOTE: All personnel are required to wear hard hats when working on or entering construction sites. These sites will be designated by barriers and posted signs.

6.3.2.3 Hard hats worn underneath anti-contamination suits in radiological areas shall be monitored and disposed of as specified in BNFL Inc. Preliminary Safety Analysis Report.

6.4 Foot Protection

6.4.1 The use of ANSI Z41.1-1983 approved hard-toe and/or chemical-resistant footwear is required when work operations present hazards such as falling objects, pinch points, or material handling which may result in injury to the foot. Otherwise, sturdy and durable leather work boots (with coverage above the ankle) in good repair shall be worn. Under no condition shall running shoes, tennis shoes, dress/casual shoes, or sandals be worn in any construction/work area.

6.4.2 During extreme cold weather, sturdy, insulated boots, with coverage above the ankle may be worn.

6.4.3 Metatarsal foot protection shall be used with all ground operated earth-compacting devices, except long handle rollers.

6.5 Electrical Hazards Protection

6.5.1 Rubber protective equipment for electrical workers shall, as a minimum, meet requirements established in the ANSI J6 series of standards.

6.6 Hearing Protection

6.6.1 Whenever it is not feasible to reduce the noise levels or duration of exposure below permissible exposures, hearing protective devices shall be provided and worn in accordance with procedure 3A-302, "Hearing Conservation".

6.6.2 Hearing protection requirements shall be determined by ESH Manager and shall be specified on the Construction Safe Work Permits or by posting of signs at permanent work sites, such as shops.

6.6.3 Double hearing protection (plugs and muffs) may be specified by ESH Manager for specific tasks, as warranted.

6.6.4 Insert-type ear plugs should be kept clean and usable.

6.7 Body Protection

6.7.1 Minimum clothing requirements for any construction site shall include work pants that cover the entire lower body (from the waist to the work boots) and

a workshirt that covers the entire upper body (from waist to neck). Short-sleeve work shirts will be allowed, provided the sleeves are no shorter than four inches from the shoulder.

6.7.2 The use of appropriate protective clothing and boots is required when working in operations which present chemical hazards, or physical hazards such as hot surfaces, sharp edges or abrasive materials. The selection of the appropriate protective garment depends on the type and physical state of the chemical(s) present. The ESH Manager shall determine the appropriate garment best suited to an operation. The requirements will be specified on the Construction Safe Work Permits.

6.8 Hand and Finger Protection

6.8.1 As a minimum, rings shall not be worn when:

6.8.1.1 Performing work on live electrical circuits.

6.8.1.2 Handling heavy materials which could mash the ring.

6.8.1.3 Handling wood with any nails or screws.

6.8.1.4 When there is a possibility of the ring being caught in machinery.

6.8.1.5 When restricted by a Construction Safe Work Permits due to particular hazards, such as contamination.

6.8.1.6 Any areas where metal objects are restricted.

6.8.1.7 When climbing is required.

6.8.2 All jewelry shall be removed when:

6.8.2.1 Performing live electrical work.

6.8.2.2 Any areas where metal objects are restricted.

6.8.3 Gloves must be selected according to the hazard/environment expected, and where not specified, the following minimum protection shall apply.

6.8.3.1 Welders' gloves are required when performing non-electrical hotwork or when handling hot material.

6.8.3.2 Handling wire rope shall require a minimum of one pair of leather-palmed gloves.

6.8.3.3 Gloves shall not be worn when there is a possibility of the glove being caught in machinery such as drill presses, or bench and pedestal grinders.

6.8.3.4 Suitable gloves shall be worn when handling rough and unfinished lumber, rusty or sharp metal, and glass; hand placement of rip-rap; moving drums or compressed gas cylinders; and when handling certain chemicals.

6.9 Fall Protection

6.9.1 The use of appropriate fall protection shall be in accordance with procedure 3A-223, "Fall Protection".

6.10 Personal Protective Equipment Maintenance and Inspection

6.10.1 All Personal Protective Equipment shall be maintained and used in a safe manner. Each employee shall inspect Personal Protective Equipment at time of issuance and prior to use for verification of satisfactory conditions.

7.0 EXTERNAL INTERFACE

7.1 Site characterization and Job Safety Analysis requirements provided by the INEEL M&O contractor shall be considered by MK in specifying Personal Protective Equipment requirements.

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

10.1 Table E-1 Eye and Face Protector Selection Guide.

EXHIBIT 10.1
PAGE 1 OF 1

STANDARDS AND INTERPRETATIONS
TABLE E-1: EYE AND FACE PROTECTOR SELECTION GUIDE

1. GOGGLES, Flexible Fitting, Regular Ventilation
2. GOGGLES, Flexible Fitting, Headed Ventilation
3. GOGGLES, Cushioned Fitting, Rigid Body

*4. SPECTACLES, Metal Frame, with Sideshields

*5. SPECTACLES, Plastic Frame, with Sideshields

6. SPECTACLES, Metal-Plastic Frame, with Sideshields

7. WELDING GOGGLES, Eyecup Type, Tinted Lenses (Illustrated)

7A. CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses (Not Illustrated)

8. WELDING GOGGLES, Coverspec Type, Tinted Lenses (Illustrated)

8A. CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses (Not Illustrated)

9. WELDING GOGGLES, Coverspec Type, Tinted Plate Lens

10. FACE SHIELD (Available with Plastic or Mesh Windows)

11. WELDING HELMETS

APPLICATIONS		
OPERATIONS	HAZARDS	RECOMMENDED PROTECTORS: Bold Type Numbers Signify Protection
ACETYLENE-BURNING ACETYLENE-CUTTING ACETYLENE-WELDING	SPARKS, HARMFUL RAYS MOLTEN METAL, FLYING PARTICLES	7, 8, 9
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	2, 10 (For severe exposure add 10 over 2)
CHIPPING	FLYING PARTICLES	1, 3, 4, 5, 6A, 7A, 8A, 10
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	9, 11 (11 in combination with 4, 5, 6 in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	7, 8, 9 (For Severe exposure add 10)
GRINDING-LIGHT	FLYING PARTICLES	1, 3, 4, 5, 6, 10
GRINDING-HEAVY	FLYING PARTICLES	1, 3, 7A, 8A (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	2 (10 when in combination with 4, 6, 8)
MACHINING	FLYING PARTICLES	1, 3, 4, 5, 6, 10
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	7, 9 (10 in combination with 4, 6, 8, in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	1, 3, 4, 5, 10

*Non-side shield spectacles are available for limited hazard use requiring only frontal protection

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-206	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: LADDERS/SCAFFOLDING

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TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 13

8.0 RECORDS 13

9.0 ATTACHMENTS 13

10.0 EXHIBITS 13

1.0 PURPOSE

1.1 This procedure is to provides requirements for the safety of employees when work requires the use of ladders and/or scaffolding and also may include aerial lifts.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities work at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.28, Safety Requirements for Scaffolding

29 CFR 1926 Subpart X, Stairways and Ladders

29 CFR 1926.451, Scaffolding

29 CFR 1926.453

ANSI A92.2-1969 "Vehicle Elevating and Rotating Platforms"

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Morrison Knudsen Records Management Program, January 1996

3A-102, ESH Surveillances

3A-112, Competent Person Requirements

3A-207, Walking-Working Surfaces

3A-223, Fall Protection

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Competent Person

4.1.1 A definition of "Competent Person" for ladders and scaffolding [per 29 CFR 1926.451(h)(14), Scaffolding, Subpart L, 1926.1053(b)(15), Ladder Inspections, and 1926.1060(a)(1), Training Requirements for Stairways and Ladders, Subpart X] can be found in procedure 3A-112, "Competent Person Requirements".

4.2 Ladders

4.2.1 Ladder: A device used to climb to levels above or below ground level. It usually consists of two vertical side rails spaced 16 inches apart, with horizontal rungs or steps evenly spaced between 10 and 14 inches apart, reference 29 CFR 1926 Subpart X Appendix A.

4.2.2 Step Ladder: A portable, foldable, self-supporting device, consisting of side rails and horizontal flat steps, spaced 10 to 14 inches apart, with braces on the sides and cross bracing in the back. It is normally used for short term work at an elevated level.

4.2.3 Extension Ladder: A portable, adjustable in length ladder, with suitable means of locking the ladder sections together.

4.2.4 Fixed Ladder: A ladder that cannot be readily moved or carried because it is an integral part of a building or structure.

4.2.5 Side-step Ladder: A fixed ladder that requires a person getting off at the top to step to the side of the ladder side rails to reach the landing.

4.2.6 Through Fixed Ladder: A fixed ladder that requires a person getting off at the top to step between the side rails of the ladder to reach the landing.

4.2.7 Individual-rung/step Ladders: A ladder without a side rail or center rail support. Such ladders are made by mounting individual steps or rungs directly to the side or wall of the structure.

4.2.8 Job-made Ladder: A ladder that is fabricated by employees, typically at the construction site, and is not commercially manufactured. This definition does not apply to any individual-rung/step ladders, reference 29 CFR 1926 Subpart x Appendix A.

4.2.9 Portable Ladder: A ladder that can be readily moved or carried.

4.2.10 Step Stool (ladder type): A self supporting, foldable, portable ladder nonadjustable in length, 32 inches or less in overall size, with flat steps and without a pail shelf, designed to be climbed on the ladder top cap as well as all steps. The side rails may continue above the top cap.

4.3 Scaffold: Any temporary elevated platform and its supporting structure used for supporting workers or material, or both.

4.4 Toeboard: A horizontal barrier, a minimum of 3 inches in height, secured along the sides and ends of a platform to guard against the falling of material.

4.5 Working Load: The load imposed by the combination of men, materials, and equipment.

4.6 Aerial Lift: A vehicle mounted aerial device used to lift personnel to job sites above ground which may include(1) extension boom platforms, (2) articulating boom platforms, (3) aerial ladders, and (4) vertical towers.

5.0 RESPONSIBILITIES

5.1 Environmental, Safety and Health (ESH) Manager: Responsible for:

5.1.1 Assuring performance of periodic inspections, verifying that the requirements of this procedure are being followed.

5.1.2 Validating the inspection reports and maintaining inspection records as required by procedure 3A-102, "ESH Surveillances".

5.2 Supervision: Responsible for:

5.2.1 Ensuring resources are provided for implementation of this procedure.

5.2.2 Ensuring compliance of this procedure.

5.2.3 Initiating and authorizing any installations and/or removals of ladders and scaffolds in accordance with this procedure.

5.2.4 Assigning a sufficient number of competent personnel to monitor the efficient and safe installation and removal of ladders and scaffolds.

5.2.5 Assuring that training or retraining is conducted in accordance with OSHA 29 CFR 1926.1060, "Training Requirements."

5.3 All Employees: Responsible for complying with the requirements of this procedure. No employee shall attempt to use a ladder or scaffold that has a "DO NOT USE" tag affixed.

5.4 Aerial Lift Operators: Operators of aerial lifts must be trained in the proper operation and inspection of the type of device used. Operators must be able to read and understand control instructions. Operators should also be trained procedures to be used to prevent accidents and injuries during operatiions.

6.0 REQUIREMENTS

6.1 General Requirements

6.1.1 A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment, or personnel hoist is provided.

6.1.2 All stairway, ladder and scaffold protection systems shall be provided before employees begin work that necessitates the installation and use of stairways, ladders, and their respective fall protection systems.

6.1.3 Installation and removal of ladders and or scaffolds, with the exception of step ladders, will be under the authorization of a competent person.

6.1.4 Defective ladders/scaffolds shall be tagged "DO NOT USE" and repaired and/or removed from the job site.

6.1.5 All personnel who use ladders and scaffolds shall be trained in accordance with OSHA 29 CFR 1926.1060. Retraining shall be provided as necessary so that the employee maintains the understanding and knowledge acquired in the previous training, or when new requirements necessitate retraining. Supervision shall ensure documentation and maintenance of training records.

6.1.6 Fall protection shall be in accordance with procedure 3A-223, "Fall Protection."

6.1.7 Aerial lift work and motorized personnel-lift platform work shall be performed in compliance with procedure 3A-209, Section 6.11, "Aerial Lifts."

6.2 Ladder Inspection and Use

6.2.1 Ladders shall be inspected by a competent person for visible defects on a periodic basis and after any occurrence that could affect their safe use. Ladders with broken or missing rungs or steps, broken or split rails, or other

faulty or defective construction shall be immediately tagged "DO NOT USE", or made completely inoperable, or removed from the job site, or repaired.

6.2.2 Ladder repairs shall restore the ladder to a condition meeting its original design criteria, before the ladder is returned to use.

6.2.3 All extension and fixed ladders shall be secured at both the top and bottom (e.g., tied, blocked, or otherwise secured) to prevent them from being displaced.

6.2.4 Ladders shall be placed on a firm level base and the area around the top and bottom of the ladders shall be kept clear.

6.2.5 The use of portable metal ladders is prohibited where there is danger of electric shock.

6.2.6 All ladder surfaces and components shall be smooth and free of snags in order to prevent injury to employees and their clothing.

6.2.7 When ladders are used for access to an upper landing surface, the ladder side rails shall extend at least 3 feet above the upper landing surface to which the ladder is used to gain access; or, when such an extension is not possible because of the ladders length, then the ladder shall be secured at its top to a rigid support that will not deflect, and a grasping device, such as a grabrail, shall be provided to assist employees in mounting and dismounting the ladder. In no case shall the extension be such that ladder deflection under a load would, by itself, cause the ladder to slip off its support.

6.2.8 Always face a ladder when ascending or descending.

6.2.9 Always have free use of both hands while ascending or descending ladders.

6.2.10 Ladders shall not be painted in such a manner as to hide the grain structure or defects. Ladders may be coated with a suitable transparent preservative material.

6.2.11 The side rails and cleats or rungs of ladders must be kept clear and free of lines, hoses, cables, wires, oil, grease, and debris, except for securing the ladder.

6.2.12 Ladders should not be used for working except for limited periods of time. Where work requires the use of tools and materials, or the job is of considerable duration, it is advisable to use a platform, scaffold or some other acceptable working base.

6.2.13 Step ladders should not be used for access and egress from one level to another, unless prior approval from MK ESH Manager has been obtained.

6.2.14 The top two steps of a stepladder shall not be used as a step.

6.2.15 All work performed off of a ladder above 6 feet (work level) shall require 100% tie-off to an anchorage, structural member, or substantial object. Work performed off of a step ladder does not require fall protection.

6.2.16 Aisles, doorways, roadways, and other points of access shall be kept clear to permit free passage of employees. Otherwise the area shall be barricaded and an alternate point of access shall be provided.

6.2.17 Ladders shall not be loaded beyond the maximum intended load for which they were built, nor beyond their manufacturer's rated capacity.

6.2.18 Ladders shall be used only for the purpose for which they were designed.

6.2.19 Non-self-supporting ladders shall be used at an angle such that the horizontal distance from the top support to the foot of the ladder is approximately one-quarter of the working length of the ladder between the foot and the top support.

Wood job-made ladders with spliced side rails shall be used at an angle such that the horizontal distance is one-eighth the working length of the ladder.

Fixed ladders shall be used at a pitch no greater than 90 degrees from the horizontal, as measured to the back side of the ladder.

6.2.20 Fixed ladders shall be provided with cages, wells, ladder safety devices, or self-retracing lifelines where the length of the climb is 24 feet or greater above lower levels.

Additional requirements and information on fixed ladders, cages, wells, ladder safety devices, or self retracing lifelines are listing in CFR 1926.1056.

6.3 Scaffold Requirements

6.3.1 No scaffold shall be erected, modified, moved, dismantled, or altered except under the supervision of a competent person.

6.3.2 The competent person shall post the scaffold with "Scaffold Under Construction" during erection and modification of the scaffolding (Exhibit A).

Prior to initial use a "Scaffold Safety Tag" (Exhibit B) shall be signed and attached to the scaffold.

6.3.3 All scaffolds shall be supported by a base plate on a firm, sound, stable base level, and capable of carrying the maximum intended load without settling or displacement.

6.3.4 All scaffolding shall have an access ladder or equivalent safe access.

6.3.5 Guardrails and toeboards shall be installed on all open sides and ends of platforms more than 10 feet above the ground or floor and on those scaffolds 4 feet or more in height having a minimum horizontal dimension in either direction of less than 45 inches. Any exceptions to this requirement must be approved by an ESH Manager.

6.3.6 Guardrails shall be nominal 2 inches by 4 inches or the equivalent, 42 inches high measured from the top of guardrail to platform surface, with a midrail half way between the toprail and the landing. Vertical supports shall be at intervals not to exceed eight feet. This protective rail should be constructed to allow for delivery of material and personnel. However, the opening should be temporary and must not weaken the remainder of the safety rail. Equivalent materials shall be capable of withstanding 200 pounds of side force when installed.

6.3.7 Where persons are required to work or pass under the scaffold, scaffolds shall be provided with a screen between the toeboard and the guardrail extending along the entire opening consisting of No. 18 gauge U.S. Standard wire, one-half inch mesh, or the equivalent.

6.3.8 Suspended scaffolding or staging shall be fastened to prevent it from swaying.

6.3.9 All scaffolds shall be adequately designed to carry, without failure, four times the maximum intended load. At no time shall any scaffold be overloaded.

6.3.10 All scaffolds must be maintained in safe condition. If scaffolds are damaged or weakened from any cause, the scaffold safety tag shall be removed and tagged with a danger tag and immediately repaired. All damaged or defective scaffold parts shall be promptly removed from the job site.

6.3.11 Scaffolds shall not be used for the storage of material except material being currently used.

6.3.12 All lumber used in construction of scaffolds shall be dressed and must be sound, straight-grained, free from cross-grain, shakes and large, loose or

dead knots. The lumber uses must also be free from dry rot, large checks, work holes or other defects impairing its strength or durability.

6.3.13 All load-carrying timber members of scaffold framing shall be a minimum of 1,500 fiber (Stress Grade) construction grade lumber. All dimensions are nominal sizes as provided in the American Lumber Standards, except where rough sizes are noted, only rough or undressed lumber of the size specified will satisfy minimum requirements.

6.3.14 All planking shall be Scaffold Grades, or equivalent, as recognized by approved grading rules for the species of wood used. Manufactured scaffold planks are acceptable.

6.3.15 Scaffold planks shall extend over their end supports not less than 6 inches nor more than 12 inches.

6.3.15.1 All planking shall be secured from movement (cleating may be acceptable for some applications).

When planks are overlapped it shall be a minimum of 12 inches.

6.3.15.2 All nails used in the construction of scaffolds, staging and supports must be of ample size and length and shall not be subjected to a straight pull in any scaffold. Nails must be used in sufficient quantities at each connection to develop the designed strength of the scaffold.

6.3.16 When taking down scaffolds, all nails shall be immediately withdrawn from the lumber.

6.3.17 The poles or vertical legs of scaffolds must be securely and rigidly braced to prevent swaying and displacement.

6.3.18 When materials are being hoisted up on a scaffold, a tag line must be used to prevent the material from striking against the scaffold, unless hoisting equipment is arranged so there is no danger of material striking the scaffold.

6.3.19 Scaffolds must be cleared of all tools, loose material and rubbish at the end of each working day.

6.3.20 Workers shall not be permitted on scaffolds which are covered with ice or snow (except to clean off or make safe). Clinging ice shall be removed from all guardrails and uprights and the planking scraped and sanded to prevent slipping.

6.3.21 Employees shall not work on scaffolds during storms and high winds.

6.3.22 No scaffold shall be erected or work performed from a scaffold that is within 10 feet of an unprotected energized power line.

6.3.23 Structural components of a manufactured scaffold system shall not be mixed with other manufacturers components (ladders may be an exception to this requirement).

6.3.24 Additional requirements and specifications are found in CFR 1926 subpart L.

6.4 Steel and Patented Scaffolds

6.4.1 Inspect all scaffold parts before using. Never use scaffold parts that have been damaged or destroyed.

6.4.2 Keep all equipment in good repair. Avoid using rusted equipment. The strength of rusted equipment is not known.

6.4.3 The competent person shall inspect scaffolds on a daily basis.

6.4.4 Provide mud sills for scaffold posts and use base plates.

6.4.5 Use adjusting screws instead of blocking to adjust the scaffold if uneven grade conditions exist. Exceptions to this procedure must be approved by an ESH Manager.

6.4.6 Plumb and level all scaffolds as the erection proceeds. Do not force braces to fit. Level the scaffold until proper fit can be made easily.

6.4.7 Fasten all braces securely. Do not climb braces. Braces between scaffold sections shall be pinned or bolted together.

6.4.8 On wall scaffolds, place and maintain anchors securely between structure and scaffold at least every 30 feet in length and 25 feet of height.

6.4.9 Equip all planked or staged areas with proper guardrails and toeboards.

6.4.10 Spacing of panels or frames shall be consistent with the loads imposed.

6.4.11 Access to all built-up scaffolds must be provided by one or more of the following means:

6.4.11.1 Manufactured portable ladders.

6.4.11.2 Access ladders positioned so that their use will not have the tendency to tip the scaffold. Mating spacing between rungs of such access ladders shall not exceed 16-1/2 inches provided part was designed for climbing.

6.4.11.3 "Hook-on" or attachable metal ladders specifically designed for use in conjunction with patented types of scaffolds.

6.4.11.4 Step or stair type accessories specifically designed for use with patented types of scaffolds. Cross braces shall not be used as a means of access.

6.5 Rolling Scaffolds

6.5.1 Do not ride rolling scaffolds.

6.5.2 All material and equipment on platform shall be removed or secured before moving scaffold.

6.5.3 All caster brakes shall be applied when scaffolds are not being moved.

6.5.4 Do not attempt to move a rolling scaffold from the top. Watch out for holes in the floor and overhead structures.

6.5.5 Do not extend adjusting screws on rolling scaffolds more than twelve inches.

6.5.6 The working platform height of a rolling scaffold must not exceed four times the smallest base dimension unless guyed or otherwise stabilized.

6.5.7 A ladder or stairway shall be provided for proper access and egress and shall be affixed or built into the scaffold and so located that when it is used it will not have a tendency to tip the scaffold. A landing platform must be provided at intervals not to exceed 35 feet.

6.6 Aerial Lifts

6.6.1 Only authorized persons may operate an aerial lift;

6.6.2 Lift controls must be inspected and tested daily while in use.

6.6.3 A safety belt shall be worn while in the basket of a lifting device and a lanyard will be fastened to basket-never to an adjacent pole or structure.

6.6.4 Vehicle brakes must be set before lifting; if outriggers are available these should be extended. If necessary wheel chocks may be required.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 Inspection records shall be maintained in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

To Be Provided

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-207	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: WALKING-WORKING SURFACES

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Weston — 2.22.99
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TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENT 5

7.0 EXTERNAL INTERFACE 11

8.0 RECORDS 11

9.0 ATTACHMENTS 11

10.0 EXHIBITS 11

1.0 PURPOSE

1.1 The objective of this procedure is to establish the safety requirements for walking-working surfaces, and other temporary work surfaces.

2.0 SCOPE

2.1 This procedure is applicable to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Subpart D, Walking-Working Surfaces

29 CFR 1926, Subpart C, General Safety and Health Provisions

29 CFR 1926, Subpart X, Stairways and Ladders

3.2 Reference Documents

3A-203, Housekeeping

3A-206, Ladders/Scaffolding

3A-219, Concrete and Masonry Construction

3A-223, Fall Protection

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Catch Platform: A substantial platform erected at the working level of the roof. The catch platform shall be erected not less than one foot below the elevation of the roof, its minimum width shall not be less than 2 feet, and it shall be firmly attached to the building to prevent its displacement. The catch platform may be in the form of a scaffold, it shall be fully planked and be equipped with a standard railing. The catch platform shall not be used for storage or as a work platform.

4.2 Floor Hole: An opening measuring less than 12 inches, but more than 2 inches in its least dimension in any floor, roof, or platform through which materials but not persons may fall, such as a belt hold, pipe opening, or slot opening.

4.3 Floor Hole Cover: The cover used to protect floor holes and openings shall be a minimum of 3/4 inch plywood or equivalent capable supporting a minimum of 300 pounds. The cover shall be secured to protect against accidental displacement.

4.4 Floor Opening: An opening measuring 18 inches or more in its least dimension in any floor, roof, or platform through which persons may fall; such as a hatchway, stair, or ladder opening, pit, or manhole.

4.5 Handrail: A bar or pipe supported on brackets from a wall or partition, as on a stairway or ramp, to furnish persons with a handhold in case of tripping.

4.6 Platform: A working space for persons, elevated above the surrounding floor or ground, such as a balcony or platform for the operation of machinery or equipment.

4.7 Runway: A passageway for persons, elevated above the surrounding floor or ground level, such as a foot walk along shafting or a walkway between buildings.

4.8 Safety-Monitoring System: A safety system in which a competent person monitors the safety of all employees in a roofing crew, and warns them when it appears to the monitor that they are unaware of the hazard or are acting in an unsafe manner. The competent person must be on the same roof as, and within sight of, the employees and must be able to verbally communicate with the employees.

4.9 Stair Railing: A vertical barrier erected along exposed sides of a stairway to prevent falls of persons.

4.10 Standard Railing: A standard railing shall consist of top rail, intermediate rail, toeboard, and posts and shall have a vertical height of 42 inches from upper surface of top rail to the floor, platform, runway, ramp level, or other walking surface. The top rail shall be smooth surface throughout the length of the railing. The intermediate rail shall be halfway between the top rail and floor platform, runway, or ramp. The ends of the rail shall not overhang the terminal posts except where such overhang does not constitute a projection hazard. Minimum requirements for standard railings under various types of construction are as follows:

4.10.1 Wood Railings: The posts shall be of at least 2-inch by 4-inch stock, spaced not to exceed 8 feet; the top rail shall be at least 2-inch by 4-inch stock; the intermediate rail shall be of at least 1-inch by 6-inch stock.

4.10.2 Pipe Railings: Posts and top and intermediate railings shall be at least 1½ inch nominal diameter with posts not more than 8 feet on centers.

4.10.3 Structural Steel Railings: Posts and top and intermediate railings shall be of 2-inch by 2-inch by ⅜-inch angles or other metal shapes or equivalent bending strength, with posts spaced not more than 8-foot centers.

4.10.4 Anchoring and Framing: The anchoring of posts and the framing of members for railings of all types shall be capable of withstanding a load of at least 200 pounds applied in any direction at any point on the top rail, with a minimum of deflection.

4.11 Toeboard: A standard toeboard shall be 3½ inches minimum in vertical height from its top edge to the level of the floor, platform, runway, or ramp. It shall be securely fastened in place and have not more than ¼ inch clearance above floor level. It may be made of any substantial material, either solid, or with openings not over one inch in its greatest dimension.

4.12 Wall Opening: An opening at least 30 inches high and 18 inches wide in any wall or partition through which persons may fall, such as a yardarm doorway or chute opening.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for assuring that all aspects of this procedure are implemented.

5.2 Environment, Safety, and Health (ESH) Manager: Responsible for monitoring all work areas, under their authority for compliance to this procedure.

5.3 Employees: Responsible for complying with all provisions of this procedure.

6.0 REQUIREMENT

6.1 General Requirements

6.1.1 All places of employment, passageways, storerooms, and service areas shall be kept clean and orderly and in a sanitary condition in accordance with procedure 3A-203, "Housekeeping." The floor of every work area shall be maintained in a clean and, so far as possible, dry condition. To facilitate cleaning, every floor of every working place and passageway shall be kept free of protruding nails, splinters, holes, or loose boards. Aisles and passageways shall be kept in good repair with no obstruction that could create a hazard.

6.1.2 Employees shall not place, or cause, or permit to be placed on any floor or roof of a building or other structure, a load greater than is approved by the MK Safety Specialist.

6.2 Guarding for Floor Openings and Floor Holes

6.2.1 All temporary and permanent floor openings shall be guarded either by a standard railing or a floor hole cover of standard strength and construction that is secured against accidental displacement. While the cover is not in place, the floor hole shall be protected by a standard railing.

6.2.2 Ladderway floor openings or platforms shall be guarded by standard railings with standard toeboards on all exposed sides, except at entranced to openings, with the passage through the railing either provided with a swinging gate or so offset that a person cannot walk directly into the opening.

6.2.3 Hatchway and chute floor openings shall be guarded by one of the following:

6.2.3.1 Hinged covers of standard strength and construction and a standard railing with only one exposed side. When the opening is not in use, the cover shall be closed or the exposed side shall be guarded at both top and intermediate positions by removable standard railings.

6.2.3.2 A removable standard railing with toeboard on not more than two sides of the opening and fixed standard railings with toeboards on all exposed sides. The removable railing shall be kept in place when the opening is not in use and should preferably be hinged or otherwise mounted so as to be conveniently replaceable.

6.2.4 When hinged covers and railing are removed from floor openings, personnel must be protected from falls (i.e., body belt or lanyard).

6.2.5 Whenever there is a danger of falling through a skylight opening, it shall be guarded by a fixed standard railing on all exposed sides or a cover capable of sustain the weight of a 300-pound person.

6.2.6 Pits and trapdoor openings shall be guarded by floor opening covers of standard strength and construction. While the cover is not in place, the pit or trap openings shall be protected on all exposed sides by removable standard railings.

6.2.7 Manhole floor openings shall be guarded by standard covers which shall be secured in place but which need not be hinged. While the cover is not in place, the manhole opening shall be protected by standard railings.

6.2.8 Where doors or gates open directly onto a stairway, a platform shall be provided, and the swing of the door shall not reduce the effective width of the platform to less than 20 inches.

6.3 Guarding of Wall Openings

6.3.1 Wall openings from which there is a drop of more than four feet, and the bottom of the opening is less than three feet above the working surface, shall be guarded as follows:

6.3.1.1 When the height and placement of the opening in relation to the working surface is such that either a standard rail or intermediate rail will effectively reduce the danger of falling, one or both shall be provided.

6.3.1.2 The bottom of a wall opening, which is less than four inches above the working surface, regardless of width, shall be protected by a standard toeboard or an enclosing screen of solid construction.

6.3.2 An extension platform outside a wall opening onto which materials can be hoisted for handling shall be protected on all open sides by a standard railing or other acceptable means of fall protection. One side of an extension platform may have removable railings in order to facilitate the handling of materials.

6.4 Guarding of Open-sided Floors, Platforms, and Runways

6.4.1 Every open-sided floor or platform six feet or more above adjacent floor or ground level shall be guarded by a standard railing, or the equivalent, on all open sides, except where there is entrance to a ramp, stairway, or fixed ladder. This entrance shall also be guarded by materials of equivalent strength. The railing shall be provided with a standard toeboard on all open sides.

6.4.2 Runways shall be guarded by a standard railing on all open sides, four feet or more above floor or ground level. Wherever tools or materials are to be used on the runway, a toeboard is to be provided on all exposed sides.

6.4.3 Where employees entering upon runways become thereby exposed to machinery, electrical equipment, or other danger not a falling hazard, additional protection shall be provided.

6.4.4 Regardless of height, open-sided floors, walkway platforms, or runways above or adjacent to dangerous equipment, pickling or galvanizing tanks,

degreasing units, and similar hazards shall be guarded with a standard railing and toeboard.

6.4.5 Areas with floor openings, walkways, platforms, or runways of lesser height shall be guarded by other delineating materials as appropriate.

6.5 Stairway Railing and Guards

6.5.1 Every flight of stairs having four or more risers shall be equipped with standard stair railings or standard handrails as specified below:

6.5.1.1 On stairways less than 44 inches wide having both sides enclosed, at least one handrail, preferably on the right side descending.

6.5.1.2 On stairways less than 44 inches wide having one open side, at least one stair railing on the open side.

6.5.1.3 On stairways less than 44 inches wide having both sides open, one stair railing on each side.

6.5.1.4 On stairways more than 44 inches wide but less than 88 inches wide, one handrail on each enclosed side and one railing on each open side.

6.5.1.5 On stairways more than 88 inches wide, one handrail on each enclosed side, one stair railing on each exposed side, and one intermediate stair railing located approximately midway of the width.

6.5.2 Winding stairs shall be equipped with a handrail offset to guard the open side(s) and to prevent walking on all portions of the treads having width less than six inches.

6.6 Guarding of Low-Pitched Roof Perimeters During the Performance of Built-Up Roofing Work

6.6.1 During the performance of built-up roofing work with a ground to eave height of more than 6 feet, or more than 6 feet above any roof area adjacent to the work area, employees engaged in such work shall be protected from falling from all unprotected sides and edges of the roof as follows:

6.6.1.1 By the use of full-body harness and lanyards while working within six feet of the unprotected edge of the roof. When full-body harness systems are used, they shall be rigged to allow the

movement of employees only as far as the edge of the roof. Full-body harness and lanyards shall be rigged to a static line. The static line shall be secured above the point of operation to an anchorage or structural member capable of supporting a minimum of 5,400 pounds of dead weight. The static line shall be a minimum of ¾-inch manilla rope or equivalent, except where the static line should be protected from cutting or abrasion.

6.6.1.2 Standard railings used along the unprotected edge of the roof, shall comply with the specifications established by Occupational Safety and Health Administration (OSHA) regulation. Removal of handrails to facilitate the installation of roofing materials requires the use of full-body harness and lanyards within six feet of the unprotected edge of the roof.

6.6.1.3 A warning line shall be erected not less than six feet from the unprotected edge of the roof. The warning shall be of rope, wire, or chain, and supported by stanchions. The warning line shall be flagged at intervals of not less than six feet with material of high visibility. The warning line shall be supported in such a way that the lowest point (including sag) is not less than 34 inches above the surface of the roof and its highest point is not more than 39 inches above the surface of the roof. The warning line shall have a tensile strength of at least 500 pounds. The stanchions to which the warning line shall be attached shall be capable of resisting a force of 16 pounds of lateral force applied at a height of 30 inches above the roof in the direction of the edge of the roof. No employee shall work outside the warning limit without the protection of an approved full protection system.

6.6.1.4 A safety monitoring system cannot be used without fall protection (guard rails, catch platform, full-body harness, or lanyard) on all projects regulated by MK.

6.6.1.5 Points of access such as ladders or stairways shall be connected to the work area by a clear access path formed by two warning lines.

6.6.2 Material may not be stored within six feet of the unprotected edge of the roof. Stored material must also be secured for protection against wind gusts.

6.7 Guarding of High Pitched Roofs Shall Be Accomplished Using Only the Following Methods

6.7.1 A catch platform shall be installed at or not less than one foot below the working area of roofs more than 6 feet above the ground or any portion of another roof adjacent to the work area on any roof.

6.7.2 Full-body harness and lanyards may be used in place of a catch platform. The lanyard shall be rigged so as to prevent the movement of the employee beyond the edge of the roof. The lanyard must be a minimum of ½-inch manila rope or equivalent and have a nominal breaking strength of 5,400 pounds. The lanyard shall be attached to at static line that is a minimum of ¾-inch manila rope or equivalent with a minimum breaking strength of 5,400 pounds. The static line shall be attached to an anchorage or structural member capable of supporting 5,400 pounds.

6.8 Stairways

6.8.1 A stairway or ladder shall be provided at all personnel points of access where there is a break in elevation of 19 inches or more, and no ramp, runway, sloped embankment or personnel hoist is provided.

6.8.2 All parts of stairways shall be kept free of hazardous projections, such as nails. Debris, and other loose material shall not be allowed on or under stairways. Slippery conditions on stairways shall be eliminated immediately, or as soon as possible.

6.8.3 Permanent steel or other metal stairways and landings with hollow pan-type treads that are to be filled with concrete or other material, when used during construction, shall be filled to the level of the nosing with solid material secured in place.

6.8.4 Temporary stairs shall have a landing of not less than 30 inches in the direction of travel and extend at least 22 inches in width at every 12 feet or less of vertical rise. Stairs shall be installed at angles to the horizontal of between 30 degrees and 50 degrees.

6.8.5 Rise height and tread width shall be uniform throughout any flight of stairs including any foundation structure used as one or more treads of the stairs.

6.9 Fall Protection and Prevention

6.9.1 MK maintains a policy of 100 percent fall protection. One hundred percent fall protection means no exposure to a fall hazard shall be permitted without protection. Fall protection and prevention shall meet the requirements of procedure 3A-223, "Fall Protection".

6.9.2 Fall protection during the erection and dismantling of scaffolding shall consist of a system of lifelines and full-body harness. Fall protection, in the form of a fully planked work surface and a standard railing, shall be provided on a completed scaffold. In the event an incomplete scaffold must be used as a work platform or the installation of a standard railing may not be possible a system of lifelines and full-body harness shall be implemented. All scaffolding shall meet the requirements of procedure 3A-206, "Ladders/Scaffolding".

6.10 Concrete and Masonry Construction Hazards

6.10.1 Control of hazards associated with concrete and masonry, such as capping reinforced bars, is addressed in procedure 3A-219, "Concrete and Masonry Construction."

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-208	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 16

TITLE: EXCAVATION AND TRENCHING

APPROVAL

William Piispanen ES&H MANAGER	2/22/99 DATE
[illegible] QUALITY MANAGER	2/22/99 DATE
Bob Wisdom CONSTRUCTION MANAGER	2.22.99 DATE

REV.	DATE	REVISION DESCRIPTION
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ORIGINATOR: KELLY POST (Initial/Date) KP 2/22/99	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 13

8.0 RECORDS 13

9.0 ATTACHMENTS 13

10.0 EXHIBITS 14

1.0 PURPOSE

1.1 The objective of this procedure is to establish safety requirements during excavation work in order to protect personnel that may work in or around excavation operations.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Subpart P, Excavation, Trenching, and Shoring

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 17

3A-112, Competent Person Requirements

3A-201, Job Safety Analysis

3A-202, Confined Spaces

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Benching (Benching System): Method of protecting employees from cave-ins by excavating the sides of an excavation to form one or a series of horizontal levels or steps, usually with vertical or near-vertical surfaces between levels.

4.2 Cave-In: The separation of a mass of soil or rock material from the side of an excavation, or the loss of soil from under a trench shield or support system, and its

sudden movement into the excavation, either by falling or sliding, in sufficient quantity so that it could entrap, bury, or otherwise injure and/or immobilize a person.

4.3 Competent Person: One who has specific training in, and is knowledgeable about, soils analysis, the use of protective systems, and the requirements of 29 CFR 1926, Subpart P and procedure 3A-112, "Competent Person Requirements," is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employees and who has the authority to take prompt corrective measures to eliminate them.

4.4 Excavation: Any man-made cut, cavity, trench, penetration, or depression in an earth surface formed by earth removal.

4.5 Ground Penetration: Driving a conductive object into the ground greater than 1'-0" shall be treated as an excavation.

4.6 Hazardous Atmosphere: An atmosphere which by reason of being explosive, flammable, poisonous, corrosive, oxidizing, irritating, oxygen deficient, toxic, or otherwise harmful, may cause death, illness, or injury.

4.7 Protective System: A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping and benching systems, shield systems, and other systems that provide the necessary protection.

4.8 Registered Professional Engineer: A person who is registered as a professional engineer in the state where the work is to be performed.

4.9 Sheeting: Members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system.

4.10 Shield: A structure that is able to withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or can be designed to be portable and moved along as work progresses. Shields may be pre-manufactured or job-built. Shields used in trenches are usually referred to as "trench boxes" or "trench shields".

4.11 Shoring: A structure such as a metal hydraulic, mechanical or timber shoring system that supports the sides of an excavation and which is designed to prevent cave-ins.

4.12 Sloping: A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation so as to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences

in such factors as the soil type, environmental conditions of exposure, and application of surcharge loads.

4.13 Spoil: Material that is removed in the formation of an excavation or trench.

4.14 Support System: A structure such as underpinning, bracing, or shoring which provides support to an adjacent structure, underground installation, or the sides of an excavation.

4.15 Tabulated Data: Tables and charts approved by a registered professional engineer and used to design and construct a protective system.

4.16 Technical Documents: For purposes of this procedure, the project/subcontract drawings and specifications.

4.17 Trench: An excavation made below the surface of the ground. In general, the depth is greater than the width at the bottom, but the width of a trench at the bottom is not greater than 15 feet.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for assuring that all aspects of this procedure are implemented, including:

5.1.1 Initiating a "Job Safety Analysis " and a "Outage Request" for each specific excavation activity.

5.1.2 Assuring that all employees assigned to excavation activities are instructed in the types of hazards associated with excavation operations.

5.1.3 Assuring safe work practices and techniques.

5.1.4 Assuring that pre-job safety meeting is held.

5.2 Competent Person: Responsible for assuring that the Excavation Permit is being followed each day and that the excavation is designed, constructed, and maintained in accordance with the requirements described in this procedure and accepted engineering requirements.

5.3 Employees: Responsible for complying with all requirements described in this procedure and specific project excavation permit.

5.4 General Superintendent: Responsible for assuring that the Outage Request(s) are completed properly and for inspecting the work site. In cooperation with the ESH

Manager, provide for the monitoring of excavations for hazardous atmospheres where it has been deemed necessary. Coordinates excavation with the INEEL M&O contractor, as applicable. Assures proper utility surveys have been conducted to the start of excavation activity.

5.5 ESH Manager: Responsible for conducting surveillances to ensure compliance with this procedure.

5.6 Project Engineer: Responsible for obtaining approval from a registered professional engineer where required by this procedure.

6.0 REQUIREMENTS

6.1 Outage Request: The Superintendent shall obtain written approval prior to beginning excavation activities by completing and submitting an Outage Request. The approved request will detail excavation requirements and must be posted at the excavation site from ground-breaking through closure.

6.2 Job Safety Analysis Plan (JSA): Prior to excavation a JSA shall be completed in accordance with procedure 3A-201, "Job Safety Analysis". A JSA shall cover every phase of the construction activity.

6.3 Pre-Excavation Requirements

6.3.1 Prior to opening an excavation, the Design Documents will detail the estimated location of utility installations such as sewer, telephone, fuel, electric, water lines, or any underground installations that may reasonably be expected to be encountered during the excavation work as determined by Operator.

6.3.2 Subsurface Investigation and Layout

6.3.2.1 Prior to the start of any excavation work, arrangements shall be made via the Outage Request form Block 2 to verify the location of all underground utility lines identified in the technical documents. The planned excavation areas identified on the technical documents shall be laid out and staked.

6.3.2.2 The subsurface investigation will be by the INEEL M&O contractor. This will be by verification of all buried items through as-builts or archive drawings and/or by use of a below-surface detector of various types. All underground objects will be identified, located and marked by the INEEL M&O contractor.

6.3.2.3 Where conducing posts, stakes, or other devices are driven into the ground a survey will be performed. This requirement may be waived under conditions described above.

6.3.2.4 The General Superintendent is responsible to assure the aforementioned investigation is completed and documented. Documentation of completed investigation(s) shall be so indicated upon the approved outage request.

6.3.2.5 Should there be excavations conducted outside the INEEL boundary, the General Superintendent shall ensure all notifications and required permits, surveillances and/or physical surveys are obtained from utility companies, communities and the State of Idaho.

6.3.2.6 The Idaho State "Dig Line" (1-800-342-1585) will provide survey support for all state areas except for cities or municipals. The "Dig Line" will provide the telephone number and name to contact within each city or municipal. The Idaho Falls "Dig Line" number is (208)-529-1250.

6.3.2.7 MK and/or Subcontractor supervision shall submit a field problem in accordance to procedures. If it has been determined that the layout of the new utility has to be altered outside the parameters of design tolerances to preclude interferences with existing utilities.

6.3.3 A Plan of the Day (POD) meeting shall be held prior to beginning the daily excavation activities. MK General Superintendent, Subcontractors and any others deemed necessary shall attend the POD meeting (example: MK ESH Manager, DOE-ID, INEEL M&O contractor) in order to verify that work areas are defined, utilities are marked and the work scope is defined and understood. The following topics shall be discussed at the Plan of the Day meeting and documented on a "Safety Training Meeting" form (Attachment 1).

6.3.3.1 Design Documents and the degrees of accuracy of these documents.

6.3.3.2 The location of existing underground utilities and objects, including type of material of construction of utilities that may be encountered during the excavation activity.

6.3.3.3 Safety precautions, as specified on the Job Safety Analysis Plan in accordance with procedure 3A-201, "Job Safety Analysis", safe work permit, outage lock and tag requirements.

6.3.3.4 Special ESH requirements, when applicable.

6.3.3.5 Excavation permit requirements, including hand excavation.

6.3.3.6 Requirements for subsurface survey and monitoring during excavation in the proximity of underground utilities and objects.

6.3.3.7 Perform task-unique training.

6.3.4 All surface encumbrances (trees, poles, boulders, etc.) that may create a hazard to employees shall be removed or supported, as necessary, to safeguard employees.

6.3.5 Competent person shall assess potential hazards by completing an "Excavation and Trenching Permit" (Attachment 2) which will be posted at the job site. The checklist will be updated as needed. Checklist information includes:

6.3.5.1 The presence and quantity of hazardous substances in the area of the excavation.

6.3.5.2 The toxicity and flammability of hazardous substances present in, or to be introduced into, the area of the excavation.

6.3.5.3 The potential for work meeting the definition of confined space work or where an oxygen deficient atmosphere may exist.

6.3.5.4 The presence of nearby above-ground or overhead utility installations.

6.3.5.5 The exposure of the general public to the excavation operations.

6.3.5.6 The potential for surface water runoff into the excavation.

6.4 Excavation Work Practices

6.4.1 Access to excavations shall be only by permission of the jobsite supervisor.

6.4.2 The competent person is responsible for identifying any unusual developments above ground which may warn of impending earth movement.

6.4.3 While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees.

6.4.4 Employees shall be protected from excavated or other materials or equipment that could pose a hazard by falling or rolling into excavations. Protection shall be provided by placing and keeping such materials or equipment at least two feet from the edge of excavations or by the use of retaining devices, or by a combination of both, if necessary.

6.4.5 No employees shall be permitted beneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by falling materials in accordance with procedure 3A-211, "Motor Vehicles and Mechanical Equipment".

6.4.6 A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or more in depth and shall require no more than 25 feet of lateral travel for employees. A 1.5 to 1 slope is considered a ramp and adequate means of egress.

6.4.7 When mobile equipment is operated adjacent to an excavation and the operator does not have a clear and direct view of the edge of the excavation, a warning system shall be implemented such as barricades, hand or mechanical signals, or stop logs.

6.4.8 Adequate precautions shall be taken to prevent employee exposure to hazardous atmospheres in any excavation which has a potential for a hazardous atmosphere, in accordance with procedure 3A-202, "Confined Spaces".

6.4.9 Employees shall not work in excavations in which there is accumulated water or in which water is accumulating, unless adequate precautions have been taken to protect employees against the hazards posed by water accumulation.

6.4.9.1 If water is controlled or prevented from accumulating by the use of water removal equipment, the water removal equipment and operations shall be monitored by a competent person to ensure proper operation.

6.4.9.2 If the excavation work interrupts the natural drainage of surface water (streams, runoff channels), diversion ditches, dikes, or other suitable means shall be used to prevent surface water from entering the excavation and to provide adequate drainage of the area adjacent to the excavation.

6.4.10 Hand excavation shall be used within two feet vertically and five feet horizontally or as otherwise specified in Special Conditions from the

underground utility locations as shown on the Design Documents or locations provided by the locator/communication surveys. This shall be construed as meaning the hand excavation shall take place within two feet vertically and five feet horizontally from the outside edges of the identified items being excavated (e.g., pipe, duct banks, etc.). The hand excavation shall be performed until the item is located or the excavation is completed.

6.4.11 If damage to known or unknown utilities occurs, notifications must be made in accordance with BNFL Inc. "Occurrence Categorization, Notification and Processing."

6.4.12 Temporary guardrails or barricades and flashing yellow lights or other suitable warning lights shall enclose the entire excavation in accordance with procedure 3A-218, "Signs, Signals, and Barricades".

6.4.13 The stability of structures adjoining the excavation shall be supported to protect employees. Excavation below the level of the base or footing of any foundation or retaining wall that could reasonably be expected to pose a hazard to employees shall not be permitted except when:

6.4.13.1 A support system (underpinning) is provided to ensure the safety of employees and the stability of the structure.

6.4.13.2 The excavation is in stable rock.

6.4.13.3 A registered professional engineer has determined that the structure will be unaffected by the excavation.

6.4.13.4 A registered professional engineer has determined that such excavation will not pose a hazard to employees.

6.4.14 Evaluations and/or designs made by the registered professional engineer shall be posted at the job site with the Construction Outage and Excavation Permit.

6.4.15 Sidewalks, pavements, and appurtenant structure shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse of such structures.

6.4.16 Structural ramps that are used solely by employees as a means of access or egress from excavations shall be designed by a competent person qualified in structural design and shall be constructed in accordance with the design.

6.4.17 Where employees or equipment are permitted to cross over excavations, walkways, or bridges with standard guardrails shall be provided. Adequate

physical barrier protection shall enclose the entire excavation. All wells, pits, shafts, etc., shall be barricaded or covered. Temporary wells, pits, shafts, etc., shall be backfilled as soon as possible.

6.5 Protective Systems

6.5.1 Each employee in an excavation shall be protected from cave-ins by an adequate protective system designed in accordance with 29 CFR 1926, Subpart P, "Excavation, Trenching, and Shoring".

6.5.2 Protection systems include sloping and benching systems or support systems, shield systems and/or other protective systems. The competent person may determine the type of protection system necessary based on the appendices and tables in 29 CFR 1926.652.

6.5.3 All soil at INEEL shall be treated as class C soil, except for actual hard rock formations. Vertical sided excavations are only allowed when:

6.5.3.1 There is no employee exposure.

6.5.3.2 There is an approved shoring system in use.

6.5.3.3 When the excavation is in hard rock.

6.5.3.4 When the excavation is shallow enough for employees to step out to protect themselves.

6.5.4 When sloping is used to protect employees, it shall be 1.5 to 1. Sloping of other than 1.5 to 1 must be approved by MK ESH Manager. Protective systems (including sloping) for excavations over twenty feet deep, shall be designed by a registered professional engineer.

6.5.5 When protective systems designed by a registered professional engineer are required by 29 CFR 1926, Subpart P, they shall be in written form and include the following:

6.5.5.1 A plan indicating the size, types, and configurations of the materials to be used in the protective system.

6.5.5.2 The identity of the registered professional engineer approving the design.

6.5.5.3 At least one copy of the design shall be maintained at the jobsite during construction of the protective system.

6.5.6 Materials and equipment used for protective systems shall be free of damage or defects that might impair their proper function.

6.5.6.1 Manufactured materials and equipment used for protective systems shall be used and maintained in a manner that is consistent with the recommendations of the manufacturer, and in a manner that will prevent employee exposure to hazards.

6.5.6.2 When material or equipment that is used for protective systems is damaged, a competent person shall examine the material or equipment and evaluate its suitability for continued use. If the competent person cannot assure the material or equipment is able to support the intended loads or is otherwise suitable for safe use, then such material or equipment shall be removed from service.

6.5.7 Installation and Removal of Support Systems (Shoring)

6.5.7.1 Members of support systems shall be securely connected to prevent sliding, falling, kickouts, or other predictable failure.

6.5.7.2 Support systems shall be installed and removed in a manner that protects employees from cave-ins, structural collapses, or from being struck by members of the support system.

6.5.7.3 Individual members of support systems shall not be subjected to loads exceeding those which those members were designed to withstand.

6.5.7.4 Before temporary removal of individual members begins, additional precautions shall be taken to ensure the safety of employees, such as installing other structural members to carry the loads imposed on the support system.

6.5.7.5 Removal shall begin at, and progress from, the bottom of the excavation. Members shall be released slowly so as to note any indication of possible failure of the remaining members of the structure or possible cave-in of the sides of the excavation.

6.5.7.6 Backfilling shall progress together with the removal of support systems from excavations.

6.6 Inspections

6.6.1 A competent person shall conduct daily inspections of excavation sites. These inspections are documented using the "Excavation Checklist".

6.6.2 The inspection shall be made prior to the start of work, and as needed throughout the shift. Inspections shall be made after each rainstorm or other hazard-promoting event.

6.6.3 Where the inspection finds evidence of any hazardous condition, exposed employees shall be removed from the hazardous area until necessary precautions have been taken to correct the situation.

6.7 Training

6.7.1 Individuals serving as competent persons shall be trained to perform the responsibilities.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor shall provide up-dated As-Built Documents which reflect the location of existing utilities and the services provided by these utilities.

7.2 MK shall provide up-dated as-built information of unknown utilities discovered during excavation to the INEEL M&O contractor.

8.0 RECORDS

8.1 Construction Outage Requests document the excavation requirements and shall be maintained as non-permanent, non-Quality Assurance (QA) records.

8.2 Training records shall be maintained in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

8.3 "Verification of Existing/As-Built Utilities" forms shall be maintained as non-permanent, non-QA records.

8.4 "Excavation Checklists" shall be maintained as non-QA, non-permanent records in accordance with the requirements of Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

9.1 Safety Training Meetings

9.2 Excavation and Trenching Permit

10.0 EXHIBITS

NONE

Attachment 9.1

Safety Training Meeting

Type of Meeting:_____

Topic:_____

The following personnel were present for meeting conducted at _____(time) on _____(date) at _____(location).

NAME	SIGNATURE	ORGANIZATION

_____ Printed Name of Meeting Chairman

_____ Signature

_____ Date

Attachment 9.2

EXCAVATION AND TRENCHING PERMIT

(OSHA Section 1926.650)

DATE:	TIME:	DATE EXPIRES
JOB DESCRIPTION AND LOCATION (Be Specific):		

BEFORE TRENCHING AND EXCAVATION

- ☐ Soil Classification
  - ☐ Stable Rock ☐ Type A ☐ Type B ☐ Type C
- ☐ Check For Previously Disturbed Ground
- ☐ Adequacy and Availability of All Equipment, Including Personal Protective Gear, Shoring Material, Signs, Barricades and Machinery
- ☐ Check For Proximity To Utilities, Buildings, Footing or Pilings and Sources of Vibrations.
- ☐ Other Known Obstructions (e.g. Footing Concrete Encasement).
- ☐ Owners of Utilities, Services or Transmission Piping, Etc. (Electrical, Telephone, Water, Sewer)
- ☐ Allowable Slope.

COMMENTS:

DURING TRENCHING AND EXCAVATION

- ☐ Size of Excavation

  Depth _____ Width _____ Length _____
- ☐ Changing Ground Conditions, Particularly After Rain Fall
- ☐ Monitor For Possible Oxygen Deficiency Or Gaseous Conditions. (Record per IH Manual Procedure 5.0 or equivalent).
- ☐ Adequacy Of Shoring And/Or Sloping As Work Progresses.
- ☐ Entrances and Exit Facilities
- ☐ Stairway ☐ Ladders ☐ Ramp
- ☐ Change In Vehicular and Machinery Operation
- ☐ Water Removal Equipment and Operation
- ☐ Adequacy of Portable Trench Boxes or Trench Shields
- ☐ Protective Systems Depth of a Trench or Excavation of 5 Feet or More.

Check The Applicable OSHA Appendix Below:

- ☐ B - Sloping and Benching

Maximum Allowable Slopes		
Stable Rock Vertical	(90°)	
Type A	3/4:1	(53°)
Type B	1:1	(45°)
Type C	1 1/2:1	(34°)

NOTE: Sloping or Benching For Excavations Greater Than 20 Feet Deep Shall Be Designed By A State Registered Professional Engineer (RPE).

- ☐ C - Timber Shoring For Trenches
- ☐ D - Aluminum Hydraulic Shoring For Trenching
- ☐ RPE - Designed Protection Systems (data must be filed on job-site)

COMMENTS:

SIGNATURES AND DATES

COMPETENT PERSON	SSHO:	PROJECT MANAGER:
CLIENT REPRESENTATIVE:	CIVIL ENGINEER:	CIVIL SUPERINTENDENT:
EQUIPMENT OPERATOR:	SUBCONTRACTOR REP:	OTHER APPROVAL:

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-209	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 22

TITLE: CRANE, HOISTING AND RIGGING OPERATIONS

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

Del Bill — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

REV.	DATE	REVISION DESCRIPTION
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RIGINATOR: KELLY POST (Initial/Date) KP 2/22/99	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 22

8.0 RECORDS 22

9.0 ATTACHMENTS 22

10.0 EXHIBITS 22

1.0 PURPOSE

1.1 This procedure establishes the minimum safety, operation, hoisting and rigging, and crane requirements.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.550, Cranes, Derricks, Hoists, Elevators, and Conveyers

29 CFR 1926.251, Rigging Equipment for Special Handling

29 CFR 1910.184, Slings

EM 385-1-1, US Army Corps of Engineers Safety and Health Manual

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

3A-215, Energy Source Lockout/Tagout

DOE Orders 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

DOE Hoisting and Rigging Manual

4.0 DEFINITIONS

4.1 Competent Person: One who is responsible for and capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to his employees and who has authorization to take prompt corrective measures to eliminate them.

4.2 High-Consequence Lifts: High consequence items and lifts are parts, components, assemblies, or lifting operations designated as such by management because the effect of dropping, upset, or collision could:

4.2.1 Cause significant work delay.

4.2.2 Cause undetectable damage resulting in future operations or safety problems.

4.2.3 Result in significant release of radioactivity or other undesirable conditions.

4.2.4 Present a potentially unacceptable risk of personnel injury or property damage.

4.2.5 This category of lift applies when the load imposed upon the equipment to be used will be less than 75 percent of the rated capacity.

NOTE: In some referenced documents, the term "high-consequence" is replaced by the term "critical."

4.3 Special High-Consequence Lift: Special High-Consequence Lifts are high-consequence lifts during which the load imposed upon the material-handling equipment to be used will equal or exceed 75 percent of the rated capacity.

4.4 Person-In-Charge: The person (other than the equipment operator) appointed to be responsible for the safe handling of high-consequence or non-high-consequence items in, around, or above spaces in which high-consequence items are located.

4.5 Qualified Person: A person, who by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated his ability to solve or resolve problems relating to the subject matter and work.

4.6 Qualified Engineer - Qualified Engineering Organization: An engineer or engineering organization whose competence in evaluation of the type of equipment in question has been demonstrated to the satisfaction of MK.

4.7 Qualified Operator: One whose competence to operate equipment safely and effectively (including the ability to accurately spot and control loads) can be demonstrated to MK by extensive experience and/or operational tests.

4.8 Qualified Rigger: One whose competence in this skill has been demonstrated by experience satisfactorily to the person in charge and Qualified Rigging Specialist.

4.9 Qualified Rigging Specialist: One whose competence in this skill has been demonstrated by extensive experience (including rigging and handling of items of a nature akin to the loads to be handled in accordance with this procedure) satisfactory to the person in charge.

4.10 Qualified Signalman: Denotes the title of an employee who has been trained to provide hand or voice communication concerning lift position or condition to a crane operator when making lifts with a crane.

4.11 Flagman: An employee who signals mobile cranes when is in transit on roadways, and who may signal other vehicular traffic under supervision.

5.0 RESPONSIBILITIES

5.1 Qualified Rigging Specialist: Responsible for implementing the requirements of this procedure for their area of responsibility. Also responsible to verify the skill of the Qualified Rigger.

5.2 General Superintendent and Superintendents: Responsible for ensuring that the safety requirements of this procedure are practiced by personnel.

5.3 ESH Manager: Responsible for monitoring the safety requirements of this procedure for compliance.

5.4 Person in Charge: Responsible for implementing the requirements of this procedure and for implementing any other task specific requirements identified for specific high consequence or special high consequence lifts.

5.5 Qualified Rigger: Responsible for appropriately selecting and securing all hardware connections between the hook and the load. Will also visually verify the hook is not visibly damaged during the course of daily work activity.

5.6 Qualified Operator: Responsible for selecting and operating equipment adequate for the loads encountered. Also responsible for conducting daily equipment inspections and other inspections identified through applicable ANSI. Responsible to halt any hoisting operations when any doubt arises as to the safety of the load or personnel.

5.7 Qualified Signalman: Responsible to maintain visual or voice communication with the operator throughout all hoisting activities.

5.8 Qualified Flagman: Responsible to signal both crane operators and vehicle operations during specific phases of crane transit activities.

5.9 Qualified Engineer - Qualified Engineering Organization: Responsible for consultation with the Qualified Rigging Specialist regarding modifications to cranes, crane configurations, lifting devices and attachments on an as needed basis.

6.0 REQUIREMENTS

6.1 Crane Operation

6.1.1 **Any incident during the hoisting/rigging activities which may affect personal safety or the operational safety of equipment, shall be reported immediately.**

6.1.2 Cranes shall be operated only by the following qualified/certified personnel:

1. Designated operators
2. Trainees under the direct supervision of a qualified operator.
3. Maintenance and test personnel when it is necessary in the performance of their duties.
4. Crane Qualified Inspectors.

6.1.3 Crane operators shall be in visual or radio contact with a qualified signal person before and during every lift. If visual or radio contact is interrupted for any reason, the operator shall stop the lift until full contact is restored.

6.1.4 The crane shall be capable, within the manufacturer's specifications, of fulfilling all requirements of the work without endangering personnel or equipment.

6.1.5 Cranes equipped with outriggers shall have the outriggers fully extended and set before all lifts.

6.1.6 Pick and carry lifts shall not be made with truck cranes. Pick and carry lifts should be avoided with other hoisting equipment. However, where necessary to do so, the following shall apply:

1. Use the load chart.
2. Investigate route to be followed for solid and level terrain.
3. Travel speed of 2-5 mph (or manufacturer recommendations) shall be required.
4. Secure the load to minimize swing.

5. Personnel shall not touch the load for any reason once it has been rigged. Tag lines shall be used to control the load.

6. Where possible, outriggers shall be extended and set within a few inches of ground level.

6.1.7 Operators shall know the total weight of a load prior to every lift. This includes the following:

1. Actual weight of load including: crate, pallet, container, etc.

2. Rigging, load line, hook, headache ball, wire rope, including slings, shackles, chokers, rings, etc.

6.1.8 **The operator shall check the load line brake and the crane for stability when the load is only inches from the ground before proceeding with any lift.**

6.1.9 The operator shall be responsible for the equipment and the load during a lift or pick. The operator shall not attempt any lift which might compromise the safety of the operation.

6.1.10 An operator shall not leave the control station of a crane during a lift or pick except under the following conditions:

1. The load is lowered or raised to a safe landing area with no tension on the load line.

2. After positioning all brakes, pawls, switches, or clutches in a safe position, turn it over to another qualified operator.

3. The load is supported by other means, such as cribbing, or manufacturer's sleds or frames.

6.1.11 Cranes shall be operated smoothly, avoiding sudden stops and starts.

6.1.12 The hoist line shall be vertical at all times.

6.1.13 Personnel shall not stand or pass under suspended loads, or ride the hook or load.

6.1.14 The boom hoist drum shall be engaged at all times except when lowering the boom.

6.1.15 Employees shall not get on or off a crane while it is in motion. Adjustments, repairs, or lubrication shall not be permitted on operating equipment unless it is required by manufacturer's recommendations.

6.1.16 Approval by the Qualified Rigging Specialist shall be obtained before operating a crane within 20 feet of power lines or over critical piping.

6.1.17 Tag line(s) shall be required on all loads unless they are unsafe according to the Safety Specialist. Use as many as necessary to adequately control the load while landing.

6.1.18 Tool boxes, oil cans, sling racks, water coolers. or other items shall not be placed within the swing radius of the counterweight. The oiler shall stand clear of the swing radius and assist the operator in keeping other employees outside the swing radius.

6.1.19 The swing radius of the crane shall be barricaded and posted with signs as necessary.

6.1.20 Operators shall ensure that all frequent and periodic inspections are current before operating the crane.

6.1.21 All hooks shall have an operable self-closing throat latch.

6.1.22 Crane load charts shall be posted in the cab of all cranes for the crane as configured, as well as rated load capacities, recommended operation speeds, special hazard warnings, or instructions.

6.1.23 In rental or contractor cranes where the tipping chart is 85 percent, the chart shall be reduced to 75 percent. This is done by reducing the indicated capacity on the chart by 10 percent. Government owned cranes shall have a 75 percent chart ordered from the manufacturer and posted in the cab. For hoisting of personnel, 50 percent maximum is allowed.

6.1.24 Two pair of orange gloves or other identifying apparel shall be kept on each crane for use by flagmen.

6.1.25 The Qualified Rigging Specialist of the crane operator shall ensure the following:

1. Check area with operator for any unusual conditions that could interfere with the lift or pick.

2. Provide a safety briefing session concerning the lift or pick.

3. Tell operator to stop the lift if there are any questions or concerns, and contact the foreman immediately.

4. Check the mechanical and operating condition of the crane with the operator.

5. Assist the operator as needed for difficult or critical lifts.

6. Make sure the counterweight and outriggers are barricaded.

7. Coordinate the lift with the operator and the signalman of the crew using the crane.

6.1.26 The foreman of the crew using the crane shall ensure the following:

1. Check the area for any unusual conditions and take action as needed to ensure a safe lift.

2. Provide a safety briefing session concerning the lift to the crew and include the operator in lift instructions.

3. Assign one or more signalmen as needed who is specifically trained in rigging practices and operating procedures to provide all signals to the crane operator.

4. Coordinate signals and other means of communication between multiple signalmen and the operator.

5. When the load weight is not known, contact the Qualified Rigging Specialist or General Superintendent.

6.1.27 Signalmen used for signaling or communication instructions to a crane operator shall be trained. They shall perform duties as follows:

1. Clear the lift path prior to signaling the operator to start the lift and be present during the entire lift or until replaced by another signalman.

2. Be constantly aware of the location of the load in relation to line of travel and potential interferences.

3. Watch for unauthorized personnel in the lift area or within the swing radius of the crane counterweight. Do not allow anyone to stand or pass under a suspended load.

4. Assist the operator in checking the boom location in relation to other interferences, obstructions, or power lines.

5. Be in full view of the operator or in direct communication by radio or other approved sound powered phones. Give clear hand or voice directions.

6. Coordinate responsibility with other signalmen if more than one is needed for the lift.

7. Stop the lift if any unusual condition or event occurs that could jeopardize the safe completion of the lift.

6.1.28 Operator and lift crew shall ensure that a Job Safety Analysis and Crane Inspection Checklist have been posted before making a lift.

6.2 Operator Qualifications

6.2.1 If the operator's physical condition indicates that their assignment to a crane could jeopardize their safety, as well as the employees working with him or her, they shall be rejected as a crane operator for MK at the INEEL. The person in charge shall assure the operator meets the following criteria:

1. Operators of cranes shall pass a written, oral and practical operating examination or furnish satisfactory evidence of qualification and experience. Examination shall be limited to the type of equipment for which examined or otherwise qualified.

2. Operators and trainees of cranes shall meet the following physical qualifications:

   A. Snellen vision test 20/30 in one eye and 20/50 in the other correct or uncorrected, normal depth perception, filed of vision, and color vision (if required by Operation).

   B. Sufficient strength, endurance, agility, coordination, and ample reaction to meet the demands of the equipment operations.

   C. Adequate hearing with or without hearing aid for specific operations.

   D. No physical defects or emotional disorders that could cause hazard to the operator or others.

   E. No evidence of seizures or loss of physical control.

   F. Medical or special clinical judgements may be required in determining physical or emotional conditions.

6.2.2 The person in charge shall assign a Qualified Operator to equipment for all lifts.

6.2.3 The person in charge shall insure prior to the start of work that each operator complete new hire orientation concerning safety policies, rigging procedures and crane operation, maintenance, and inspection requirements.

6.2.4 New Operators shall be monitored by the Qualified Rigging Specialist.

6.3 Crane Inspection

6.3.1 Applicable ANSI B30 series daily, monthly, and special inspections shall be completed prior to operating any crane.

6.3.2 The Qualified Rigging Specialist shall request annual inspection documentation when the crane is requisitioned.

6.3.3 Rented or leased cranes shall be inspected prior to use regardless of any inspection form signed by others.

6.3.4 Maintenance and repair work on cranes shall be conducted in accordance with manufacturer's maintenance manuals, unless equipment is leased or rented.

6.4 Cranes

6.4.1 Fall protection shall be used by all personnel climbing a tower crane.

6.4.2 Only one person shall be permitted in the cab of the mast crane. Exceptions shall be approved by the Qualified Rigging Specialist.

6.4.3 The General Superintendent shall ensure the following:

1. Ensure proper loading and securing of crane when transporting.
2. Provide a flagman for signaling in close quarters, such as turns, gates intersections, congested areas, overtaking traffic, etc.

6.4.4 The operator shall shut down the crane if the wind velocity reaches the maximum recommended by the manufacturer. An anemometer shall be mounted on tower cranes.

6.4.5 Never carry out hoisting operations when weather conditions could be hazardous to personnel or property. The effects of extreme cold temperatures must be considered. The size and shape of loads must be examined to determine if a hazard exists during high winds. Wind loading may cause capacity of equipment to be exceeded. When wind speeds exceeds the manufacturers specifications or visibility is impaired by darkness, snow, fog, or the rain, operations must be suspended.

6.4.6 Safe working loads of hoisting equipment apply only to freely suspended loads on plumb hoist lines. Rapid swinging of load also adds additional stresses and reduces stability. The load must always be directly below the boom points upper load block. Side loading is prohibited.

6.5 Crane Modifications

6.5.1 Modifications to cranes shall not be made without prior written approval from the manufacturer or a qualified engineer per ANSI B30.

6.5.2 All recommendations concerning modifications shall be submitted to the Qualified Rigging Specialist for review with the crane manufacturer on Qualified Engineer prior to implementation of the modification.

6.5.3 Welding on cranes must only be performed by Welders qualified to AWSD1.1.

6.6 Movement of Cranes (Under Their Own Power)

6.6.1 The foreman of the crane operator shall ensure the following:

1. Ensure proper operating and mechanical condition of the crane.

2. Know the hazards on the travel route and include in a Plan of the Day briefing for the operator and flagman.

3. One or more flagman escort the crane when any of the following conditions exist:

   A. Crane travel over congested roads. Minimize the need for travel during shift change.

   B. When the boom or any of its attachments extend more than 20 feet in front of the crane. An escort vehicle equipped with yellow caution lights shall be used when travelling long distances.

4. That travel speed is commensurate with traffic and road conditions.

5. All cranes are equipped with a horn signal system (i.e. one blast to move forward, two blasts to stop, and three blasts to back up).

6.6.2 The flagman shall comply with the following:

1. Be qualified.

2. Maintain a position in full view of the operator and use proper hand signals.

3. Wear a high visibility vest and orange flagging gloves.

4. Watch for any unusual condition or event that could interfere with the safe movement of the crane.

6.6.3 The qualified Rigging Specialist shall ensure the following:

1. Direct planning of the move. Consider routing, turns, speeds, stops, terrain, weather condition.

2. Ensure compliance with the plan for movement.

6.6.4 General Superintendent shall be responsible for each crane movement or and ensure the following:

3. Direct planning of the movement to include selected turns, speed, stops, terrain, weather conditions, traffic, etc.

4. Halt the movement operation if any question arises concerning safe movement of the crane.

6.7 Trailered Movement of Cranes

6.7.1 The General Superintendent or Construction Supervision in charge of the crane shall ensure the following:

1. Assign a qualified crew to the crane.

2. Ensure proper operating and mechanical condition of the crane.

6.7.2 The General Superintendent in charge of the tractor-trailer shall ensure the following:

1. Assign a qualified and competent driver.

2. Ensure proper operating and mechanical condition of the tractor and trailer.

3. Obtain patrol and electrical escorts, if and when required.

6.8 High-Consequence Lifts

6.8.1 High-Consequence Lifts shall include as a minimum, the following:

1. A person shall be appointed to be in charge of the entire lifting operation. A resume/certification of the Person-In-Charge's qualifications will be submitted with the high-consequence lift procedure for review.

2. The Person-In-Charge shall be a qualified Rigging Specialist or shall be assisted by a qualified Rigging Specialist, experienced in using hoisting and rigging equipment of the type to be used; preparing and reviewing drawings, procedures and equipment assignments, and supervising the job/lift.

3. The Person-In-Charge shall ensure that a High-Consequence Lift Procedure is prepared addressing the entire lifting operation from conception through finalization. The procedure will be submitted to MK ESH Manager prior to lifting operations.

4. Only qualified operators shall be assigned to operate lifting equipment. A resume of the operators qualifications shall be submitted with the High-Consequence Lift procedure for review.

5. Qualified Riggers shall be signalmen. A resume/certification of the rigger qualifications shall be submitted with the High-Consequence Lift procedure for review.

6. When the weight of the lift is within 10 percent of the special-rated capacity, and equipment of greater capacity is not available, the Person-In-Charge shall review, in detail, the positioning and rigging of the load with the persons who carry out the lift. As with all other lifts, the effect of ground conditions, wind and weather on the stability of the equipment, and the affect of movement speeds shall be considered in giving instructions to equipment operators.

7. Hoisting shall be stopped when the load is approximately two inches off the supports and a check made to determine any tendency to swing or sway, and any tendency of slings to slip or change position. Sling positions shall be adjusted or additional supports or restraints shall be added as necessary before continuing the lift. Approval of changes to sling position, supports, and restraints shall be obtained from the Person-In-Charge before they are made.

8. The Person-In-Charge shall ensure prior to lifting that good rigging practices, precautions, and safety measures shall be employed, that equipment operators are qualified and have been properly instructed, and the equipment is adequate for the loads involved and in good operating condition.

9. Special High-Consequence Lift procedure shall include those requirements in paragraph 6.8.1-1 through 9 of this procedure and in addition, the following:

   A. Identification of each piece of operating equipment to be used in the move by type, rated or special-rated capacity and for

other than permanently installed equipment, the equipment serial number or other identifying number.

B. Identification of slings, lifting bars, and other major rigging accessories or assemblies, by unique identification number.

C. A list of all non-serialized rigging accessories and materials required in the move or lift, identified by type and capacity.

D. Identification of the items to be moved, its weight, dimensions, and center of gravity, all of which may be estimated from drawings or engineering analysis, and the total hook load.

E. Rigging sketches showing all lifting points, sling angles, accessories, methods of attachment, boom angles, crane orientations, and other factors affecting the capacity of equipment and accessories used in the move, together with notation of limitations to be applied on any allowable orientation of the operating equipment or rigging accessories to be used.

F. Instructions to be given to equipment operators, including boom and swing angles at each step of the move, sequence of equipment moves, and coordination of moves of other equipment involved; speeds, direction, and distances, load weight, center of gravity, and other pertinent data.

G. Identification of persons who will have field responsibility for the move or lift and for monitoring it.

H. Requirement for specific tests to be made before, during, and after the move or lift, including load test for Special-High Consequence Loads or practice lift.

I. Surveillance procedures, including check points, instruments, and indicators, that will be used to ensure that the move proceeds according to plan and the special-rated capacity of the equipment has not been exceeded.

6.8.2 The ESH Manager, the Qualified Rigging Specialist, and the General Superintendent shall approve all high consequence and special high consequence lifts.

6.9 <u>Crane Work Near Overhead Power Lines</u>

6.9.1 When planning crane placements, select locations that are least likely to allow any part of the crane or lift to come within 30 feet of a energized power line by rotation, boom extension/elevation, or crane movement.

6.9.2 If any part of the crane shall come within the following minimum clearances, the lines shall be de-energized and grounded or the work shall not be done.

LINE VOLTAGE	MINIMUM CLEARANCE
13.8 kV	10 Feet
115 kV	13 Feet
230 kV	16 Feet

6.9.3 Procedure 3A-215, "Energy Source Lockout/Tagout" shall be put into effect to de-energize overhead power lines. The person in charge shall ensure that the line is grounded.

6.9.4 The following shall be considered before starting work within 30 feet of overhead energized power lines.

1. Allow daylight work only, no work on a rainy or foggy day.
2. Place a rubber blanket on the line.
3. Provide Lineman's gloves and boots for operators and other exposed persons (rigger, other, etc.)
4. Place rubber blanket on the operator's seat.
5. Insulate the crane boom.
6. Provide insulated tag lines.
7. Place blocks under the crane outriggers.
8. Cranes shall be grounded per 29 CFR 1926.550.
9. Allow no one on the crane but the operator.
10. Post a special signalman/spotter to maintain line clearance.
11. Notify the INEEL M&O contractors Power Group lineman for standby.
12. Provide detailed drawings.

6.9.5 Cranes and other heavy equipment shall not be operated within three feet of power poles, or guy wires supporting these poles.

6.9.6 Guy wires within the swing radius of the crane or load shall be flagged with highly visible tape.

6.10 Rigging

6.10.1 General Requirements

1. All rigging equipment shall be tagged with a unique identification number and shall receive inspections initially, periodically, before and after use. All rigging equipment which fails inspection shall be immediately tagged out of service, and destroyed as soon as practical to prohibit inadvertent future use.

2. All rigging shall be inspected by a qualified person before each lift and marked inspected at least annually. All rigging shall be clearly labeled with its capacity. All rigging shall be stored in a rigging loft or an equivalent, and shall not be exposed to the elements.

3. Chains shall not be used for lifting unless part of a chainfall or come-a-long device.

4. Wire ropes shall be kept in good repair and without deformities. Wire ropes with visual signs of kinking, crushing, unstranding, birdcaging, main strand displacement, core protrusion loss of rope diameter, unevenness of outer strands, corrosion, heat damage, abrasion, broken wires or strands and cracked, worn or deformed end attachments shall be destroyed.

5. Wire rope shall not be used if in one rope lay there are six randomly distributed broke wires or three broken wires in one strand.

6. All synthetic slings shall be carefully inspected and maintained. Any synthetic sling which exhibits damage will be removed from service and immediately destroyed.

7. Knots shall not be tied in rigging for any purpose, and all rigging shall be used only for its intended purpose.

8. Knotted and kinked slings will be considered permanently damaged and shall be destroyed, then removed from site.

9. Rigging used to hoist manbaskets shall be identified as such and not used for any other purpose.

10. Hooking back to the load line will not be permitted. All sling eyes shall be seated in the bowl of the hook.

11. When sling eyes do not fit, then use a properly sized shackle. Use a shackle to hold two or more eyes. The pin of the shackle should be placed in the hook with the eyes of chokers bearing on the shank.

12. Only shouldered eye bolts shall be used. Except where it is not possible because of the configuration of the item to which the eye bolt is attached. Unshouldered eye bolts shall not be used when load is to be lifted at an angle because it is subjected to bending and the load it can safely carry is severely reduced. Shouldered eye bolts must be installed per the manufacturers recommendations and must contact the working surfaces to keep bending to a minimum. Never insert the point of a hook in an eye bolt, use a shackle. Do not reeve a sling through a pair of eye bolts. One single leg should be attached to each eye bolt. If eye bolts are welded, the assembly shall be proof tested at 125 percent of capacity.

13. All signalmen shall be properly trained and provided with access to a rigging handbook.

14. The center of gravity must be below the hook and below the lowest point of attachment to ensure stability.

15. To protect slings at sharp corners, use softeners. Sharp bends, pinching and crushing shall be avoided.

16. Avoid bending the eye section of wire rope slings around corners.

17. When the temperature is below freezing caution must be exercised to ensure no part of the hoisting equipment is shock loaded. A fracture of steel could result. Check the manufacturers' recommendations.

18. Stress factors that reduce capacity and safe working load of rigging shall be considered when using slings at low angles or when choked.

19. The gross load, which is the sum of the weight of the slings, block, spreader hooks, lifting below stowed or erected jibs, headache ball, other elements of rigging or equipment and the load, must be accounted for when determining hoisting equipment.

20. Avoid dragging slings from beneath loads.

21. Protect all rigging from flame cutting and electric welding operations, and avoid contact with solvents and chemicals.

22. When estimating sling capacity using four legged slings, only two of the legs shall be considered to carry the full load.

23. Remove all loose pieces of material from load prior to moving.

24. Wear gloves when handling wire rope.

25. Keep hands free from pinch points.

26. Control load at all times. Sufficient tag lines shall be used.

27. At least three wire rope clips shall be used when making an eye on a wire rope.

28. Hoisting/rigging equipment for material handling shall be visually inspected prior to each use on each shift and as necessary during its use to ensure that it is safe.

29. Hoisting/rigging equipment shall not be loaded in excess of its recommended working load.

30. Special hoisting devices, slings, spreaders, hooks, clamps, or other lifting accessories shall be marked to indicate the safe working loads and shall be proof-tested prior to initial use total 125 percent of their rated load.

6.10.2 Wire Rope

1. Tables H-3 through H-14 of 29 CFR 1926 Subpart H, (1926.251, "Rigging Equipment for Material Handling") shall be used to determine the working loads of various sizes and classifications of improved plow steel wire rope and wire rope slings with various types of terminals. For sizes, classifications, and grades not included in these tables, the safe working load recommended by the manufacturer for specific, identifiable products shall be followed, provided that a safety factor of not less than five is maintained.

2. Wire rope with protruding ends of strands in splices on slings and bridles shall be covered or blinded.

3. Wire rope application use limitations shall be in accordance with 29 CFR 1926.251(c).

6.10.3 Natural Rope, and Synthetic Fiber Slings

1. 29 CFR 1926.251 (e), Tables H-15, 16, 17, and 18, or the manufacturer's rating, whichever is least, shall apply when using natural synthetic fiber rope slings.

2. Splices in rope slings are prohibited.

3. Synthetic webbing (nylon, polyester, and polypropylene) shall be identified by:

A. Name of manufacturer

B. Rated capacities for each type of hitch

C. Type of material

4. Synthetic web slings shall be immediately removed from service if any of the following conditions are present:

A. Acid or caustic burns

B. Melting or charring of any part of the sling surface

C. Snags, punctures, tears or cuts

D. Broken or work stitches

E. Distortion of fittings

F. Discoloration of rotting

G. Red warning line showing

H. Other visible or tactile signs of damage.

6.10.4 Shackles and Hooks

1. 29 CFR 1926.251, Table H-19, or the manufacturers rated capacity, whichever is less, as referenced previously, shall be used to determine the safe working loads of various sizes of shackles.

2. The manufacturer's recommendations shall be followed in determining the safe working loads of the various sizes and types of specific and identifiable hooks.

3. Shackles and hooks shall be constructed of forged alloy steel with the identifiable load rating on the shackle or hook. All hooks except for sorting hooks and sliding choker hooks shall be equipped with a self closing throat latch.

6.11 Aerial Lift Requirements

6.11.1 Aerial lifts should be designed, constructed and operated in accordance with current ANSI standards. Aerial lifts shall include the following types of vehicle mounted aerial devices for elevating personnel:

1. Extensible boom platform

2. Aerial ladders
3. Vertical towers
4. Articulating boom platforms
5. Bucket trucks
6. Scissor lifts

6.11.2 Aerial lifts shall not be modified for uses other than those intended by the manufacturer, unless the modification has been certified in writing by the manufacturer.

6.11.3 Only operators who have documented training for the specific make and model lift are authorized to operate the equipment. Training may be provided by manufacturers representatives, the Qualified Rigging Specialist or his designee.

6.11.4 The manufacturer's recommended checkout instructions shall be completed each day by the operator prior to use of the machine.

6.11.5 A body belt must be worn with the lanyard secured to appropriate anchor point by all personnel while in the platform or bucket.

6.11.6 Personnel shall remain in the platform or bucket at all times and shall not use the platform to gain access to a work location without the written approval of the ESH Manager.

6.11.7 The boom platform shall not rest on a support or other surface for stability.

6.11.8 Aerial lifts shall be operated from a firm level surface.

6.11.9 Platform movement shall be in accordance with manufacturing recommendations.

6.11.10 The platform operational controls shall be physically operated and never mechanically blocked.

6.11.11 Adequate warning signs or barricades shall be posted at the work area. The counterweight swing radius shall also be flagged and or otherwise barricaded in accordance with MK procedure 3A 218, "Signs, Signals and Barricades".

6.11.12 Personnel shall not work from elevated platforms when winds exceed manufacturers' recommendations or twenty (20) miles per hour, whichever is stronger.

6.11.13 The operator shall, on a daily basis, visually inspect the tires, hydraulic systems, booms, baskets, controls, brakes, drive chain, and safety equipment and document inspection findings on a provided checklist. These checklists will be posted on or near the lift by the operator and maintained in a legible condition while the lift is in use.

6.11.14 The load limits specified by the manufacturer shall be posted on the equipment and shall not be exceeded.

6.11.15 An aerial lift shall not be used as a material hoist, except for miscellaneous hand carried materials which fit within the personnel enclosure.

6.11.16 The platform shall be placed in its lowest position for personnel mounting and dismounting.

6.11.17 At least one person in a work platform shall be a qualified operator. Total weight of personnel, materials, and tools in aerial platforms shall not exceed the load limit specified by the manufacturer.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 A high consequence lift procedure or special high consequence lift procedure is a non-QA, non-permanent record to provide approval for work and compliance with applicable requirements. It is destroyed when work is completed.

8.2 Operator qualification documents are generated and maintained in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-210	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: MATERIAL HANDLING AND STORAGE

APPROVAL

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TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENT 4

7.0 EXTERNAL INTERFACE 10

8.0 RECORDS 10

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 This procedure establishes the safety requirements for storing and handling material.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction operations at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910. 176, Handling Materials-General

29 CFR 1926. 250, Material Handling, Storage, Use, and Disposal

3.2 Reference Documents

3A 205, Personal Protective Equipment

3A-224, Fire Prevention and Protection Program

3A-228, Flammable and Combustible Materials

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

NFPA 231, General Storage

4.0 DEFINITIONS

NONE

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for ensuring that all aspects of this procedure are implemented on all projects.

5.2 Environmental, Safety and Health (ESH) Manager: Responsible for monitoring all work areas under their authority to ensure compliance with this procedure.

5.3 Supervision: Responsible for evaluating the hazards of the various material handled when determining whether special precautions need to be followed.

5.4 MK employees: Responsible for complying with all provisions of this procedure. The relative fire safety in the storage area will largely depend on employee housekeeping practices.

6.0 REQUIREMENT

6.1 General Requirements: All personnel involved in the handling and storage of nonhazardous material shall adhere to the following requirements:

6.1.1 All materials stored in tiers shall be stacked, racked, blocked, interlocked, or otherwise secured to prevent sliding, falling, or collapse.

6.1.2 Maximum safe load limits of floors within buildings and structures shall be conspicuously posted in all storage areas, except for floor or slab on grade. Maximum safe loads shall not be exceeded.

6.1.3 Aisles and passageways shall be kept clear to provide for the free and safe movement of material handling equipment and employees. Such areas shall be kept in good repair.

6.1.4 When a difference in road or working levels exist, means such as ramps, blocking or grading shall be used to ensure the safe movement of vehicles between the two levels.

6.2 Indoor Storage

6.2.1 Material stored inside buildings under construction shall not be placed within 6 feet of any hoistway or inside floor openings, nor within 10 feet of an exterior wall which does not extend above the top of the material stored.

6.2.2 Employees required to work with material stored in silos, hoppers, tanks, and similar storage areas shall meet the requirements of procedure 3A-202, "Confined Spaces", for working in confined spaces.

6.2.3 Non-compatible materials shall be segregated in storage.

6.2.4 Bagged materials shall be stacked by stepping back the layers and crosskeying the bags at least every 10 bags high.

6.2.5 Materials shall not be stored on scaffolds or runways in excess of supplies needed for immediate operations.

6.2.6 Brick stacks shall not be more than 7 feet in height. When a loose brick stack reaches a height of 4 feet it shall be tapered back 2 inches in every foot of height above the 4 feet level.

6.2.7 When masonry blocks are stacked higher than 6 feet, the stack shall be tapered back one-half block per tier above the 6-foot level.

6.2.8 Used lumber shall have all the nails withdrawn before stacking. Lumber shall be stacked on level and solidly supported sills. Lumber shall be so stacked as to be stable and self-supporting. Lumber piles shall not exceed 20 feet in height provided that lumber to be handled manually shall not be stacked more than 16 feet high.

6.2.9 Structural steel, poles, pipe, bar stock, and other cylindrical materials, unless racked, shall be stacked and blocked so as to prevent movement, spreading or tilting.

6.3 Outdoor Storage

6.3.1 Outdoor storage is acceptable for materials that are:

6.3.1.1 Of low fire hazard, not requiring protection even if located outdoors.

6.3.1.2 Of low value that a potential loss would not justify the utilization of building space.

6.3.1.3 Of such great fire hazard that indoor protection is impractical, when balanced against potential loss.

6.3.1.4 Of large volume and bulk, making it impractical to construct and protect a building to house the storage.

6.3.1.5 Materials shall be secured to prevent problems from wind gusts.

6.3.2 Automatic fire protection is generally impractical for outdoor storage. As a result, emphasis will be placed upon the following safety principles:

6.3.2.1 Keep potential ignition sources from coming in contact with buildings, transformers, yard equipment, refuse burners, overhead power lines, and vandals.

6.3.2.2 Elimination of adverse factors such as trash accumulations, weeds, and brush.

6.3.2.3 Provision of favorable physical conditions such as limited pile sizes, low storage heights, wide aisles, and possible use of fire retardant covers.

6.3.3 Aisles shall be maintained between individual piles, between piles and buildings, and between piles and the boundary line of the storage site. Sufficient driveways having the width of at least 15 feet should be provided to permit the travel of fire equipment to all portions of the storage area.

6.4 Liquid Fuel Storage

6.4.1 The storage and handling of liquid fuels such as gasoline and diesel fuel shall be in accordance with National Fire Protection Agency (NFPA) Flammable and Combustible Liquids Code, procedure 3A-228, "Flammable and Combustible Materials" and procedure 3A-224, "Fire Prevention and Protection Program". Fire aisles, access to stairways and fire equipment shall be kept clear.

6.5 Yard Maintenance and Operations

6.5.1 The entire storage area shall be kept free from accumulation of unnecessary combustible material. Vegetation should be kept cut low. Weed control and the periodic cleanup of the storage yard shall be provided in a regular basis. This service shall be provided as required and when requested.

6.5.2 No heating equipment should be located or used within the storage area. Salamanders, braziers, portable heaters and other open fires shall not be used.

6.5.3 Smoking shall be prohibited in all areas, except in those locations prominently designated as smoking areas.

6.5.4 Tarpaulins, used for protection of material in storage against the weather, shall be of fire retardant fabric.

6.6 Use of Mechanical Equipment

6.6.1 Where mechanical handling equipment is used, sufficient safe clearances shall be allowed for aisles, at loading docks, through doorways and whatever turns and whatever passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstruction across or in aisles that could create a hazard. Permanent aisles and passageways shall be appropriately marked.

6.6.2 Only approved industrial trucks shall be used in hazardous locations.

6.6.3 Dockboards and bridgeplates shall be properly secured before they are driven over.

6.6.4 There shall be sufficient headroom for any equipment loaded with other equipment or material to pass under overhead installations, lights, pipes, sprinkler systems, etc. An overhead guard shall be used as protection against falling objects.

6.6.5 Only stable or safely arranged loads shall be handled. Caution shall be exercised when handling off-center loads which cannot be centered. Only loads within the rated capacity shall be handled.

6.6.6 Rigging equipment for material handling shall be inspected prior to use to insure that it is safe. Rigging equipment when not in use, shall be removed from the immediate work area so as not to present a hazard to employees.

6.7 Handling Material Manually

6.7.1 Always examine the object to be lifted. Determine its weight and look for sharp edges. Check to see if the load is stable and equally distributed. Decide how to hold the object. If mechanical devices can be used to move material, use them. Avoid manually lifting objects when possible.

6.7.2 Always plan the route that is free from tripping and slipping hazards. Know where the object will be unloaded.

6.7.3 Always get help if you have any doubt about moving the object by yourself. Find out the weight of the load, if possible.

6.7.4 When lifting, assume a comfortable stance. Lift smoothly, keeping the load close to the body. Avoid twisting your body as you lift.

6.7.5 When unloading an object, be careful not to crush fingers.

6.7.6 Always remove and/or secure any loose parts before lifting or handling an object.

6.7.7 A one-person lift ("squat lift") shall be performed as follows:

6.7.7.1 Face the object and stand as close to the load as possible, feet spread apart. (Slide the load close to you if it's on a shelf.)

6.7.7.2 Bend at the knees, keeping your back straight and stomach tucked in. (You'll reduce the risk of pinching a disc.)

6.7.7.3 Grasp the load firmly.

6.7.7.4 Lift smoothly with your legs.

6.7.7.5 Hold the load close to the center of your body.

6.7.8 An alternative lift (when it's not possible to bend your knees or get close to the object) shall be performed as follows:

6.7.8.1 Stand as close to the load as possible.

6.7.8.2 Bend at the knees if you can, or brace yourself by putting your knees against a solid object.

6.7.8.3 Bend at the hips, keeping your head and back in a straight line.

6.7.8.4 Lift gradually, using legs, buttocks, and stomach muscles.

6.7.9 Objects shall be carried as follows:

6.7.9.1 Do not carry long objects around corners out of your view. Get help if the object requires two people.

6.7.9.2 Do not change your grip on the load unless its weight is supported.

6.7.9.3 Do not carry a load that blocks your vision.

6.7.9.4 Use dollies, hand carts, and/or buggies to carry material whenever possible.

6.7.10 Never lift or carry a load above your head or on the side of your body.

6.7.11 Team lifts shall be performed as follows:

6.7.11.1 Whenever possible, lift with someone of similar build and height.

6.7.11.2 Lift from the hips at the same time, then raise the load to the desired level.

6.7.11.3 Choose one person to call the signals.

6.7.11.4 Move smoothly and in unison.

6.7.11.5 When carrying long objects each person should be on the same side.

6.7.12 Loads from a high place shall be lowered as follows:

6.7.12.1 Test the load's weight by pushing up on it. Check whether the load will shift when you lift it.

6.7.12.2 Always check the top of the object for loose materials that may fall.

6.7.12.3 Stand as close to the lift when possible.

6.7.12.4 Grasp the object firmly, sliding it down your body.

6.7.13 One-arm loads (such as buckets, tool boxes, etc.) shall be carried as follows:

6.7.13.1 Brace your body with the opposite arm, if possible.

6.7.13.2 Reach for the load, bend at the knees and waist, and keep your back straight.

6.7.13.3 Grasp the load firmly (use a handle, if possible).

6.7.13.4 Lift with your legs, using the free arm for balance.

6.7.13.5 Keep your shoulders level, switch hands regularly.

6.7.14 Always wear foot protection when lifting and/or handling materials that may cause injury to the feet in accordance with procedure 3A-205, "Personal Protective Equipment".

6.7.15 Wear adequate gloves of suitable materials for the job in accordance with procedure 3A-205, "Personal Protective Equipment".

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-211	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: MOTOR VEHICLES AND MECHANICAL EQUIPMENT

APPROVAL

William Pierpaner — 2/22/99
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBITS 7

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with guidelines for driving/operating motor vehicles and mechanical equipment.

2.0 SCOPE

2.1 This procedure applies to all MK employees that use motor vehicles and mechanized equipment for official business at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Subpart O, Motor Vehicles, Mechanized Equipment and Marine Operations

3.2 Reference Documents

3A-104, Accident Investigations, Reports and Record Keeping

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Driver: Means any person who operates a motor vehicle.

4.2 Mechanized Equipment: Various sizes and types of equipment that are used for the construction of highways, buildings, pipe lines, and similar type work which includes scrapers, crawler or wheel tractors, loaders, bulldozers, off-highway trucks, graders, agricultural and industrial tractors, and similar equipment.

4.3 Motor Vehicle: Any vehicle, machine, tractor, trailer, semitrailer propelled or drawn by mechanical power in the transportation of employees, passengers or property, or any combination thereof determined by the Occupational Safety and Health Administration.

4.4 Occupant Seat Belt: A manual or passive restraint system.

4.5 Tie-down System: A mechanism to tie-down material or equipment by using slings, chains, ropes, or some other approved type straps to prevent movement of loads in any direction while being transported.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for the implementation of this procedure. Supervisors shall ensure that their employees who operate motor vehicles and equipment are qualified and/or properly licensed.

5.2 ESH Manager: Responsible for conducting surveillances to assure compliance with this procedure.

5.3 Employees: Responsible for compliance with the requirements of this procedure and complying with all motor vehicle requirements/laws of the state.

5.3.1 Report any physical conditions or the use of medications or other substances that could impair their safe operation of vehicles to their supervisor and refrain from operating vehicles under those conditions.

6.0 REQUIREMENTS

6.1 General Requirements

6.1.1 All construction vehicles or equipment parked for the night, adjacent to a highway or street, shall have appropriate lights, reflectors, barricades, or similar approved warning devices.

6.1.2 All motor vehicles and mechanized equipment shall be equipped with the following equipment in good, operable condition:

- Brake Systems (emergency, parking, service)
- Headlights and tailights
- Brake and backup lights
- Horn, rearview mirrors, and seatbelts
- Windshields and powered wipers
- Defrosters when necessary.

6.1.3 All construction vehicles and equipment shall be equipped with backup or movement that is audible above the surrounding noise level.

6.1.4 All haulage vehicles loaded by power shovels, loaders, or similar equipment, shall have a cab shield and/or canopy adequate to protect the operator from shifting or falling materials.

6.1.5 A tie-down system or other acceptable method shall be utilized to secure materials, tools, equipment, and supplies during transport.

6.1.6 Trucks with dump bodies shall be equipped with positive means of support, permanently attached, and capable of being locked in position to prevent accidental lowering of the body while maintenance or inspection work is being done.

6.1.7 Operating levers controlling hoisting or dumping devices on haulage bodies shall be equipped with a latch or other device which will prevent accidental starting or tripping of the mechanism.

6.1.8 Trip handles for tailgates of dump trucks shall be arranged so that the operator will be in the clear while dumping.

6.1.9 Mud flaps shall be used in lieu of fenders whenever the motor vehicle equipment is not designed for fenders.

6.1.10 When personnel may come in contact with an exhaust system that is mounted vertically on the cab, the system shall be shielded or guarded.

6.1.11 Commercial motor and haulage vehicles operating on public roads and highways shall comply with all applicable portions of 49 CFR Transportation.

6.2 Accident Reporting: See procedure 3A-104 , "Accident Investigations, Reporting and Record Keeping".

6.3 Any person who operates a company motor vehicle shall be responsible for reporting any malfunction which may occur while the vehicle is in their custody. If such a deficiency jeopardizes safe operation, the vehicle shall not be operated until corrective action has been taken.

6.4 Vehicle and Equipment Inspections

6.4.1 All drivers and operators shall check their vehicle or machine at the beginning of each shift to assure all equipment and accessories are functioning properly.

6.4.2 The inspection should include:

- Brakes (hand and foot)
- Steering
- All lights and signals
- Tires

- Seat Belts
- Windshield (Cracked windshields and broken glass shall be replaced.)
- Wipers
- Operating Controls

6.4.3 If an unsafe condition is found, the vehicle shall not be operated. Unsafe conditions or damage shall be reported immediately to Supervision.

6.4.4 General Operating Requirements

6.4.5 Prior to placing a vehicle or machinery in motion, the operator shall make certain that seat belts are in use, and the immediate area around their vehicle or equipment is clear of personnel, other vehicles and equipment, etc.

6.4.6 During any refueling operation, the engine shall be stopped with ignition keys removed and in the possession of the operator.

6.4.7 While a vehicle is in motion, the operator will ensure passengers DO NOT:

- Extend any part of their body out the windows
- Ride on or in parts of the vehicle not intended for passengers (e.g., the bed of pickups, running boards)
- Get in or out of the vehicle

6.4.8 Additionally, drivers will ensure the number of occupants in the vehicle is limited to the number of seats with seatbelts.

6.4.9 Operators shall be certain that clearance is sufficient before attempting passage under overhead obstacles such as wires and overhead pipe, etc.

6.4.10 Vehicles and Equipment shall be operated at speeds reasonable for weather and road conditions; and never at a speed greater than the posted speed limit.

6.4.11 Equipment operators will use the "3 points of contact" method when mounting or dismounting from equipment.

6.4.12 No employee will backup any motor vehicle or equipment having an obstructed view to the rear unless:

6.4.12.1 The vehicle has a reverse signal alarm audible above the surrounding noise level, or

6.4.12.2 The vehicle is backed up only when an observer signals that it is safe to do so.

6.5 Parking

6.5.1 Mechanized equipment shall be placed in a "zero energy" state, that is, engine off; transmission in park or lowest gear; blades, rippers, bellys, and/or other attachments lowered to the ground; and parking brake set.

6.5.2 Trucks, 1½ ton capacity or larger, shall be chocked when parked.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-212	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: MACHINERY AND MACHINE GUARDING

APPROVAL

William Pierpoint ES&H MANAGER	2/22/99 DATE
Dill Bill QUALITY MANAGER	2/22/99 DATE
Bob Wisdom CONSTRUCTION MANAGER	2.22.99 DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 6

8.0 RECORDS 6

9.0 ATTACHMENTS 6

10.0 EXHIBITS 6

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with safety requirements for machinery and machine guarding.

2.0 SCOPE

2.1 This procedure applies to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, OSHA Standards, Subpart 0, Machinery and Machine Guarding

3.2 Reference Documents

3A-102, ESH Surveillances

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Authorized Person: One to whom the authority and responsibility for performing a specific assignment has been given by the employer.

4.2 Guard: A barrier that prevents entry of the operator's hands or fingers into the point of operation.

4.3 Stop Control: An operator control designed to immediately deactivate the clutch control and activate the brake to stop slide motion.

4.4 Interlocked Press Barrier Guard: A barrier attached to the press frame and interlocked so that the press stroke cannot be started normally unless the guard itself, or its hinged or movable section, encloses the point of operation.

4.5 Pinch Point: Any point, other than the point of operation at which it is possible for a part of the body to be caught between the moving parts of a press or auxiliary equipment, or between moving and stationary parts of a press or auxiliary

equipment or between the material and moving part or parts of the press or auxiliary equipment.

4.6 Point of Operations: The area on a machine where work is actually performed on the material being processed.

4.7 Safety Block: A prop that, when inserted between the bolster plate and the face of the slide, prevents the slide from falling of its own dead weight.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for:

5.1.1 Providing employees with safe machinery.

5.1.2 Ensuring employees comply with the requirements of this procedure.

5.1.3 Ensuring all affected employees are familiar with safe operating methods before starting work on any machine.

5.1.4 Ensuring all machinery is properly guarded prior to operation.

5.2 Employees: Responsible for:

5.2.1 Reporting all known or suspected hazards to management.

5.2.2 Complying with all provisions listed in this procedure.

5.3 ESH Manager: Responsible for maintaining inspection records and conducting periodic inspection of power presses and other machinery to ensure that all parts, auxiliary equipment, and safeguards are in place and in a safe operating condition. The ESH Manager shall review purchase requisitions to assure machine guarding requirements are specified.

6.0 REQUIREMENTS

6.1 Type of Guarding: One or more methods of machine guarding shall be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, in-going nip points, rotating parts, flying chips, and sparks. Examples of guarding methods are:

- Barrier guards
- Two-hand tripping devices
- Electronic safety devices.

6.2 Special hand tools for placing and removing material shall permit easy handling of material without the operator placing a hand in the danger zone. Such tools shall not be in lieu of other guarding required by this procedure, but can only be used to supplement protection provided.

6.2.1 The following are some of the machines which usually require point of operation guarding:

- Guillotine cutters
- Shears
- Alligator shears
- Power presses
- Milling machines
- Power saws
- Jointers
- Portable power tools
- Forming rolls and calendars.

6.3 General Machine Guarding Requirements

6.3.1 Guards shall be affixed to the machine where possible and secured elsewhere if, for any reason, attachment to the machine is not possible.

6.3.2 The guard shall be such that it is not an accident hazard in itself.

6.3.3 The point of operation of machines, whose operation exposes an employee to injury, shall be guarded.

6.3.4 The guarding device shall be in conformity with any appropriate standards (e.g., Occupational Safety and Health Administration/American National Standards Institute [OSHA/ANSI]). Therefore, or, in the absence of applicable specific standards, it shall be so designed and constructed as to prevent the operator from having any part of his body in the danger zone during the operating cycle.

6.3.4.1 ESH Manager shall review purchase requisitions to assure that this requirement is met.

6.3.4.2 ESH Manager shall inspect all new equipment to the requirements of the purchase order.

6.4 Inspections: Inspection shall be performed in accordance with procedure 3A-102, "ESH Surveillances".

6.4.1 Supervision shall:

6.4.1.1 Perform an initial inspection of all machinery and remove from service any equipment not properly guarded. General precautions for machinery operators are provided in Attachment 1.

6.4.1.2 Perform a re-inspection of all machinery taken out of service for repairs prior to restart.

6.4.2 Acceptance: Acceptance of equipment shall be made after inspection of equipment for machinery and machine guarding.

6.4.3 Qualifications: Any necessary qualifications of inspecting personnel shall be in accordance with procedure 3A-102, "ESH Surveillances".

6.5 Prior to use of any machinery addressed by this procedure, affected employees should be familiarized with the safe operating method for that machinery.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

9.1 General Precautions for Machinery Operators

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
PAGE 1 OF 1

GENERAL PRECAUTIONS FOR MACHINERY OPERATORS

1. Know the safe procedure before operating any machine.
2. Verify that all guards and safety devices are functioning.
3. Verify that the exhaust system is working effectively for the machine in use.
4. Do not reach across moving parts of any machine.
5. Avoid unnecessary conversation while machine is operating.
6. Do not force-feed stock beyond ability of machine to accept it.
7. Stop machine completely before removing jammed stock.
8. Never grab belt to stop machine.
9. After de-energizing, do not attempt to stop motion of cutting edges with hand or stick.
10. Know the location of all emergency switches.
11. Never engage in "horseplay" on the job.
12. Always use suitable eye protection equipment.
13. Get prompt first-aid for even the slightest cut or scratch and report the injury to supervisory personnel.

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TITLE: HAND AND POWER TOOLS

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENT 5

7.0 EXTERNAL INTERFACE 12

8.0 RECORDS 12

9.0 ATTACHMENTS 12

10.0 EXHIBITS 12

1.0 PURPOSE

1.1 The objective of this procedure is to identify the requirements and responsibilities for safe operation and maintenance of hand tools and hand-held power tools.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910 Subpart P, Hand and Portable Powered Tools and Other Hand-held Equipment

29 CFR 1926 Subpart I, Tools - Hand and Power

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

3A-202, Confined Space

3A-214, Electrical Safety

3A-228, Flammable and Combustible Materials

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 17

American National Standards Institute

- A10.3-1995, Safety Standard for Powdered-Actuated Fastening Systems
- B19.1-1995, Safety Standard for Air Compressor Systems (ANSI/ASME)
- B30.1-1998, Jacks (ANSI/ASME)
- B7.1-1988, The Use, Care, and Protection of Abrasive Wheels
- Z9.4-1997, Ventilation and Safe Practices of Abrasive Blasting Operations

- 70B-1994, Electrical Equipment Maintenance (ANSI/NFPA)
- 1624-1988, Light Industrial Tools
- 45-1992, Portable Electric Tools (ANSI/UL)

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Fixed Electric Tools: A stationary tool which receives power for operation from an electrical source by a cord and plug.

4.2 Hand Tools: A broad spectrum of items, which are generally hand-held and hand operated, and used in performance of the related craft work.

4.3 Hydraulic Tools: Tools that utilize hydraulic fluids to retain their operating characteristics.

4.4 Pneumatic Tools: Tools that are moved or worked by air pressure.

4.5 Portable Electric Devices: Electric powered devices and equipment which are not permanently mounted, and are connected to an electrical power source by a cord and plug.

4.6 Portable Electric Tool: A hand-held or otherwise easily relocated tool which receives power for operation from an electrical source by a cord and plug.

4.7 Powder Actuated Tools: Tools which, by means of a heavy hammer supplemented by a load, moves a piston designed to be captive to drive a stud, pin, or fastener into a hard work surface and that meet all applicable requirements of American National Standards Institute (ANSI), A10.3-1985, Safety Requirements for Explosive-Actuated Fastening Tools.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for assisting supervisor(s) in establishing specifications for procurement of acceptance portable and power tools, and will conduct surveillances to ensure compliance with this procedure.

5.2 Supervision: Responsible for tool safety reviews, identifying training requirements, assuring compliance with this procedure, monitoring employee performance, and having tools repaired.

5.3 Employees: Responsible for complying with the correct operation and safe use of tools and equipment as required by this procedure.

6.0 REQUIREMENT

6.1 General Requirements

6.1.1 Supervision shall identify appropriate training requirements for employees who use hand and powered portable tools. Employees shall be trained through formal training (when required) and/or safety meetings.

6.1.2 Before using, all hand and portable power tools shall be in proper operating condition and used only for the purpose the manufacturer intended.

6.1.3 All defective tools and equipment shall be immediately removed from service, tagged "DO NOT USE", and repaired or replaced.

6.1.4 All tools will be used and maintained in a condition not altered from the original manufactured design, unless such alternatives are specifically authorized in writing by the tool manufacturer.

6.2 Portable and Fixed Electrical Tools

6.2.1 All electrical tools shall be in proper working condition.

6.2.2 Double insulated portable electric tools shall be positively and distinctly marked to identify that the tool is double insulated and Underwriters' Laboratory (UL) approved.

6.2.3 All electric tools shall bear the UL label or the label of an equivalent recognized testing agency such as Factory Mutual (FM).

6.2.4 Power for electrical hand tools which is not a permanent wiring of the building shall require or structure (i.e., extension cord) a ground fault circuit interrupter (GFCI) or an assured equipment grounding conductor program.

6.2.5 Portable electric tools shall not be used where sparks or heat generated may cause a fire or explosion.

6.2.6 Portable electrical tools to be used in a potentially flammable or explosive atmosphere shall be listed by UL or FM for the specific class, division, and group atmosphere involved.

6.2.7 Portable electrical tools (except orbital sanders, erasers, or tools designed by the manufacturer with an integral clutch mechanism) shall have constant pressure-type controls. Locking devices on the controls shall be removed or made inoperative.

6.2.8 All portable power tools such as, but not limited to, circular saws, belt sanders, and right-angle grinders, shall be provided with guards that protect the point of operation and/or nip points.

6.2.9 Power tools shall be disconnected from the power source when not in use, before servicing, and when changing accessories such as blades, bits, and cutters.

6.2.10 Fixed electrical tools shall be plugged directly into a receptacle. The use of extension cords on fixed electrical tools is prohibited.

6.2.11 The use of electric cords for hoisting or lowering tools shall not be permitted.

6.3 Fuel Powered Tools

6.3.1 All fuel powered tools shall satisfy the applicable requirements for powered hand tools identified.

6.3.2 All fuel powered tools shall be stopped while being refueled, serviced, or maintained; and fuel shall be transported, handled, and stored in approved containers in accordance with procedure 3A-228, "Flammable & Combustible Materials".

6.3.3 When fuel powered tools are used in enclosed spaces, the applicable requirements for concentrations of toxic gases and use of personal protective equipment apply in accordance with procedure 3A-202, "Confined Space".

6.4 Hydraulic Tools

6.4.1 The fluid used in hydraulic tools shall be fire-resistant fluids, approved under the Schedule 30 of the U.S. Bureau of Mines, Department of the Interior and shall retain its operating characteristics at the most extreme temperatures to which it will be exposed.

6.4.2 The manufacturer's safe operating pressures for hoses, valves, pipes, filters, and other fittings shall not be exceeded.

6.4.3 Hydraulic jacks (these requirements include manually operated lever, ratchet, or screw type):

1. The manufacturer's rated capacity shall be legibly marked on all jacks and shall not be exceeded.

2. All jacks shall have a positive stop to prevent overtravel.

3. All jacks shall set on a firm foundation.

4. Blocking or cribbing shall be used whenever there is a possibility of slippage of the metal cap of the jack.

6.4.4 All hydraulic powered tools shall be inspected regularly by a competent person for defects that may cause equipment failure.

6.5 Pneumatic Tools

6.5.1 All pneumatic power tools shall satisfy the applicable requirements for powered hand tools.

6.5.2 Operators shall be specifically trained in the safe use of compressed air tools.

6.5.3 Compressed air shall not be used for cleaning except where reduced to less than 30 psi and then only with effective chip guarding and personal protective equipment.

6.5.4 Compressed air shall not be used to clean employee's clothing.

6.5.5 Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

6.5.6 All hoses exceeding 1/2-inch inside diameter shall have a pressure reducing safety device at the source of supply or branch line to reduce pressure in case of hose failure.

6.5.7 Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

6.5.8 The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

6.5.9 Abrasive blast cleaning nozzles shall be equipped with an operating valve which must be held open manually. A support shall be provided on which the nozzle may be mounted when not in use.

6.5.10 Pneumatically powered equipment shall conform to the requirements of ANSI B30.1-1998, and abrasive blasting equipment shall conform to the requirements of ANSI Z9.4-1997.

6.5.11 Safety-resistant devices or chains of adequate strength shall be used to attach hoses to compressor fittings on all lines ½ inch or greater.

6.6 Powder-Actuated Tools

6.6.1 Powder- and explosive-actuated fastening tools shall meet the design requirements in accordance with ANSI A10.3-1995.

NOTE: This requirement does not apply to devices designed for attaching objects to soft construction materials, such as wood, plaster, tar, dry wallboard and the like, or to stud welding equipment.

6.6.2 Only high momentum, low velocity, or "hammer" type powder-actuated tools are permitted. The design and construction of these tools shall be in accordance with 29 CFR 1910.243 (d)(2)(iii) requirements.

6.6.3 All operators of powder-actuated tools shall be trained in the operation of the tool and shall be familiar with the provisions of ANSI A10.3-1985 and the instructions provided by the manufacturer for operation and maintenance.

6.6.4 Powder-actuated tools shall be used only under a work control document in accordance with procedure 3A-201, "Job Safety Analysis."

6.6.5 Powder-actuated tools shall be tested each day before loading to see that safety devices are in proper working condition. The method of testing shall be in accordance with the manufacturer's recommended procedure.

6.6.6 No load (cased or uncased) shall be used in any powder-actuated tool if it will accurately chamber in any existing approved commercially available low-velocity hammer operated piston tool and will cause a fastener to have a mean velocity in excess of 300 feet per second when measured 6.5 feet from the muzzle end of the barrel. No individual test firing of a series shall exceed 300 feet per second by more than 8 percent.

6.6.7 Powder-actuated tool fasteners shall be only those specifically manufactured for use in such tools.

6.6.8 Powder-actuated tools shall not be loaded until just prior to the intended firing time. Loaded tools shall not be unattended. Magazines shall be removed if tool is unattended.

6.6.9 Powder-actuated tools shall never be pointed at any employee. This includes both loaded or unloaded tools.

6.6.10 Powder-actuated tool fasteners shall not be driven into very hard or brittle materials that may shatter or break, including, but not limited to, cast iron, glazed tile, surface hardened steel, glass block, live rock, face brick, or hollow tile.

6.6.11 Powder-actuated tools shall not be used for driving into material easily penetrated unless such materials are backed by a substance that will prevent the pin or fastener from passing completely through and creating a flying obstacle hazard on the other side.

6.6.12 All powder-actuated tools shall be used with the correct shield, guard, or other attachments recommended by the manufacturer.

6.6.13 Powder-actuated tools shall not be used in an explosive or flammable atmosphere.

6.6.14 Studguns, powder-actuated and powder-assisted industrial tools must be designed and equipped to prevent free flight of any projectile. Employees/operators are required to attend annual training in all aspects of powder-actuated tools. A valid certificate of competence (valid for the year) shall be in each employee's/operator's possession, prior to operating powder-actuated tools. Records of training and certification will be maintained.

6.7 Electrical Powered Abrasive Wheels and Tools

6.7.1 Powered Abrasive Wheels and Tools shall meet all the applicable requirements for powered tools.

6.7.2 All abrasive wheels and tools shall meet the standards listed in ANSI B7.1-1988, "The Use, Care, and Protection of Abrasive Wheels".

NOTE: Natural sandstone wheels and metal, wooden, cloth, or paper discs, having a layer of abrasive on the surface are excluded from the requirements of this paragraph.

6.7.3 All grinding machines shall be supplied with sufficient power to maintain the spindle speed at safe levels under all conditions of normal operations.

6.7.4 Except as listed below, all portable grinding tools shall be equipped with a guard that satisfies the requirements of 29 CFR 1910.243 (c) and 1926.303 (c)(4 through 6):

1. Wheels used for internal work and are entirely within the work being ground while in use.

2. Mounted wheels two inches and smaller in diameter.

3. Types 16, 17, 18, 18R, and 19 cones, plugs and threaded hole pot balls where the work offers protection.

6.7.5 All abrasive wheels shall be inspected by a competent person using a ring test before mounting to make sure they have not been damaged in transit, storage, or otherwise. The spindle speed of the machine shall be checked before mounting of the wheel to be certain that it does not exceed the maximum operating speed marked on the wheel.

6.7.6 Cracked abrasive wheels or those with any other obvious defect shall not be used.

6.8 Electrical Tool Inspection

6.8.1 All electrical tools, electrical devices, and extension cords shall be inspected upon initial acquisition, and daily by the user. Tools that fail inspection shall be tagged "DO NOT USE" and be repaired or replaced.

6.8.2 The installed covering on electrical cords shall be free of defects, such as cracks or breaks.

6.8.3 The plug shall be dead front or molded type. Open end plugs with paper press-fitted disks are not approved for use.

6.8.4 Extension and flexible cords shall be free of splices.

6.8.5 The power cord shall contain three wires with a ground prong incorporated into the plug.

EXCEPTION: Tools identified as "double insulation" or "double insulated" do not require the ground plug or grounding wire.

6.9 Manually Used Hand Tools

6.9.1 Only those tools in good condition shall be issued or permitted to be used on the job.

6.9.2 Tools with mushroomed heads, split handles or any other defect must be taken out of service until repaired and or replaced.

6.9.3 Tools shall be stored in appropriate containers, racks, or bins suitably constructed for tool storage.

6.9.4 Where workers normally furnish their own tools, such tools shall conform to the requirements demanded for safe and efficient work.

6.9.5 Wrenches and other tools designed for turning shall have flats or teeth kept in the designed condition and at the proper angle. Wrenches shall not be used when jaws are sprung to the point that slippage occurs.

6.9.6 Impact tools (such as drift pins, wedges, and chisels) shall be kept free of mushroomed heads.

6.9.7 Files and rasps shall be fitted and used with secure handles. They shall be clean and sharp.

6.9.8 Only tools designed as levers shall be used as levers. Levers shall be sized for the job and used in a manner that minimizes risk of slippage.

6.9.9 Only tools approved for specific hazardous locations shall be used. Tools used where flammable vapors may be present shall be made of non-sparking materials. Tools used on or around electrical installations shall have insulated handles in good condition.

6.9.10 All hand-held power tools shall be equipped with a constant pressure switch that will shut off the power when the pressure is released. Positive on/off switches are not authorized on hand-held power tools.

6.9.11 All operations of hand-held power tools shall use safety goggles and a face shield for protection against injury.

6.9.12 The only exceptions to this policy are:

1. Employees using circular power saws for cutting wood may use sealed eye protection such as safety goggles or sealed safety glasses in lieu of safety goggles and a face shield.

2. Employees using drills horizontally or vertically may use sealed eye protection such as safety goggles or sealed safety glasses in lieu of safety goggles and face shield. A face shield is required when drilling overhead.

6.9.13 Other exceptions may be authorized by the MK ES&H Department on a case-by-case basis.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 Training Records will be kept in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-214	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: ELECTRICAL SAFETY

APPROVAL

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ES&H MANAGER — DATE

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QUALITY MANAGER — DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 9

8.0 RECORDS 9

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 This procedure establishes safe work practices for electrical operations and to prevent employee injury from direct or indirect contact with electrical circuits.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Subpart S, Electrical

29 CFR 1926, Subpart K, Electrical

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

3A-215, Energy Source Lockout/Tagout

3A-216, Work On or Near Energized Circuits

3A-217, Temporary Electrical Wiring

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 17

Morrison Knudsen Industrial Hygiene Procedures Manual, June 1996, Section 5

ANSI/NFPA 70 National Electric Code - (NEC)

DOE Electrical Safety Manual

DOE Order 440.1A, Worker Protection Management for DOE Federal and Construction Employees

4.0 DEFINITIONS

4.1 Approved: Acceptable to the authority having jurisdiction.

4.2 Circuit: The connection of conductors and devices to a power source to perform a desired electrical function.

4.3 De-Energized Circuit: A circuit disconnected from its power source.

4.4 Energized Circuit: Applied rated voltage from a power supply to a circuit.

4.5 Grounded: Connected to earth or some conducting device that serves in the place of earth.

4.6 Qualified Person: A person who has training in avoiding the electrical hazards of working on or near exposed energized parts in accordance with 29 CFR 1910, Subpart S, "Electrical", and 29 CFR 1926, Subpart K, "Electrical".

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for complying with the requirements of this procedure, ensuring that employees understand their responsibilities, and ensuring that a competent person, in accordance with procedure 3A-112, "Competent Persons", is assigned to electrical work as required.

5.2 Environmental, Safety, and Health (ESH) Manager: Responsible for providing consultation services on electrical safety concerns and ensuring that periodic inspections are conducted.

5.3 Employees: Responsible for complying with the requirements of this procedure.

6.0 REQUIREMENTS

6.1 Work Practices

6.1.1 Electrical installations (both temporary and permanent), electrical repairs, and maintenance shall be performed by qualified persons in accordance with applicable codes, specifications and procedures.

6.1.2 Tools, cords, equipment, and other electrical devices that are observed to be in need of repair shall be tagged for repair.

6.1.3 Prior to work on energized components of electrical equipment, a facility outage request shall be submitted in accordance with procedures. All

circuits shall be de-energized and tagged/locked out in accordance with procedure 3A-215, "Energy Source Lockout/Tagout ".

6.1.4 The installation, maintenance, and use of temporary wiring shall be in accordance with procedure 3A-217, "Temporary Electrical Wiring".

6.1.5 Cranes or high profile equipment near overhead power lines shall be operated in accordance with procedure 3A-209, "Crane, Hoisting and Rigging Operations". Cranes and high profile equipment shall be grounded in accordance with Section 6.4 of this procedure when grounding is required.

6.1.6 All qualified persons required to work on exposed energized parts involving either direct contact or contact by means of tools or materials, or work near enough to energized parts to be exposed to the electrical hazard, shall work in accordance with procedure 3A-216, "Work On or Near Energized Circuits".

6.1.7 Electrical, pneumatic, and mechanical powered tools and equipment used for excavating, drilling, cutting, etc., shall be grounded in accordance with Section 6.4 of this procedure when the possibility exists for contact with electrical conductors.

6.1.8 Flammable liquids storage cabinets shall be grounded in accordance with ANSI/NFPA 70.

6.1.9 When unqualified personnel are required to work in transformer vaults, switchgear rooms or similar power distribution locations, Supervision and the ESH Manager shall review the work location. Protective measures shall be required as deemed necessary.

6.1.10 Work within a confined space, such as transformer vaults, manholes, utility tunnels, etc., shall be done in accordance with procedure 3A-202, "Confined Space".

6.1.11 Equipment and devices used to open or close a circuit under load shall be designed for that purpose and be of the proper rating.

6.1.12 Overcurrent protection of circuits and conductors shall not be modified, even on a temporary basis, to exceed the rating of the circuits or conductors.

6.1.13 Only qualified persons shall perform testing work on electrical circuits or equipment.

6.1.14 Testing instruments and accessories shall be visually inspected for defects or damage before each use. All test equipment shall be calibrated in

accordance with Morrison Knudsen Industrial Hygiene Procedures Manual, Section 5. If a defect or damage is found, the item shall be taken out of service until repairs are made.

6.1.15 Test instruments and accessories shall be rated for the circuits and equipment to which they will be connected and be designed for the environment in which they will be used.

6.1.16 Electrical equipment capable of igniting nearby flammable materials shall not be used unless measures are taken to prevent hazardous conditions from developing.

6.1.17 Employees working on or near high voltage lines (600 volts or greater) shall obtain prior authorization from Supervision in accordance with procedure 3A-216, "Work On or Near Energized Circuits", and shall comply with the following requirements:

6.1.17.1 Submit an "Outage Request Form", in accordance with procedure when work will be within ten feet of the power line or equipment.

6.1.17.2 Request a "Work Permit Clearance Authorization", in accordance with procedure, when working between 10 and 50 feet of any energized high voltage lines or equipment. The "Work Permit Clearance Authorization" will grant a "clearance" from the INEEL M&O contractor Outage Coordinator/Power Dispatcher. Upon completion of the work, a request shall be initiated to cancel the "Work Permit Clearance Authorization".

6.1.17.3 Prior to working under a clearance/outage as required above, complete a Job Safety Analysis in accordance with procedure 3A-201, "Job Safety Analysis."

6.2 Use of Equipment

6.2.1 Electrical hand tools shall be used in accordance with procedure 3A-213, "Hand and Power Tools".

6.2.2 If an assured equipment grounding program is used, electrical tools, extension cords and other cord and plug connected equipment shall be inspected before each use and shall be connected to a ground fault circuit interrupter system.

6.2.3 Electrical cords connected to equipment shall not be used for raising or lowering the equipment.

6.2.4 Electrical cords and welding leads shall not be fastened with staples hung from nails, suspended by wire, or otherwise hung in such a manner that could damage the outer jacket or insulation. A non-conductive support, such as rope or cable ties, may be used to support electrical cords and cables.

6.2.5 Employee's hands shall not be wet when plugging and unplugging extension cords and cord and plug connected equipment, if energized equipment is involved. Energized plug and receptacle connections may not be handled if the condition of the connection could provide a conducting path to the employee's hand (if, for example, a cord connection is wet from being immersed in water). Methods for plugging, unplugging or handling connections as listed above are, but not limited to, the following:

6.2.5.1 Unplug at the source if the source is in a dry location.

6.2.5.2 Open the circuit supplying the source if the source is in a wet location.

6.2.5.3 Turn off portable electric generators if the source is a portable generator.

6.2.5.4 Utilize insulating protective equipment such as electrical insulating rubber gloves.

6.3 Personnel Protection

6.3.1 Employees working in areas where there are potential electrical hazards shall utilize insulating tools and protective equipment that are appropriate for the work to be performed in accordance with procedure 3A-216, "Work On or Near Energized Circuits".

6.4 Ground-Fault Circuit Interrupters

6.4.1 Unless an assured equipment grounding conductor program is in place, all 120-volt, single-phase, 15- and 20-ampere receptacle outlets, which are not a part of the permanent wiring of the building or structure and which are in use by employees, shall have approved ground-fault circuit interrupters for personnel protection. Receptacles on a two-wire, single-phase portable or vehicle-mounted generator rated not more than 5 kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces, need not be protected with ground-fault circuit interrupters.

6.5 Grounding

6.5.1 Equipment shall be grounded when used in work locations where any possibility exists for accidental contact with energized electrical conductors or equipment, either above or below ground.

6.5.2 Cranes, high profile equipment, tools and equipment used for excavations shall be grounded, when required, using an insulated 4/0 copper welding cable up to 400 feet long. The cable shall be connected to an existing ground of equal or larger size. If no suitable ground is available, a three-quarter inch diameter by ten feet long (¾" x 10') ground rod shall be driven and tested for the ground connection. An Excavation Penetration Permit is required prior to driving rod in accordance with procedure 3A-208, "Excavation and Trenching". The ground cable shall be attached to the ground rod, equipment, or existing ground by an approved connector.

6.5.3 Testing of ground rods shall be accomplished in accordance with ANSI/NFPA 70.

6.5.4 Core drills and other equipment used for drilling, cutting or penetrating concrete in excess of two inches shall be grounded. The ground cable shall be a #2 or larger copper welding cable up to 50 feet long. If a length in excess of 50 feet is required, contact the ESH Manager. The ground cable shall be connected to one of the following grounds:

6.5.4.1 Building ground station.

6.5.4.2 Building ground wire, #2 or larger.

6.5.4.3 Structural steel of buildings that have the structural steel connected to a ground grid by a #2 or larger copper wire.

6.5.4.4 The ground cable shall be attached to the ground by an approved connector and attached to the equipment using a lug or other approved connector attached to a bolt or screw from the equipment housing.

6.5.5 The connecting surface of all ground connections shall be clean to ensure a good electrical connection.

6.6 Electrical Insulating Rubber Gloves and Blankets

6.6.1 Supervision shall designate a person responsible for controlling, and storing electrical insulating rubber gloves and blankets.

6.6.2 Employees requiring electrical insulating rubber gloves or blankets may check out the items(s) from the designated person. The item(s) shall be promptly returned when the specific checkout task is complete.

6.6.3 Electrical insulating rubber gloves and blankets shall be tested after each use and every six months. Items failing tests shall be destroyed, with appropriate information given to Supervision.

6.6.4 Testing shall be performed by a company qualified in the testing of rubber insulating equipment.

6.6.5 Electrical insulating rubber gloves and blankets shall be kept in their storage containers when not being used and shall not be left unsupervised unless locked in a suitable location.

6.6.6 Electrical insulating rubber gloves shall not be used without protectors. The protectors shall not be used for a purpose other than to protect the rubber gloves.

6.7 Electrical Disconnects

6.7.1 Each disconnecting means shall be legibly marked to indicate its purpose as required per OSHA 1910.303(f), 1926.403(h), and NEC Article 110-22. This includes circuit breakers and switches.

6.7.2 Working space about electrical equipment shall be maintained in accordance with OSHA 1910.303(g), 1926.403(i), and NEC Article 110-32 and 110-33.

6.7.3 Required working space shall not be used for storage.

6.8 Training

6.8.1 Employees will receive training in electrical safety procedures as required by their job responsibilities. All operations staff shall be trained in the requirements of 29 CFR 1926, Subpart K.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-215	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: ENERGY SOURCE LOCKOUT/TAGOUT

APPROVAL

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ES&H MANAGER — DATE

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QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 12

8.0 RECORDS 13

9.0 ATTACHMENTS 13

10.0 EXHIBITS 13

1.0 PURPOSE

1.1 This procedure establishes the minimum requirements for the lockout/tagout of energy sources that could cause injury to personnel from activities such as, but not limited to, installing, constructing, repairing, inspecting, testing or maintaining equipment or systems.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

2.2 This procedure applies to all forms of energy, including electrical, mechanical, hydraulic, pneumatic and other potentially hazardous sources. The Lock Out/Tag Out procedure will be consistent with INEEL procedures and will be coordinated by contractors working in the same area. MK operations will use the color RED for both tags and locks.

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.147, The Control of Hazardous Energy (lockout/tagout)

29 CFR 1926.417, Lockout and Tagging of Circuits

3.2 Reference Documents

3A-201, Job Safety Analysis

National Electric Code

DOE STD-1030-92, Guide to Good Practices for Lockouts and Tagouts

DOE 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Adequate Working Clearances: **Electrical**: these clearances are established in the National Electric Code (NEC) and establish specific safe working clearances from energized conductors of various load capacities. An outage for a specific line may

require de-energizing other lines in order to establish adequate working clearances. **Other Energy Systems**: Other types of energy isolation may require de-energizing beyond the scope of the item specifically identified in an outage, in order to establish adequate working clearances from potentially harmful sources.

4.2 Danger Tag Log: Document utilized to provide accountability for Danger Tags.

4.3 Energy Source: Any electrical, mechanical, hydraulic, pneumatic, chemical, nuclear, thermal, motor driven or other energy source that could cause injury to personnel or equipment.

4.4 Energy-Isolating Device: A physical device which prevents the transmission or release of energy. Examples include a manually-operated electrical circuit breaker, a disconnect switch, a manually-operated switch, slide gate, slip blind, line valve, blocks, or similar devices with visible indication of the position of the device. (Push buttons, selector switches, and other control devices are not energy-isolating devices.)

4.5 Lockout/Tagout: The placement of a lock and/or tag on the main energy isolating device in accordance with this procedure, indicating that the energy isolating device is not to be operated until removal of the lock/tag in accordance with this procedure. (The term lockout/tagout allows the use of a tagout or a combination of tag and lock. Every effort shall be taken to use both lock and tag in all situations.)

4.6 Lockout Device: A device that requires the use of a lock and key to hold an energy-isolating device in the safe position for the purpose of protecting personnel. It is used in conjunction with a tagout device.

4.7 Multiple Lockout/Tagout System: The placement of lockouts/tagouts of energy systems or equipment by two controlling parties (i.e., the INEEL M&O contractor or subcontractor), accomplishing a double lockout/tagout of an energy system or piece of equipment.

4.8 Tagout Device: A prominent warning device capable of being securely attached which, for the purpose of personnel protection, forbids the operation of an energy-isolating device and identifies the position of the device and the person who placed it and who has control of the tagout device.

4.9 Technical Documents: For the purpose of this procedure shall mean the project/subcontract drawings, specifications, and special conditions.

4.10 Verification: Assuring that a system/equipment is de-energized through checks such as testing or metering to measure for the presence of energy, or inspecting/observing to verify an energy source has been de-energized.

5.0 RESPONSIBILITIES

5.1 General Superintendent: Responsible for liaison activities between the Contractor, Subcontractors, and others as outlined in this procedure.

5.2 Superintendent: Responsible for implementation of this procedure for safe lockout/tagout of systems or equipment prior to construction activities and who through training and qualifications is competent to witness and document the requirements of this procedure.

5.3 Foreman/Supervisor: Responsible for implementation of this procedure for safe lockout/tagout of systems and/or equipment which create an exposure to workers under his supervision.

5.4 Subcontractor Supervisor: Responsible for implementation of this procedure for safe lockout/tagout of systems or equipment prior to construction activities and who through training and qualifications is competent to witness and document the requirements of this procedure.

5.5 ESH Manager: Responsible for conducting periodic surveillances to assure compliance to this procedure and conducting an annual evaluation of the lockout/tagout program.

6.0 REQUIREMENTS

6.1 Training

6.1.1 All employees will receive general energy source lockout/tagout training. The topic will include brief discussions of the following:

6.1.1.1 The purpose and use of the Energey Source Lockout/Tagout Program.

6.1.1.2 Recognition of applicable hazardous energy sources, the type and magnitude of the energy available in the workplace.

6.1.1.3 Methods and means necessary for energy isolation and control.

6.1.1.4 Limitation of Tags and locks.

6.1.2 Employees responsible for working on hazardous energy sources will receive detailed training.

6.1.3 The following key points shall be included in training:

6.1.3.1 Tags are warning devices and do not provide physical restraint.

6.1.3.2 When tags are attached they shall be removed only by the authorized employee responsible for the tag.

6.1.3.3 Tags must be legible and understandable by all authorized employees and all other employees whose work operations are or may be affected.

6.1.3.4 Tags and their means of attachment must be made of material which will withstand the environmental conditions exposed to which they are exposed.

6.1.3.5 Tags may provide a false sense of security.

6.1.3.6 Tags must be securely attached to energy isolating devices so that they can't be inadvertently or accidentally detached during use.

6.1.3.7 Appropriate retraining shall be provided to all employees annually or as necessary.

6.1.4 Training for MK employees shall be performed and documented per Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

6.1.5 Training for Subcontractors shall be performed in accordance with the requirements of this procedure and documented and maintained onsite.

6.2 Job Safety Analysis (JSA)

6.2.1 Prior to commencing work which requires lockout/tagout of energy sources, Supervision may be required to complete a detailed JSA for every phase of the lockout/tagout activity (see procedure 3A-201, "Job Safety Analysis").

6.3 General

6.3.1 This procedure establishes safe methods for rendering inactive any electrical, mechanical, pneumatic, chemical, hydraulic, thermal, or other energy sources that could cause injury to personnel or damage to equipment during construction installation, modification, repair, maintenance, or demolition. The systems or equipment for these energy sources shall be physically isolated from their energy sources before any

task is performed which could result in injury or property damage if energy were delivered to the equipment or system.

WARNING: Anyone bypassing a lockout/tagout or removing a lock-out/tagout which they did not apply to the energy isolating means without proper authorization **WILL BE SUBJECT TO DISCIPLINARY ACTIONS.**

6.3.2 Deviations to the requirements of this procedure are not authorized without the written consent of the MK ESH Manager.

6.3.3 The preplanning for interruption of energy systems: The MK and/or Subcontractor Supervision shall make arrangements, in writing on an Outage Request form, a minimum of seven work days in advance of the need for interruption of energy systems or equipment that are within the INEEL M&O contractor's ownership. This applies to any energy systems, equipment, or utilities which must be disconnected, shutoff, relocated, or otherwise modified for the performance of the construction work.

NOTE: If the outage request is not completed and forwarded to the INEEL M&O contractor within the minimum seven working days, the INEEL M&O contractor Outage Coordinator will reject the outage and a new outage request will have to be submitted.

6.3.4 Outages shall be required with all lockout/tagout of energy systems. Requests for outages shall be submitted to the Contractor utilizing the "Outage Request" DOE-ID Form. The outage request shall be completed using the instructions attached to the "Outage Request" form. The Subcontractor and/or MK Supervisor shall be responsible for ensuring that items 1-5 on the Outage Request Form are complete and accurate. Prior to forwarding the request to the INEEL M&O contractor item number 6 shall be signed stating the request is complete. Outage Request forms shall be obtained from the MK ESH Manager.

6.3.5 Work on energy systems shall not be done through a verbal work authorization with the INEEL M&O contractor. If at any time during the outage, the scope of the "Outage Request" form changes, another "Outage Request" form shall be processed.

6.3.6 Subcontractor and/or MK personnel shall not operate breakers, switches, valves, or other energy-isolating devices within an operating facility belonging to the INEEL M&O contractor for the purpose of closing down or re-activating energy sources.

6.4 Lockout/Tagout Devices

6.4.1 Tags used for all lockout/tagout operations shall be "Danger Do Not Operate". This tag shall be the only tag used for lockout/tagout operations. Tags shall be supplied by Subcontractors and/or MK.

6.4.2 Tags shall be securely attached to the energy-isolating device.

6.4.3 Tags and locks shall be removed only by the authorized employee who placed them on the energy source, except as described in section 6.5.13.

6.4.4 Lockout devices shall be used at all times. When this is not possible, proper information shall be obtained from the INEEL M&O contractor with reasons why locks cannot be used. This information shall be obtained from section number 12 of the Outage Request Form. After the appropriate notification from the Contractor, the use of an appropriate tag is an acceptable warning method with the MK ESH Manager concurrences. When tags are used in lieu of locks for lockout/tagout, additional worker protection measures shall be utilized as per OSHA 1910.147 and OSHA 1910.333.

6.4.5 All locks used by Subcontractor and/or MK employees shall be single keyed and uniquely identifiable from all other locks used in the work place. The lock shall either include the picture of the protected worker or the entire body of the lock shall be red in color.

6.4.6 Locks used for lockout/tagout shall be distributed from a secured location. Subcontractors shall identify in writing the location of locks used for lockout/tagout. MK locks shall be distributed from a secured location designated by the Project Engineer.

6.4.7 A master key shall be maintained for each lock used for lockout/tagout in a secured lock box. The lock box shall be secured by a single keyed lock controlled by an authorized person. Subcontractors shall identify in writing the location of the lock box and the authorized person who controls the lock box. MK master keys shall be maintained in a lock box controlled by the Project Engineer.

6.4.8 MK and/or Subcontractor Supervision shall maintain traceability and accountability of locks by developing a tracking system to identify the location of locks and the authorized person responsible for the lock.

6.4.9 Tags reflecting a hazardous condition shall have instruction information included on the tag in the block designated "Information".

6.4.10 Lockout devices shall be attached in such a manner as to hold the energy-isolating devices in the safe off position.

6.4.11 Lockout devices must be designed to accommodate at least two locks.

6.5 Lockout/Tagout

6.5.1 Prior to work commencing on any energy system, the completed and approved original Outage Request Form shall be received from the INEEL M&O contractor.

6.5.2 After receiving the original completed and approved Outage Request form from the INEEL M&O contractor, a Lockout/Tagout shall be initiated prior to work commencing. The original copy of the log shall be maintained by the responsible Subcontractor and/or MK supervisor and readily available on site.

6.5.3 When multilocks and multitags are used during a single outage, they may be listed on one lockout/tagout log record sheet. The numbers of each lock and tag shall be legible. An attachment sheet may be utilized to list any lock and/or tag numbers which cannot be accommodated on the log record sheet.

6.5.4 The INEEL M&O contractor personnel shall isolate the requested system/equipment with adequate working clearance following their lockout/tagout procedure by installing the necessary locks and tags. This shall also include verification at the point at which work is to be performed to ensure the equipment/system is at a zero-energy state.

6.5.4.1 For electrical systems, verifications of the zero-energy state shall be accomplished by utilizing an approved Industrial Voltage meter capable of detecting both alternating and direct current (AC or DC).

6.5.4.2 For other energy systems, the method used for verification of the zero-energy state shall be communicated to the subcontractor and/or MK Supervisor. This method shall be identified on the Job Safety Analysis Plan.

6.5.5 The Subcontractor and/or MK Supervisor shall verify that the system/equipment is at a zero-energy state by verifying the INEEL M&O contractor has completed the sections "Location of Zero-Energy Verification" and "Signature of Individual Verifying Zero-Energy State" of their Lockout/Tagout Log. The location of this log will be identified in section No. 12 of the Outage Request form.

6.5.6 The Subcontractor and/or MK authorized person performing the work shall verify the equipment/system is at a zero-energy state prior to installing locks and tags over the INEEL M&O contractor's locks and tags. Upon completion of the zero energy verification, section number 13 shall be completed on the outage request form. The verification shall be done at the point at which work is to be performed.

6.5.6.1 For electrical systems, verification of the zero-energy state shall be accomplished by utilizing an approved industrial voltage meter capable of detecting both alternating and direct current (AC or DC) up to 600 volts. The system shall be tested over the entire range of the meter on both AC and DC scales.

6.5.6.2 For other energy systems, the zero-energy state shall be verified by MK in a manner mutually agreed upon with the INEEL M&O contractor. This verification process shall be identified on the Job Safety Analysis (JSA).

6.5.6.3 If the system is identified by contract documents or appears to be of a voltage greater than 600 volts the method of testing the system shall be specifically identified in the Job Safety Analysis Plan that must be approved prior to start of work on the system.

6.5.6.4 If, at any time during the initial test a voltage is detected, all work on the system shall cease and the MK General Superintendent shall be notified.

6.5.7 For work in construction areas which are not controlled by the INEEL M&O contractor, the responsible MK/Subcontractor Supervision shall verify that the energy source is de-activated and the lock/tag is in place and testing of the system/equipment has been accomplished prior to the start of work.

6.5.8 The responsible MK/Subcontractor Supervision shall attach/install a lock/tag over the craftpersons lock/tag. This will complete the double lock/tag of the energy source.

6.5.9 Multiple Subcontractors and lower tier subcontractors, performing work on and/or exposed to the same lockout/tagout of an energy source, shall have their authorized person attach a lockout device and tag at the lockout point.

6.5.10 Upon completion of the lockout/tagout outage work, section number 14 shall be completed and the outage request forwarded to the INEEL M&O contractor as applicable. In addition the Lockout/Tagout Log Record Sheet shall be completed and forwarded with the appropriate tags attached to the MK General Superintendent for inclusion into the project files.

6.5.11 The individual who placed the tag(s), shall verify and document on the tracking log (section 14 and/or 15) that all active tags are in place, legible and visible every 30 days, plus or minus five days. This verification shall also include a review to ensure procedural requirements are being met.

6.5.12 Construction Danger Tags will be valid for a period of 90 calendar days. At the end of this period, they must either be removed or replaced with a new Construction Danger Tag. When a new tag is placed, the sequential number shall be identified on the lockout/tagout log record sheet. The tag which is removed shall be attached to the log and identified as removed.

6.5.13 In situations when the authorized employee who placed the lock/tag on an energy source is not on site to remove the lock/tag, the Project Engineer or his designee may authorize the removal of locks/tags by the following steps:

6.5.13.1 Verify that the employee whose lock is to be removed is not on site.

6.5.13.2 Make all reasonable efforts to contact the employee.

6.5.13.3 Ensure the equipment or system is safe before authorizing removal of protection.

6.5.13.4 Ensure that the employee is informed of the removal prior to returning to work on the system.

6.5.13.5 Document the action taken.

6.6 Special Lockout/Tagout

6.6.1 Interruptions/energized testing: In situations where the energy- isolating device(s) is/are locked/tagged and there is a need for testing or positioning of the equipment/process, the following sequence shall apply:

6.6.1.1 The Subcontractor and/or MK shall demonstrate to the General Superintendent that the task is necessary and can be completed safely.

6.6.1.2 Notify all personnel affected by the task.

6.6.1.3 Clear all personnel not involved with the task.

6.6.1.4 Clear lockout/tagouts. The Subcontractor and/or MK shall clear their lockouts/tagouts and the INEEL M&O contractor personnel shall clear remaining lockout/tagout as applicable.

6.6.1.5 Proceed with the test/positioning of equipment/process.

6.6.1.6 De-energize all systems and re-lockout/re-tag the controls to continue work.

6.6.1.7 Upon completion, the employees shall notify all affected personnel that the test or process is complete.

6.7 Restoration of Equipment/System

6.7.1 Employees shall not operate breakers, switches, valves, etc. for the purpose of reactivating existing utilities in an operating facility belonging to the INEEL M&O contractor. This function shall be performed by the INEEL M&O contractor.

6.7.2 Upon completion of work, any equipment/system disconnected or put out of service shall be reconnected and restored to the original operating condition unless otherwise required.

6.7.3 Upon completion of restoration, the equipment/system will be turned over to the INEEL M&O contractor to be energized, unless otherwise required by the design documents.

6.8 Events

6.8.1 Lockout/tagout related procedure violation or personnel errors that caused or could have caused serious personnel injury, equipment damage, or comprised work safety, shall require an investigation to determine the cause, corrective actions, and reporting requirements. This process shall be done with all parties involved with the lockout/tagout operation.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor shall provide verification of initial lockout/tagout of an energy source, system, equipment, etc. The employee will lockout/tagout after the INEEL M&O contractor and only after following the requirements in the procedure.

7.2 Employees shall notify the General Superintendent when work is complete, tag/lock is removed and the INEEL M&O contractor lockout/tagout is no longer required. The General Superintendent shall notify the INEEL M&O contractor that the lockout/tagout is no longer required.

8.0 RECORDS

8.1 The Construction Danger Tags and Log shall be given to the General Superintendent for inclusion in the project file upon completion of the project or at the conclusion of the work activity which required the placement of the tags.

9.0 ATTACHMENTS

9.1 Lockout/Tagout Permit

10.0 EXHIBITS

NONE

Attachment 9.1

LOCKOUT/TAGOUT PERMIT

1. EQUIPMENT/SYSTEM TO BE ISOLATED:				
2. BUILDING		FLOOR:	COLUMN:	
LOCATION OTHER:				
3. PURPOSE OF ISOLATION:				
4. TYPE OF ISOLATION:				
5. AUTHORIZED INDIVIDUAL:			BADGE:	DATE:
6. SPECIAL INSTRUCTIONS:				
7. LOCKOUT/TAGOUT PERFORMED:				
TAG NO.	DEVICE I.D.	BLDG. FL. COL.	INSTALLED BY	11. REMOVED BY
8. VERIFICATION: SYSTEM IS SAFE FOR SPECIFIED WORK TO START				
AUTHORIZED INDIVIDUAL:			DATE:	TIME:
9. ACCOUNTABILITY:				
REQUESTING AUTHORITY	ACCEPTS PROTECTION DATE	TIME	REQUESTING AUTHORITY	RELEASE PROTECTION DATE / TIME
10. LOCKOUT/TAGOUT REMOVAL AUTHORIZATION:				
AUTHORIZED INDIVIDUAL:			DATE:	TIME:

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-216	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 8

TITLE: WORK ON OR NEAR ENERGIZED CIRCUITS

APPROVAL

William Piispanen ES&H MANAGER	2/22/99 DATE
[illegible] QUALITY MANAGER	2/22/99 DATE
Bob Wisdom CONSTRUCTION MANAGER	2.22.99 DATE

REV.	DATE	REVISION DESCRIPTION
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 PROCEDURE 5

7.0 EXTERNAL INTERFACE 8

8.0 RECORDS 8

9.0 ATTACHMENTS 8

10.0 EXHIBITS 8

1.0 PURPOSE

1.1 The objective of this procedure is to define requirements for safely performing work on or near energized electrical circuits.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL) involving troubleshooting, emergency repairs, or work on or near energized electrical circuits where it is impractical to de-energize the circuit or equipment.

2.2 This procedure does not apply to routine shop bench maintenance and repair, and testing performed by qualified persons.

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Subpart S, Electrical Safety

29 CFR 1926, Subpart K, Electrical

NFPA 70 [latest edition], National Electrical Code

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

3A-112, Competent Persons

3A-214, Electrical Safety

3A-215, Energy Source Lockout/Tagout

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 17

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Circuit: The connection of conductors and devices to a power source in one or more closed paths to perform a desired electrical function.

4.2 De-energized Circuit: A circuit disconnected from its power source.

4.3 Energized Circuit: Applied rated voltage from a power source to a circuit.

4.4 Qualified Person: An electrician who has the education, experience, and training to safely perform work on or near exposed energized circuits.

4.5 Work Plan: A structured documented review by the supervisor and employee of the safety requirements to work on energized circuits. The plan is discarded after work is complete.

4.6 Work Near Energized Circuits: Work in a location such that the worker may come in contact with energized circuits. This work involves activities such as installing conduit and/or wire into energized panels or any activity where exposed terminals, bus, or devices may be encountered.

4.7 Work On Energized Circuits: Work which involves actual contact with energized circuits. The contact may be gloved or bare hands in contact with bare or insulated conductors or may be insulated tools in contact with bare conductors.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for initiating a work plan for each task that requires work on energized circuits, and review work planned near such circuits. Supervision shall provide direction, equipment and supplies to minimize electrical hazards. Supervision is responsible to get ESH Manager concurrence prior to starting work. Supervision shall comply with the requirements of this procedure.

5.2 Qualified Electricians: Responsible for complying with the requirements of this procedure, assisting in the development of work plans and assuring a competent person, in accordance with procedure 3A-112, "Competent Persons", performs the work as required.

5.3 Environmental, Safety and Health (ESH) Manager: Responsible for providing consultation services on electrical safety concerns, approval of work plans, and to conduct periodic inspections of work performed by this procedure.

6.0 PROCEDURE

6.1 This procedure shall only be used when a circuit cannot be de-energized.

6.2 General

6.2.1 The minimum requirements to be addressed when working on or near energized circuits are presented below.

6.2.1.1 Watches, rings, necklaces, and other conductive items shall be removed.

6.2.1.2 Portable ladders shall be of nonconductive construction.

6.2.1.3 Required fall protection shall be utilized.

6.2.1.4 Hard hats and safety glasses with side shields or face shields, or both, shall be worn.

6.2.1.5 The work area shall be cleared of all unnecessary equipment, material, and tools that would increase the potential for inadvertent contact with energized circuits during work.

6.2.1.6 The two-man rule applies when working on energized circuits. A second person, knowledgeable of all isolation points, shall be present.

6.2.1.7 Appropriate safety equipment such as insulating barriers or insulating blankets shall be applied when possible. Workers on the ground shall stand on insulated blankets while performing the work.

6.2.1.8 The work area shall be roped and warning signs "DANGER EXPOSED ENERGIZED CIRCUITS" shall be posted.

6.2.1.9 If it becomes necessary for the personnel doing the work to leave to work area, guarding shall be installed if necessary.

6.2.1.10 Upon completion of work, an inspection shall be conducted by Supervision to verify safe conditions prior to installing covers, removing warning signs and flagging.

6.2.2 The work plan is used for planning and is turned over to Supervision upon completion of the work task.

6.2.3 A Job Safety Analysis shall be obtained prior to the start of work on or near energized circuits, in accordance with procedure 3A-201, "Job Safety Analysis."

6.3 Work On or Near High Voltage Electrical Equipment

Work on or near high voltage electrical circuits (600 volts or greater) shall comply with the following:

6.3.1 An "Outage Request Form", "High Voltage Electrical Clearance Authorization Form", or "High Voltage Work Permit Authorization Form" approved by the INEEL M&O contractor is required for work affecting non-AMWTP utilities, prior to beginning work.

6.3.1.1 All outages/clearances will be arranged through the Construction Engineer. Upon completion of the work, any equipment disconnected or deactivated shall be reconnected and/or restored to the original operating condition unless otherwise required.

6.3.2 When a particular service is to be de-energized for the benefit of the construction work, a double lockout/tagout procedure shall be used in accordance with procedure 3A-215, "Energy Source Lockout/Tagout".

6.3.3 No part of any person or conductive object shall be permitted to encroach within the below-listed clearance distance, unless the person and the conductive object or the energized part is appropriately insulated and/or guarded.

6.3.3.1 600 V to 15 kV; phase to phase - 2 feet.

6.3.3.2 15.1 kV to 46 kV; phase to phase - 2 feet, 6 inches

6.3.3.3 46.1 kV to 72.5 kV; phase to phase - 3 feet

6.3.3.4 72.6 kV to 145 kV; phase to phase - 3 feet, 6 inches

6.3.3.5 161 kV to 169 kV; phase to phase - 3 feet, 8 inches

6.3.3.6 230 kV to 232 kV; phase to phase - 5 feet

6.3.4 The operation of construction equipment (derricks, cranes, trucks, etc.) in the proximity of high voltage power lines is addressed in OSHA 29 CFR 1926/1910. Additional requirements for work performed at the AMWTP include:

6.3.4.1 Equipment working 20 to 50 feet from any energized power line will require a High Voltage Work Permit Authorization in accordance with procedure.

6.3.4.2 Equipment working closer than 10 feet from a power line will require either:

6.3.4.2.1 De-energization of the power line or power source and visible grounding of the line or source and the location where the work is being performed.

6.3.4.2.2 An insulating barrier (not part of or an attachment to the equipment) must be erected to prevent physical contact between the equipment and the power line or other power source.

6.3.5 Cranes and other construction equipment in transit at the AMWTP must maintain the lowest possible profile when moving under power lines. A properly positioned spotter will be used when safe distances cannot be maintained during transit. Supervision should consider alternate routes to avoid low power lines.

Equipment over 14 feet in height requires a specified escort and advance notification to MK Supervision.

6.4 Work On Energized Circuits (over 50 Volts)

6.4.1 Supervision and employees shall periodically review the work.

6.4.2 The work shall be reviewed and approved by the ESH Manager.

6.5 Work Near Energized Circuits (over 50 Volts)

6.5.1 Supervision and employees shall review the steps required to perform the work tasks.

6.5.2 Safety concerns shall be identified and discussed, and controls shall be implemented where required.

6.6 Training

6.6.1 Electrical personnel required to work on or near energized circuits shall be trained annually.

6.6.2 Training shall include the following:

6.6.2.1 The requirements of this procedure and CFR 1926 Subpart K.

6.6.2.2 Techniques necessary to distinguish exposed live parts from other parts of electrical equipment including ways to determine the nominal voltage of exposed live parts.

6.6.2.3 The clearance distances specified for voltages in 29 CFR 1910, Subpart S, section 1910.333(c), 29 CFR 1926, Subpart K, sections 1926.403 (j), and 1926.43 (i).

6.6.3 Training shall be performed, documented, and records maintained per Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-217	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 9

TITLE: TEMPORARY ELECTRICAL WIRING

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

REV.	DATE	REVISION DESCRIPTION
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ORIGINATOR: KELLY POST
(Initial/Date) KP 2/22/99

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 9

8.0 RECORDS 9

9.0 ATTACHMENTS 9

10.0 EXHIBITS 9

1.0 PURPOSE

1.1 The objective of this procedure is to define the requirements of temporary electrical wiring.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Subpart K, Electrical

29 CFR 1910.305, Subpart S, Wiring Methods, Components, and Equipment for General Use

3.2 Reference Documents

3A-102, ESH Surveillances

ANSI/NFPA 70, [latest edition], National Electric Code (NEC)

ANSI/NFPA 70E-1995, Electrical Safety Requirements for Employee Work Places

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Approved: Equipment and conductors required or permitted by the National Electric Code (NEC) are acceptable only where approved for a specific environment or application by the authority having jurisdiction. "Listing" or "Labeling" by a qualified testing laboratory will provide a basis for approval.

4.1.1 Labeled: Equipment or materials to which has been attached a label, symbol, or other identifying mark of an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or

materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner.

4.1.2 Listed: Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials, and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner.

4.2 National Electrical Code (NEC): The section within the National Fire Protection Association (NFPA-70) that establishes the practical safeguarding of persons and property from hazards arising from the use of electricity.

4.3 Temporary Electrical Wiring: The provisions of this procedure apply to temporary electrical power and lighting wiring methods which may be of a class less than would be required for permanent installations. Except as specifically modified by this procedure, all other requirements of the National Electrical Code and OSHA Safety Standards 29 CFR 1910/1926, for temporary and permanent wiring shall apply to temporary wiring installations.

4.4 Temporary Lights: Single portable extension light, temporarily fixed or fastened lighting string, temporarily fixed or fastened single incandescent or fluorescent light, and portable lighting string or fixture (e.g., supported on moveable poles).

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for ensuring that temporary electrical wiring meets current NEC and OSHA standards, and for complying with the requirements of this procedure.

5.2 ESH Manager: Responsible for providing consultation services on electrical safety concerns and for conducting periodic inspections of work performed by this procedure.

5.3 Employees: Responsible for complying with this procedure.

6.0 REQUIREMENTS

6.1 Feeders

6.1.1 Feeders shall be protected as provided in Article 240 of the NEC and shall originate in an approved distribution center.

6.1.2 Conductors used for feeders are permitted within raceways or cable assemblies. Multi-conductor cord, or cable of a type identified in Table 400-4 of the NEC for hard or extra hard usage, may also be used for feeders.

6.1.3 Feeders shall be permitted to be run as open conductors if supported on approved insulators at intervals of not more than 10 feet if the voltage does not exceed 150 volts to ground and if they are not subject to physical damage.

6.1.4 Open feeder conductors shall not be laid on the floor or ground.

6.2 Branch Circuits

6.2.1 Branch circuits shall be protected as provided in Article 240 of the NEC and shall originate in an approved power outlet or panelboard.

6.2.2 Conductors used for feeders are permitted within raceways, or cable assemblies. Multi-conductor cord or cable of a type identified in Table 400-4 of the NEC for hard or extra hard usage may also be used for branches.

6.2.3 Each branch circuit shall contain a grounding conductor.

6.2.4 Branch circuits shall be permitted to be run as open conductors if supported on approved insulators at intervals of not more than 10 feet when the voltage does not exceed 150 volts to ground and they are not subject to physical damage.

6.2.5 Open branch circuit conductors shall not be laid on the floor or ground.

6.2.6 The grounded conductor (neutral) of a branch circuit shall be identified by a continuous white or gray color.

6.2.7 The equipment grounding conductor of a branch circuit shall be identified by a continuous green color unless it is bare.

6.3 Ground Fault Protection

6.3.1 Ground fault circuit interrupters or an assured equipment grounding conductor program shall be used on construction sites in accordance with the applicable requirements of Article 305 of the NEC and 29 CFR 1910/1926.

6.3.2 Ground fault circuit interrupters and assemblies shall be approved for the environment and conditions in which they are used.

6.3.3 Ground fault protection or an assured equipment grounding conductor program is required in addition to any other requirements for equipment grounding conductors.

6.3.4 Ground fault protection is not required on receptacles of a 2-wire, single-phase portable or vehicle mounted generator rated not more than 5 kW, where the circuit conductors of the generator are insulated from the generator frame and all other grounded surfaces.

6.4 Receptacles

6.4.1 All receptacles shall be of the grounding type.

6.4.2 No grounded conductor (neutral) shall be attached to any terminal or lead so as to reverse the designated polarity.

6.4.3 A grounding terminal on a receptacle shall not be used for purposes other than grounding.

6.4.4 Receptacles shall be electrically connected to the equipment grounding conductor.

6.4.5 Receptacles shall not be installed on branch circuits which supply temporary lighting.

6.4.6 Receptacles shall not be connected on the same ungrounded conductor of multi-conductor circuits which supply temporary lighting.

6.4.7 Receptacles used in wet or damp locations shall be constructed of waterproof components and approved for the location.

6.4.8 Receptacles, cord connectors and attachment plugs shall be constructed so that no receptacle or cord connector will accept an attachment plug with a different voltage or current rating than that for which the device is intended.

6.5 Disconnecting Means

6.5.1 Suitable disconnecting switches, breakers, or plug connectors shall be installed to permit disconnection of all ungrounded conductors of each temporary circuit.

6.5.2 Multi-wire branch circuits shall be provided with a means to disconnect all ungrounded conductors simultaneously at the power outlet or panelboard where the branch circuit originated.

6.5.3 Approved breaker handle ties shall be permitted.

6.6 Cord Sets

6.6.1 Extension cord sets used with portable electric tools and equipment shall be three wire type and shall be designed for hard or extra hard usage of a type identified in Table 400-4 of the NEC.

6.6.2 All 120 volt, 208 volt, 240 volt, and 480 volt cords and cord sets shall have an equipment grounding conductor which shall be connected to the grounding contacts of the plug, receptacle or equipment at each end of the cord.

6.6.3 The exposed metal parts of all 120 volt, 208 volt, 240 volt, and 480 volt cords and plug connected tools and equipment shall be grounded in accordance with the applicable requirements of Article 250 of the NEC.

6.6.4 Cord or cable used on cord sets, tools, and equipment shall be marked as described by Article 400, Section B of the NEC.

6.6.5 Flexible cords and cables shall be protected from damage. Sharp corners and projections shall be avoided.

6.6.6 Flexible cords and cables may pass through doorways and other pinch points, if adequate protection is provided to avoid damage.

6.6.7 Cords and cord sets shall be approved for the application and environment for which they are used.

6.7 Attachment Plugs

6.7.1 All 15 and 20 ampere attachment plugs and connectors shall be so constructed that there are no exposed current carrying parts except the prongs, blades, or pins. The cover for wire terminations shall be a part which is essential for the operation of an attachment plug or connector (dead front construction).

6.8 Splices

6.8.1 On construction sites, a box shall be required for splices or junction connections where the circuit conductors are multiconductor cord or cable assemblies or open conductors.

6.8.2 Splice and insulation methods shall be in accordance with the applicable requirements of the NEC Article 110-14(b), 400-9, 305, 4(g), 530-12 and OSHA 29 CFR 1910/1926.

6.8.3 A box having a separate bushed hole for conductors shall be used whenever a change is made to a conduit or tubing system or a metal-jacketed cable system.

6.9 Temporary Lighting

6.9.1 All lamps for general illumination shall be protected from accidental contact or breakage with an approved guard.

6.9.2 Sockets shall be of an NEC approved type.

6.9.3 Metal case sockets shall be grounded.

6.9.4 Sockets used in wet or damp locations shall be approved for this location.

6.9.5 Temporary lights shall not be suspended by their electric cords unless the cords are approved for this means of suspension.

6.9.6 Hard or extra hard cord is required for wiring temporary lights. Flexible cords used with temporary and portable lights shall be designed for hard or extra hard usage of a type identified in Table 400-4 of the NEC.

6.9.7 Permanent wiring methods recognized in the NEC would be acceptable as temporary lighting installations, if properly used and approved.

6.9.8 Open wiring may be used in situations where it can be demonstrated that the open conductor lighting string is Underwriters Laboratory approved, is safe under the conditions of use and location, the installation complies with the applicable requirements of the NEC and OSHA Standards, and where approval is obtained prior to the installation.

6.9.9 Portable electric lighting used in conductive locations, as for example, drums, tanks and vessels, shall be operated at 12 volts or less. However, 120 volt lights may be used if protected by a ground fault circuit interrupter.

6.10 Temporary Wiring: Temporary wiring shall be removed immediately upon completion of construction or purpose for which the wiring was installed.

6.11 Grounding: All grounding shall conform with Article 250 of the NEC.

6.12 Hazardous Locations: All devices and equipment used in hazardous locations shall be in accordance with articles 500 through 504 of the NEC. These articles cover the requirements for electrical equipment and wiring for all voltages in locations where fire or explosion hazards may exist due to flammable gases or vapors, flammable liquids, combustible dust, or ignitable fibers or flyings.

6.13 Mobile Structures: All mobile offices, trailers, mobile stores and other mobile structures requiring electrical power shall comply with the requirements of Article 550 of the NEC.

6.14 Inspections: Periodic inspections of work performed in accordance with this procedure shall be conducted by the ESH Manager. These inspections shall be conducted in accordance with procedure 3A-102, "ESH Surveillances".

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-218	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 11

TITLE: SIGNS, SIGNALS, AND BARRICADES

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

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TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 11

8.0 RECORDS 11

9.0 ATTACHMENTS 11

10.0 EXHIBITS 11

1.0 PURPOSE

1.1 The objective of this procedure is to meet the safety requirements for the design, application, and use of signs, tags, flagging, barricades, and barriers.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.144, Safety Color Code for Marking Physical Hazards

29 CFR 1910.145, Specifications for Accident Prevention Signs and Tags

29 CFR 1926.200, Accident Prevention Signs and Tags

29 CFR 1926.202, Barricades

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

3A-102, ESH Surveillances

American National Standards Institute

- ANSI A10.2, Safety Code for Building Construction
- ANSI D6.1, Manual on Uniform Traffic Control Devices for Streets and Highways
- ANSI Z35.1, Specifications for Accident Prevention Signs
- ANSI Z35.2, Specifications for Accident Prevention Tags
- ANSI Z53.1, Safety Color Coding for Marking Physical Hazards

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Barricades: Fixed or portable devices, having one to three diagonally marked horizontal rails supported by a stable base, used to control vehicular and pedestrian traffic by closing, restricting, or delineating all or a portion of an established travel route.

4.2 Barriers: Fixed or portable devices designed to prevent vehicles from physically entering an area.

4.3 Flagging: High visibility tape, chain, rope, and/or bunting used to warn personnel of a hazardous location or operation.

4.4 Guardrails: Protective structure, having top and intermediate rails and support posts, used to prevent pedestrians from physically entering an area.

4.5 Signs: A piece of metal, plastic, wood, or paper marked with words and/or symbols and/or color-coded and located to convey a message to personnel observing the sign.

4.6 Tags: A strong strip of paper, plastic, fabric, or leather designed for attachment to an object and marked as a visual warning of a hazardous condition or operation.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for:

5.1.1 Implementing the requirements of this procedure.

5.1.2 Ensuring that each employee under their supervision understands his/her responsibilities and complies with the requirements of this procedure.

5.1.3 Ensuring that hazards and hazardous operations which cannot be eliminated from the work place are identified, marked, and guarded by appropriate barrier, barricade, flagging, guardrails, signs, and/or tags.

5.1.4 Ensuring that barriers, barricades, flagging, guardrails, signs and tags conform to the requirements of this procedure.

5.2 Environmental, Safety, and Health (ESH) Manager: Responsible for conducting periodic surveillances to ensure compliance with all requirements of this procedure.

5.3 Employees: Responsible for:

5.3.1 Complying with the requirements of this procedure.

5.3.2 Informing Supervision of all hazards and hazardous operations which cannot be eliminated from the work place.

5.3.3 Ensuring that personnel in the work place observe the instructions, directions, and intent of the barriers, barricades, flagging, guardrails, signs, and tags.

6.0 REQUIREMENTS

6.1 Administrative Controls

6.1.1 The ESH Manager shall evaluate the scope of work to identify, insofar as possible, any safety, sign and barricade concerns which may be involved in the work to be performed. This process may take place during the Job Safety Analysis process in accordance with procedure 3A-201, Job Safety Analysis."

6.1.2 ESH Manager shall, upon evaluation of the work to be performed, identify the necessary means to minimize danger to employees.

6.1.3 All required safety signs and barricades shall be erected prior to the initiation of work activities or as necessitated by the work performed.

6.1.4 Follow up surveys shall be conducted by the General Superintendent to evaluate job safety and the effectiveness of the safety sign or barricade.

6.1.5 ESH Manager shall perform periodic surveillance of the jobs to ensure compliance with set forth requirements in accordance with procedure 3A-102, "ESH Surveillances".

6.2 Barricades

6.2.1 Barricade rails shall:

6.2.1.1 Be at least 24 inches long.

6.2.1.2 Be mounted horizontally at least 36 inches above the ground.

6.2.1.3 Marked with alternate orange and white 45 degree diagonal stripes.

6.2.2 Barricade rails shall be supported by a stable base, weighted with sand bags, which will resist a 16-pound lateral force applied to the support 30 inches above the floor, platform, runway, ramp, or ground.

6.2.3 Barricades shall be used on or around work areas when it is necessary to prevent the inadvertent intrusion of pedestrian traffic.

6.2.4 Barricades shall not be placed within two feet of the edge of an excavation.

6.3 Barriers

6.3.1 Barriers shall be:

6.3.1.1 Constructed of solid material such as concrete highway bumpers (jersey barriers) in a manner which protects personnel from the inadvertent intrusion of vehicular traffic.

6.3.1.2 A minimum of 36 inches in height.

6.3.1.3 Painted, marked, and/or illuminated to enhance their visibility.

6.3.1.4 Meet the requirements of ANSI D6.1 , "Manual on Uniform Traffic Control Devices for Streets and Highways".

6.3.2 Barriers shall be used on or around work areas when it is necessary to protect personnel from the inadvertent intrusion of vehicular traffic.

6.3.3 Barriers shall be used to guard excavations across or adjacent to streets or roadways.

6.3.4 Barriers shall not be placed within two feet of the edge of an excavation.

6.4 Flagging

6.4.1 Flagging shall be located within the field of vision (between approximately 36 to 48 inches above the ground, walk, or work surface) and used to identify and warn personnel of general and specific hazards.

6.4.2 Tape and chain used as flagging shall have a minimum width of ¾ inch; rope and bunting used as flagging shall have a minimum rope diameter of ¼ inch. Additional signs may be attached to the flagging when appropriate.

6.4.3 Flagging shall be placed at least six feet laterally from the hazard being identified.

6.4.4 Flagging shall not be used as a substitute for barricades or barriers; however, when there is no imminent danger to personnel, the short-term (less than 24 hours) use of flagging to identify new, unplanned hazards is permissible while appropriate barricades or barriers are being created.

6.5 Guardrails

6.5.1 Guardrails shall be constructed:

6.5.1.1 Of finished wood, tubular pipe, or other solid material which is suitable for its intended use.

6.5.1.2 With a 2-inch by 4-inch (nominal) wood or 1½-inch diameter pipe top rail located approximately 42 inches above the floor, platform, runway, ramp, or ground.

6.5.1.3 With a 1-inch by 6-inch (nominal) wood or 1½-inch diameter pipe intermediate rail located approximately halfway between the top rail and the floor, platform, runway, ramp, or ground.

6.5.1.4 With a 1-inch by 4-inch (nominal) toeboard located not more than ¼ inch above the floor, platform, runway, ramp, or ground, when required.

6.5.2 Guardrails shall be supported by 2-inch by 4-inch (nominal) wood or 1½-inch diameter pipe posts, or by other solid material spaced not to exceed eight feet. The anchoring of posts and framing of members for railings of all types shall be of such construction that the completed structure is capable of withstanding a 200 pound force applied in a lateral or downward direction at any point on the top rail.

6.5.3 The ends of the rails shall not overhang the terminal posts except where such overhang does not constitute a projection hazard.

6.6 Safety Signs

6.6.1 General - There shall be no variation in the design of safety signs posted to warn of specific dangers and radiation hazards. All signs shall be furnished

with rounded or blunt corners and shall be free from sharp edges, burrs, splinters, or other sharp projections. The ends or heads of bolts or other fastening devices shall be located in such a way that they do not constitute a hazard. All signs shall be conspicuously posted in a location readily visible to personnel preparing to enter an area requiring the sign. The name of the company which placed the sign shall be lettered at the bottom of the sign.

6.6.2 Danger signs shall be used where an immediate hazard exists. Danger signs shall have red as the predominate color: red upper panel, black outline letters and borders, and a white lower panel for additional black-letter wording.

6.6.2.1 Employees shall be instructed that danger signs indicate immediate danger and that special precautions are necessary.

6.6.3 Caution signs shall be used to warn against potential hazards or to caution against unsafe operations. Caution signs shall have yellow as the predominant color: black upper panel and borders, yellow-letter "CAUTION" (on the black panel), and a yellow lower panel for additional black-letter wording.

6.6.3.1 Employees shall be instructed that caution signs indicate a possible hazard against which proper precautions should be taken.

6.6.4 Instructional signs shall be used to convey general instructions and suggestions. Instructional signs shall have green as the predominant color: green upper panel, white letters, and a white lower panel for additional black-letter wording.

6.6.5 Directional signs shall be used to convey directional information. Directional signs shall have white as the predominant color: black upper panel, white directional symbol, and a white lower panel for additional black-letter wording.

6.6.6 Exit signs shall be used to identify emergency fire exits. Exit signs shall be lettered in legible green letters, not less than six inches high, on a white field and the principal stroke of the letters shall be at least ¾ inch in width.

6.6.7 Biological hazard signs shall be used to identify the actual or potential presence of a biohazard and/or identify equipment, containers, rooms, materials, and/or experimental animals which contain or are contaminated with a viable hazardous agent. Biological hazard signs shall have

fluorescent orange or orange/red as the predominant color, with a contrasting color or black letters and/or symbols.

6.6.7.1 The term "biological hazard" and "biohazard" shall include only those infectious agents presenting an actual or potential risk to human well-being.

6.6.8 Radiation hazard signs shall be used to identify radiation hazards. Radiation hazard signs shall have magenta or purple as the predominant color, with yellow letters and/or symbols.

6.6.9 Street signs shall be posted as needed to advise motorists of construction activity and/or hazards on or adjacent to the roadway. The design of street signs shall conform to the requirements of ANSI D6.1, "Manual on Uniform Traffic Control Devices for Streets and Highways". Street signs shall have a standard size of 48-inches by 48-inches, shall be the standard diamond shape, shall have a black message and border, and shall have an orange background. The message on street signs shall have a minimum letter size of five inches. Street signs shall be supported by a stable base not easily blown over by the wind or traffic.

6.6.9.1 Construction area and advance construction area signs shall be used to advise vehicle operators of construction activities adjacent to the roadway.

6.6.9.2 Road work and advance road work signs shall be used to advise vehicle operators of construction activities on the roadway.

6.6.9.3 Detour and advance detour signs shall be used to advise vehicle operators of a road detour.

6.6.9.4 Road closed and advance road close signs shall be used to advise vehicle operators of a road closure.

6.6.9.5 Flagman and advance flagman signs shall be used to advise vehicle operators when a flagman is used to control/direct traffic through a construction area on or adjacent to the roadway. Flagman shall wear warning vests or other suitable garments marked with or made of reflective or high-visibility material.

6.6.9.6 Truck Crossing signs shall be used to advise vehicle operators and pedestrians of truck crossings.

6.7 Tags

6.7.1 Safety tags shall:

6.7.1.1 Be used as a temporary means of warning employees of an existing hazard, such as defective tools, equipment, etc.

6.7.1.2 Not be used in place of or as a substitute for safety signs.

6.7.1.3 Contain a signal word and a major message. The signal word shall be either "Danger", "Caution", or "Biological Hazard", "BIOHAZARD", or the biological hazard symbol. The major message shall indicate the specific hazardous condition or the instruction to be communicated to the employee. The signal word shall be readable at a minimum distance of five feet (1.52 m) or such greater distance as warranted by the hazard. The tag's major message shall be presented in either pictographs or written text or both. The signal word and the major message shall be understandable to all employees who may be exposed to the identified hazard.

6.7.1.4 All employees shall be informed of the meaning of the various tags used throughout the workplace and what special precautions are necessary.

6.7.1.5 Tags shall be affixed as close as safely possible to their respective hazards by a mechanical means such as string, wire, or adhesive that prevents their loss or unintentional removal.

6.7.2 Danger tags shall be used in major hazard situations where an immediate hazard presents a threat of death or serious injury to employees.

6.7.3 Caution tags shall be used in minor hazard situations where a non-immediate or potential hazard or unsafe practice presents a lesser threat of employee injury.

6.7.4 Warning tags may be used to represent a hazard level between "Caution" and "Danger", instead of the required "Caution" tag, provided that they have a signal word of "Warning", an appropriate major message.

6.7.5 Biological hazard tags shall be used to identify the actual or potential presence of a biological hazard and to identify equipment, containers, rooms, experimental animals, or combinations thereof, that contain or are contaminated with hazardous biological agents.

6.7.6 Other tags may be used in addition to those required by this procedure or in other situations where this procedure does not require tags, provided that they do not detract from the impact or visibility of the signal word and major message of any required tag.

6.8 Barricade Tape

6.8.1 Barricade tape or rope shall be used wherever safety signs are used to delineate the work area. The barricade tape shall be visible at all times when work is being performed, and shall be removed when work is completed. The barricade tape shall be maintained at 36 to 42 inches in height.

6.8.1.1 Danger barricade tape shall be used with danger signs. The danger barricade tape shall be solid red with the word "danger" in black lettering.

6.8.1.2 Caution barricade tape shall be used with caution signs. The caution barricade tape shall be solid yellow with the word "caution" in black lettering.

6.8.1.3 Radiation hazards may be identified by yellow and magenta rope, tape, or signs.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-219	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: CONCRETE AND MASONRY CONSTRUCTION

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

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QUALITY MANAGER — DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 14

8.0 RECORDS 14

9.0 ATTACHMENTS 14

10.0 EXHIBITS 14

1.0 PURPOSE

1.1 The objective of this procedure is to establish and define safety requirements for employees and personnel involved in concrete and masonry operations.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Subpart Q, Concrete and Masonry Construction

3.2 Reference Documents

3A-301, Respiratory Protection

3A-205, Personal Protective Equipment

3A-206, Ladders/Scaffolding

3A-207, Walking-Working Surfaces

3A-209, Crane, Hoisting, and Rigging Operations

3A-211, Motor Vehicles and Mechanical Equipment

3A-218, Signs, Signals, and Barricades

3A-223, Fall Protection

3A-224, Fire Prevention and Protection

ANSI A10.9-1997, Safety Requirements for Concrete and Masonry Work

ANSI A10.9a-1989, Shoring for Concrete and Masonry Work

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Authorized Person: A person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the jobsite.

4.2 Bull Float: A long handled (usually) tool used to spread out and smooth concrete.

4.3 Formwork: The total system of support for freshly placed or partially cured concrete, including the mold or sheeting (form) that is in contact with the concrete as well as all supporting members including shores, reshores, hardware, braces, and related hardware.

4.4 Limited Access Zone: An area alongside a masonry wall which is under construction and which is clearly demarcated to limit access by employees.

4.5 Precast Concrete: Concrete members (such as walls, panels, slabs, columns, and beams) which have been formed, cast, and cured prior to final placement in a structure.

4.6 Qualified Person: A person who, by extensive knowledge, training, or experience, has demonstrated the ability to resolve problems relating to the subject matter of this procedure. This is Supervision or their designee.

4.7 Reshoring: The vertical supporting members that are used to support partially cured concrete after the removal of the formwork. The construction operation in which shoring equipment (also called reshores or reshoring equipment) is placed, as the original forms and shores are removed, in order to support partially cured concrete and construction loads.

4.8 Shoring: The vertical supporting members in a formwork system.

4.9 Structural Concrete: Concrete used to carry structural load or to form an integral part of a structure.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for implementing this procedure. Supervision will delegate specific responsibilities to subordinate supervisors to ensure that all levels of supervision understand their role and commitment to this procedure.

5.2 Environmental, Safety, and Health (ESH) Manager: Responsible for monitoring the safety requirements of this procedure to assure compliance.

5.3 Employees: Responsible for complying with the applicable requirements set forth in this procedure.

6.0 REQUIREMENTS

6.1 Formwork

6.1.1 Formwork shall be capable of supporting without failure all vertical and lateral loads that may reasonably be anticipated to be applied to the formwork.

6.1.2 Drawings or plans, including all revisions, as provided by the designer, shall be available at the jobsite.

6.1.3 Formwork shall be inspected for defects or deviations from work specifications by a qualified person prior to, during, and immediately after placement of the concrete.

6.1.4 Stripped lumber and materials intended for reuse shall have all nails and wire removed. All lumber and material shall be removed from the work area or properly stockpiled.

6.1.5 Lumber, concrete, form hardware, and other materials shall not be permitted to accumulate on whalers, scaffolds, walkways and formdecks.

6.1.6 Fire protection shall be provided in areas where wood forms or other combustible materials are used in accordance with procedure 3A-224, "Fire Prevention and Protection".

6.1.7 When the forming and stripping operations of formwork cannot be done from the floor, ground, or other solid construction, a proper means of access shall be used in accordance with procedure 3A-207, "Walking-Working Surfaces". The use of guardrails, safety harness or other means for protection is required (refer to 3A-223, Fall Protection).

6.1.8 Forms being raised or removed in sections shall not be released until braced or secured. Personnel shall be prohibited from riding forms being moved or suspended from hoisting devices.

6.1.9 Employees or others at lower levels shall be protected from falling materials by approved warning signs, barricades, or overhead protection

along walkways in accordance with procedure 3A-218, "Signs, Signals, and Barricades".

6.1.10 No construction loads shall be supported on, nor any formwork or shoring system be removed from, any part of the structure except where that portion of the structure in combination with the remaining forming and shoring system, has sufficient strength to support its weight and total loads involved. The strength of the partially cured concrete and/or reshoring necessary to carry the proposed construction loads shall be specified by an engineer/architect if not contained in the project drawings and/or specifications.

6.2 Concrete Placement

6.2.1 Employees shall wear full-length trousers, long-sleeve shirts, rubber boots, and gloves and avoid contact between skin surfaces and moist concrete, to reduce the possibility of concrete burns. Employees shall also wear safety glasses with attached side shields during concrete placement operations, and may be required to wear an approved face shield. Washing facilities or waterless soap and eyewash solution adequate to cleanse the eyes shall be provided.

6.2.2 Proper access, walkways, and scaffolding shall be provided at point of placement in walls, piers, columns, etc.

6.2.3 Concrete trucks and other mobile equipment shall be equipped with automatic audible backup alarms, or backing operations shall be controlled by a flagman in accordance with procedure 3A-211, "Motor Vehicles and Mechanical Equipment".

6.2.4 When discharging on a slope, all wheels of ready-mix trucks shall be chocked and the brakes set to prevent movement, unless the driver remains in the cab and controls vehicle movement in accordance with procedure 3A-211, "Motor Vehicles and Mechanical Equipment".

6.2.5 Concrete buckets, positioned by a crane, shall be suspended from approved shackles or safety type hooks. The load shall not exceed the rated lifting capacity of the crane at the designated boom radius.

6.2.6 When the point of placement is not readily visible to the crane operator, a flagman using a uniform signal system shall be positioned in clear view of the operator and the point of placement. Where this is not possible, telephone or radio communication shall be used.

6.2.7 Riding of concrete buckets shall be prohibited. People shall be kept out from under concrete buckets suspended from cranes.

6.2.8 In handling concrete buckets by cranes, care should be taken to keep the loaded bucket under the boom point in order to minimize side loading on the boom.

6.2.9 Handles of buggies shall not extend beyond the wheels on either side of the buggy.

6.2.10 Concrete buckets equipped with hydraulic or pneumatic operated gates shall have positive safety latches or similar safety devices installed to prevent premature or accidental dumping. Buckets shall be designed to prevent material from hanging up on the top and sides of the bucket.

6.2.11 Concrete pumping systems using pipe shall be provided with adequate pipe supports. Any air hoses or pipes in such systems shall be provided with positive fail-safe joint connectors to prevent separation of sections when pressurized. When air pressure and a clean out plug are used to clean the transfer lines, a trap shall be installed at the end of the line to prevent the clean out plug from being shot into an area occupied by people.

6.2.12 Sections of tremies, elephant trunks, and similar concrete conveyances shall be secured with wire rope or equivalent in addition to the regular couplings or connections.

6.2.13 A stable footing shall be provided for employees placing concrete through a pneumatic hose.

6.2.14 Nozzlemen placing concrete through a pneumatic hose shall wear approved head and face protective equipment.

6.2.15 Handles should be protected from contacting an electrical source. Handles on bull floats, used where they may contact energized electrical conductors, shall be constructed of nonconductive material, or insulated with a nonconductive sheath whose electrical and mechanical characteristics provide the equivalent protection of a handle constructed of nonconductive material.

6.2.16 Powered and rotating-type concrete troweling machines that are manually guided shall be equipped with a control switch that will automatically shut off the power whenever the operator removes his hands from the equipment handles.

6.3 Precast Concrete

6.3.1 Handling and erection procedures shall be done under the supervision of a qualified person using certified shop/erection drawings and procedures.

6.3.2 Storage - Precast members stored on the site shall be supported to prevent tipping. The base shall be level and stable to prevent differential settlement. Stacking of members shall be such that lifting attachments will be undamaged and accessible.

6.4 Patching, Finishing and Curing

6.4.1 When patching, finishing, or curing work must be done at elevations beyond the reach of workmen, access to such work shall be provided by ladders, scaffolds, boatswain's chairs, or other approved methods in accordance with procedures 3A-206, "Ladders/Scaffolding" and 3A-207, "Walking-Working Surfaces".

6.4.2 Employees shall be required to wear industrial safety glasses with side shields attached and face shields when chipping, wire brushing, or using power impact or rotary tools in patching and finishing concrete in accordance with procedure 3A-205, "Personal Protective Equipment".

6.5 Winter Protection

6.5.1 Fire protection consisting of water hoses, fire extinguisher, or both, shall be provided for all operational heating equipment being used for concrete curing.

6.5.2 Any temporary winter protection enclosures shall be provided with adequate light and ventilation for the safety of personnel in these areas.

6.5.3 Temporary heating equipment, including storage containers, valves, piping, and fittings, shall be installed, tested and operated only with the concurrence of an ESH Manager.

6.6 Equipment

6.6.1 Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains, or other reciprocating, rotating, and moving parts of equipment shall be guarded if such parts are exposed to personal contact or otherwise constitute a hazard in accordance with procedure 3A-212, "Machinery and Machine Guarding".

6.6.2 Stationary electric-driven equipment, such as compressors, mixers, conveyors, screens, etc., shall be locked and tagged out prior to making repairs in accordance with procedure 3A-215, "Energy Sources Lockout/Tagout".

6.7 Employee Protection During Cutting and Sandblasting

6.7.1 Employees wet cutting or wet sandblasting concrete shall wear approved head and face protective equipment, along with long-sleeve shirts, full-length trousers, and gloves.

6.7.2 Employees dry cutting or dry sandblasting concrete shall wear approved respiratory protective equipment, along with long-sleeve shirts, full-length trousers, and gloves in accordance with procedure 3A-301, "Respiratory Protection".

6.7.3 Employees required to enter the immediate area where wet or dry sandblasting operations exist shall wear approved protective head and face equipment and protective clothing in accordance with procedure 3A-205, "Personal Protective Equipment".

6.8 Cement

6.8.1 Bagged portland cement, masonry cement, and lime should be stacked in piles, stepping back the layers and cross keying the bags at least every ten bags high. Bags should be removed uniformly from the top of the piles to avoid tipping of the stack.

6.8.2 Pallets and empty bags should be disposed of promptly to eliminate fire and tripping hazards. Returnable pallets shall be stored in an orderly manner until ready for shipment.

6.8.3 Handling and Erection

1. Employees assigned to handling and erection operations shall be instructed in proper methods of handling and erecting precast concrete products.

2. Precast members shall be handled in a position consistent with their shape and design as recommended on the shop and/or erection drawings. They shall be handled at the lifting points designated on the shop and/or erection drawings using only compatible lifting attachments. During the handling of prestressed concrete beams, it is imperative that they are kept in the position designated on the shop and/or erection drawings.

3. Lifting hardware shall be designed to provided sufficient strength to withstand the imposed loads with a factor of safety of at least five. Embedded inserts used in precast concrete elements or precast, prestressed concrete shall have a minimum safety factor of four.

4. Temporary Support and Bracing - Precast concrete wall units, structural framing, or tilt-up wall panels shall be braced until permanent connections are completed. Temporary supports or bracing shall be designed by or under supervision of a qualified person in accordance with American National Standard Minimum Design Loads for Buildings and Other Structures, ANSI A58.1-1982, but not less than 15 pounds per square foot on projected surfaces. Permanent connections may be used in lieu of bracing provided they are designed to withstand all loads imposed during construction and attachments are made under the supervision of a qualified person.

5. Falling Hazard - No one shall be permitted under precast members being lifted or tilted into position. Barricades, warning signals and signs shall be provided to safeguard traffic and people in the immediate area of all handling and erection operations in accordance with procedure 3A-218, "Signs, Signals and Barricades".

6.9 Masonry Construction

6.9.1 This section covers safety requirements relating to on-site masonry construction. Field operations shall be done under the supervision of a qualified person.

6.9.2 Handling and Storage of Masonry Materials

1. Masonry units shall be stored on a firm and reasonably level support.

2. Masonry materials placed on a scaffold shall not exceed the design capacity of the scaffold.

3. Loose bricks shall not be stacked more than seven feet high. When a loose brick stack reaches a height of four feet, it shall be tapered back two inches in every foot of height above the four foot level. When loose masonry blocks are stacked higher than six feet, the stack shall be tapered back on-half of the block height per tier above the six foot level in accordance with procedure 3A-210, "Material Handling and Storage".

4. In removing masonry units, stacks shall be kept level and the step back maintained.

5. Banded brick or block packages shall not be lifted by crane or lift truck forks inserted in formed voids in the package unless the voids are spanned with a suitable support and the package bands are tight. Masonry unit packages that are lifted by forks placed in voids in units on the bottom layer shall be neatly cubed and contain no visible broken units. Other packages shall be lifted with a pallet or other similar device.

6.10 Wall Erection

6.10.1 A limited access zone shall be established whenever a masonry wall is being constructed. The limited access zone shall conform to the following:

1. The limited access zone shall be established prior to the start of a construction of the wall.

2. The limited access zone shall be equal to the height of the wall to be constructed plus four feet, and shall run the entire length of the wall.

3. The limited access zone shall be established on the side of the wall which will be unscaffolded.

4. The limited access zone shall be restricted to entry by employees actively engaged in constructing the wall. Only authorized employees shall be permitted to enter the zone.

5. The limited access zone shall remain in place until the wall is adequately supported to prevent overturning and to prevent collapse.

6. All masonry walls over eight feet in height shall be adequately braced to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. The bracing shall remain until the designed lateral strength is reached, or the top supporting members are in place to prevent collapse due to wind or other forces. Braces or shores shall be secured in position.

6.11 Masonry Saws

6.11.1 Masonry saws shall be guarded by a semicircular enclosure over the blade and by a slotted horizontal hinged bar mounted underneath the enclosure to retain fragments of the blade in case it should shatter while in use in accordance with procedure 3A-212, "Machinery and Machine Guarding".

6.11.2 A safety latch shall be installed on notch saws to prevent the motor and cutting head assembly from lifting out of the notches.

6.11.3 Blade speed shall be maintained in accordance with the manufacturer's specifications and in accordance with procedure 3A-213, "Hand and Power Tools".

6.11.4 Dry cutting masonry saws shall be equipped with dust collectors. Operators of such saws and other persons in the area shall be provided with approved dust respirators.

6.11.5 Metal parts of saws and frames which do not carry current shall be grounded.

6.11.6 Saw operators shall wear approved safety goggles or face shields.

6.11.7 Masonry saws shall be inspected at regular intervals and shall be maintained in safe operating condition in accordance with procedure 3A-213, "Hand and Power Tools".

6.12 Mason's Scaffolds

6.12.1 Mason's scaffolds and other working surfaces shall be kept free of ice, scrap, debris, unneeded materials, and tools that create a hazard.

6.13 Reinforcing Steel

6.13.1 Protective gloves should be worn when handling reinforcing steel in accordance with procedure 3A-205, "Personal Protective Equipment".

6.13.2 Employees placing and tying reinforcing steel in walls, piers, columns, etc., working six feet or more above an adjacent working surface shall use safety harness or equivalent protection. One hundred percent fall protection is required for all unprotected elevated work.

6.13.3 Employees shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate hazard of impalement. This shall be accomplished by covering the protruding ends of the steel with timber or other equivalent methods.

6.13.4 Housekeeping shall be maintained at all times to reduce tripping and falling hazards.

6.13.5 Rigging - Bundles of reinforcing steel moved by crane or cableway shall be tied together to prevent slipping. Steel bundles over 20 feet in length shall be handled by spaced two-part slings or chokers in accordance with procedure 3A-209, "Crane, Hoisting, and Rigging Operations."

6.13.6 Guying - Reinforcing steel for walls, piers, columns, and similar vertical structures shall be guyed and supported to prevent collapse.

6.13.7 Wire Mesh Rolls - Wire mesh rolls shall be secured at each end to prevent recoiling action. Unrolled wire mesh shall be secured on each side of a proposed cut before cutting the mesh.

6.13.8 Prohibited Uses of Reinforcing Steel

1. Reinforcing steel shall not be used as guy attachments at deadman anchorage points.

2. Reinforcing steel shall not be used as hooks or stirrups for scaffolding, nor shall it be used as a load bearing member of any lifting device.

6.14 Shoring and Reshoring

6.14.1 Supervision shall ensure that the equipment meets the requirements specified in the formwork drawings.

6.14.2 Shoring equipment found to be damaged shall not be used for shoring.

6.14.3 Erected shoring equipment shall be inspected by the qualified individual to meet all applicable drawings and specs included in the work package, immediately prior to, during, and immediately after concrete placement.

6.14.4 Shoring equipment that is found to be damaged or weakened after erection, shall be immediately reinforced.

6.14.5 The sills for shoring shall be sound, rigid, and capable of carrying the maximum intended load.

6.14.6 All base plates, shore heads, extension devices, and adjustment screws shall be in firm contact, and secured when necessary, with the foundation and the form.

6.14.7 Eccentric loads on shore heads and similar members shall be prohibited unless these members have been designed for such loading.

6.14.8 Whenever single post shores are used one on top of another (tiered), the employer shall comply with the following specific requirements in addition to the general requirements for formwork.

1. The design of the shoring shall be in accordance with ANSI A10.9-1997, and ANSI A10.9a-1989.

2. The single post shores shall be vertically aligned.

3. The single post shores shall be spliced to prevent misalignment.

4. The single post shores shall be adequately braced in two mutually perpendicular directions at the splice level. Each tier shall also be diagonally braced in the same two directions.

5. Adjustment of single post shores to raise formwork shall not be made after the placement of concrete.

6. Reshoring shall be erected, as the original forms and shores are removed, whenever the concrete is required to support loads in excess of its capacity.

6.14.9 While the reshoring is underway, no placement of fresh concrete or storage of reinforcing steel on slab forming above shall be permitted; and no construction loads shall be permitted on the partially cured concrete unless accounted for in the shoring and reshoring design.

6.14.10 The reshoring shall be checked by a qualified person to determine that it is properly placed as specified in the formwork drawings and/or specifications.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-220	EFFECTIVE DATE: JUNE 1, 1999
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APPROVAL

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TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 8

6.0 REQUIREMENTS 8

7.0 EXTERNAL INTERFACE 19

8.0 RECORDS 19

9.0 ATTACHMENTS 20

10.0 EXHIBITS 20

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with safety requirements for blasting and the use of explosives.

2.0 SCOPE

2.1 This procedure is applicable to MK blasting activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.109, Explosives and Blasting Agents

29 CFR 1926 Subpart U, Blasting and the Use of Explosives

3.2 Reference Documents

Morrison Knudsen Records Management Program, January 1996

3A-102, ESH Surveillances

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

DOE-ID APPENDIX 0550, Standard Operational Safety Requirements, Part III, Subpart I, Explosives, current revision

U.S. Department of Energy, DOE/EV--06194-Rev.6, DOE Explosives Safety Manual

ANSI/NFPA 495-1996, Manufacture, Transportation, Storage, and Use of Explosive Materials

4.0 DEFINITIONS

4.1 American Table of Distances: also known as Quantity Distance Tables - means the American Table of Distances for Storage of Explosives as revised and approved by the Institute of the Makers of Explosives.

4.2 Approved or Approval: Means sanctioned, endorsed, accredited, certified, or accepted as satisfactory by a duly constituted and nationally recognized authority or agency.

4.3 Authorized Person: Means a person approved or assigned by the employer to perform specific types of duties or to be at a specific location or locations at a job site.

4.4 Barricaded: A intervening approved barrier, natural or artificial, of such type, size and construction as to limit the effects of an explosion on near by buildings or exposures.

4.5 Blasting Agent: Any material or mixture, consisting of fuel and oxidizer, intended for blasting, not otherwise defined as an explosive, provided that the finished product as mixed for use or shipment, cannot be detonated by a number eight test blasting cap when unconfined.

4.6 Blast Area: The area in which explosives loading and blasting operations are conducted, including the area within the influence of flying rock missiles.

4.7 Blaster: The person or persons authorized to use explosives for blasting purposes and meeting the qualifications in Section 6.1.2.

4.8 Blasting Cap: A metallic tube closed at one end, containing a charge of one or more detonating compounds, and designed for and capable of detonation from the sparks or flame from a safety fuse inserted and crimped into the open end.

4.9 Block holing: The breaking of boulders by firing a charge of explosives that has been loaded in a drill hole.

4.10 Bulk Mix Delivery Equipment: Equipment (usually a motor vehicle with or without mechanical delivery device) that transports materials in bulk form for mixing, or loading directly into blast holes, or both.

4.11 Compatibility: The ability of explosives, explosive materials, ingredients or compositions to remain unaffected when in contact with other materials or containers.

4.12 Deflagration: A very rapid combustion, sometimes accompanied by flame, spark, or spattering of burning particles. Although classed as an explosion, a deflagration generally implies the burning of a substance with self-contained oxygen so that the reaction zone advances into the unreacted material at less than the velocity of sound.

4.13 Delay Mechanism: A mechanism designed to initiate detonation at a predetermined period of time after energy is applied to the ignition system.

4.14 Detonate or Detonation: To be changed by exothermic chemical reaction usually from a solid or liquid to a gas with such rapidity that the rate of advance of the reaction zone into the unreacted material exceeds the velocity of sound in the unreacted material; that is, the advancing reaction zone is preceded by a shock wave.

4.15 Detonating Cord: A flexible cord containing a center core of high explosive and used to initiate other explosives.

4.16 Detonator: Any device containing a detonating charge that is used for initiating detonation in an explosive; the term includes but is not limited to, electric blasting caps of instantaneous and delay types, and the non-electric instantaneous and delay blasting caps.

4.17 Electric Blasting Cap: A blasting cap designed for and capable of detonation by means of an electric current.

4.18 Electric Blasting Circuitry

4.18.1 Bus wire: An expendable wire used in parallel or series. Bus wires are connected to the leg wires of electric blasting caps.

4.18.2 Connecting Wire: An insulated expendable wire used between electric blasting caps and the lead wires or between the bus wire and the lead wires.

4.18.3 Lead wire: An insulated wire used between the electrical power source and the electric blasting cap circuit.

4.18.4 Permanent Blasting Wire: A permanent mounted, insulated wire used between the electrical power source and the electric blasting cap circuit.

4.19 Emulsion Explosive: An explosive material containing substantial amounts of oxidizers dissolved in water droplets surrounded by an immiscible fuel may be classified as Explosives Class A, Explosives Class B, or blasting agents.

4.20 Explosive: The term explosive includes any chemical compound or mechanical mixture which, when subjected to heat, impact, friction, detonation, or other suitable initiation, undergoes a very rapid chemical change with the evolution of large volumes of highly heated gases which exert pressures in the surrounding medium. The term applies to materials that either detonate or deflagrate; and all material classified as Class A, Class B, or Class C Explosives by the U.S.

Department of Transportation. Following are the U.S. Department of Transportation classifications of explosives:

4.20.1 Class A Explosives: Explosives possessing a detonating or otherwise maximum hazard; such as, but not limited to, dynamite, nitroglycerin, picric acid, lead azide, black powder, blasting caps, and detonating primers.

4.20.2 Class B Explosives: Explosives which possess flammable hazard; such as, but not limited to, propellant explosives, photographic flash powders, some special fireworks, and some smokeless powders.

4.20.3 Class C Explosives: Explosives including certain types of manufactured articles which contain Class A or Class B explosives, or both, as components in restricted quantities.

4.21 Explosive Materials: Include but is not limited to, explosives, blasting agents, detonators, dynamite and other high explosives, slurries, emulsions, water gels, black powder, pellet powder, initiating explosives, safety fuses, squibs, detonation cord, igniters, pyrotechnics, pyrotechnic compositions, and ammunition.

4.22 Fuse Lighters: Special devices for the purpose of igniting safety fuse.

4.23 Inert: Containing no explosives, active chemicals or pyrotechnics.

4.24 Leading Line or Wire: An insulated wire used between the electric power source and the electric blasting cap circuit.

4.25 Magazine: A building, structure, or container other than an explosive manufacturing building approved for the storage of explosive materials.

4.26 Misfire: An explosive charge which failed to detonate.

4.27 Mud-Capping: (sometimes known as Bulldozing, Adobe Blasting, or Dobying) - Blasting boulders by placing explosives against a rock, boulder, or other object without confining the explosives in a drill hole.

4.28 Oxidizer or Oxidizing Material: A substance, such as a nitrate, that readily yields oxygen or other oxidizing substance to stimulate the combustion of organic matter or other fuel.

4.29 Powderman: Person responsible for delivering explosive materials to the explosive site.

4.30 Primary Blast: The blasting operation that dislodges original rock formations from their natural locations.

4.31 Primer: A cartridge or container of explosives into which fire is conveyed at a continuous and steady rate to fire blasting caps.

4.32 Qualified: One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training, and experience, has successfully demonstrated the ability to solve or resolve problems relating to the subject matter, the work or the project.

4.33 Restricted Area: Any area, from which personnel, aircraft, or vehicles, other than required for operations, are excluded for reasons of safety and security.

4.34 Safety Fuse: A flexible cord containing an internal burning medium by which fire or flame is conveyed at a continuous and uniform rate from the point of ignition to the point of use, usually a detonator.

4.35 Secondary Blast: Using explosives to reduce materials to an appropriate size for handling, mud-capping, and blockholing operations.

4.36 Semi-conductive Hose: A hose with an electrical resistance high enough to limit flow of stray electric currents to safe levels, yet not so high as to prevent drainage of static electric charges to ground. Hose of not more than 2 megohms resistance over its entire length and of not less than 5,000 ohms per foot meets the requirement.

4.37 Sensitivity: A physical characteristic of an explosive material, classifying its ability to react to externally applied energy or changes in environment.

4.38 Shield: A safeguard securely braced and of a strength proven sufficient to withstand the effects of the maximum credible incident involving the item being handled.

4.39 Slurry: An explosive material containing substantial portions of a liquid, oxidizers, and fuel, plus a thickener. Slurries may be classified as Explosives Class A, Explosives Class B, or Blasting Agents.

4.40 Stability: The ability of an explosive material to retain chemical and physical properties when exposed to specific environmental conditions over a particular period of time.

4.41 Stemming: A suitable inert or incombustible device used to confine or separate explosives in a drill hole, or to cover explosives in mudcapping.

4.42 Springing: Using explosives to create a pocket in the bottom of a drill hole to hold larger quantities of explosives.

4.43 Water Gels: An explosive material containing substantial portions of water, oxidizers, and fuel plus a cross-linking agent. Water gels may be classified as Explosives Class A, Explosives Class B, or Blasting Agents.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for the implementation of this procedure. Each Supervisor shall delegate specific responsibilities to subordinate supervisors to ensure that all levels of supervision understand their role and commitment to this procedure.

5.2 Environmental, Safety and Health (ESH) Manager: Responsible for assuring the implementation of and compliance with this procedure, and assuring performance and documentation of periodic inspections, assessments, and surveillances, verifying that the requirements of this procedure are being followed in accordance with procedure 3A-102, "ESH Surveillances".

5.3 Management: Responsible for ensuring resources are provided for implementation of and compliance with this procedure.

5.4 Employees: Responsible for compliance with the requirements of this procedure.

6.0 REQUIREMENTS

6.1 General Requirements

6.1.1 Competent Supervision: The transportation, handling, storage, and use of dynamite and other explosive materials, including blasting agents, shall be directed and supervised by persons of proven experience and competency in blasting and use of explosives. Written evidence of the blasting supervisor's past experience shall be furnished to MK's Subcontract Administrator.

6.1.2 Qualifications: A blaster shall be qualified, by reason of training, knowledge, or experience, in the field of transporting, storing, handling, and use of explosives, and have a working knowledge of State and local laws and regulations which pertain to explosives. Blasters shall be required to furnish satisfactory evidence of competency in handling explosives and performing in a safe manner the type of blasting that will be required.

6.1.3 Permission Required: Permission shall be obtained from MK prior to bringing any explosives or blasting agents on the jobsite. Such permission will not be given unless the contractor safety plans or a subsequent supplementary plan includes a comprehensive detailed blasting program. The required program must, as a minimum, show proposed methods and procedures for conforming with the referenced standards and regulations including:

1. Method and equipment for transporting explosives and detonators.
2. Type and location of storage facilities.
3. Primer assembly procedure and location.
4. Employee training programs.
5. Provisions for protecting persons, structures, private and public property.
6. Provisions for developing and distributing a daily blasting plan covering hole diameter, spacing, loading and delay patterns.
7. Provisions for disposal of explosives and blasting agents and associated materials.

6.1.4 Security and Inventory: The blasting contractor shall provide such reasonable and adequate security as is necessary to prevent loss or theft of explosives. He shall maintain an inventory of all explosives on the jobsite including a record of explosives received, and withdrawn from the magazines. Such records shall be available to MK, and any loss or theft promptly reported.

6.1.5 Notification of Owners: Blasting operations in the immediate vicinity of buildings, public roads, overhead powerlines, utility services, or similar facilities shall not be undertaken until the owners and/or the operators have been notified and all necessary precautions taken for safe control of the blasting operations.

6.1.6 Smoking Restrictions: Smoking, firearms, matches, open flame lamps, fire, heat-producing devices, and sparks shall be prohibited in or near explosive storage sites or in areas where explosive materials are being handled, transported, or used.

6.1.7 Thunderstorms: The handling or use of explosives shall be discontinued during the approach and progress of a thunderstorm. All persons shall be removed from the danger areas to a place of safety during such periods.

The blasting contractor shall use the National Oceanographic and Atmospheric and Administration or the INEEL Warning Communications Center and/or an approved-type lightning warning device capable of detecting atmospheric conditions that could produce lightning (warning devices shall be acceptable to MK prior to installation).

6.1.8 Vibration and Damage Control: Blasting in or adjacent to structures, buildings, and other facilities susceptible to vibration and/or air blast damage, shall be carefully controlled to eliminate any possibility of damage. Where required by the specifications or the Project Engineer or Subcontract Administrator, the contractor shall submit for review and approval a vibration and damage control plan prepared by a recognized blasting specialist. The plan shall incorporate provisions for monitoring blasts with calibrated seismographs containing axial orthogonal velocity transducers with a flat frequency response from 2 to 200 Hz to be placed in designated locations and/or structures as specified by MK. The maximum peak particle velocity as recorded by the seismographs at the designated structures or locations shall not exceed 1 inch per second, unless otherwise specified by MK. The seismograph recording or seismogram shall be a real time direct readout permanent record of the vibration measurements and copy shall be submitted to MK. Air blast shall be controlled so it does not exceed 128 decibel linear-peak at designated locations and/or structures as specified by the Safety Specialist.

6.1.9 Warning Signs: Warning signs shall be posted at access points to blasting areas.

6.1.10 Destruction of Explosives: Explosives, blasting agents, and blasting supplies that have deteriorated or been damaged shall not be used. They and all excess explosives shall be destroyed or removed from the site in accordance with specific written manufacturer instructions acceptable to MK.

6.1.11 Empty Explosive Containers: Empty boxes and combustible packing materials which have contained explosives shall be destroyed by burning or procedures acceptable to the manufacturer and MK. In no case shall any person be allowed within 100 feet of the burning site once the material has been ignited, or until no visible flames or smoke has been detected for 1 hour.

6.2 Radio and Electromagnetic Radiation

6.2.1 Requirement: Adequate precautions shall be taken to prevent accidental discharge of electric blasting caps from current induced by radar, radio transmitters, powerlines, and similar sources of electromagnetic radiation.

6.2.2 Radio Transmitters: Where the safe clearance distances from RF transmitter stations, as set forth in ANSI C95.4, cannot be observed, blasting shall be done with a totally nonelectric firing system. Electrical detonators shall not be stored or used within the ANSI specified distances from a transmitter station.

6.2.3 Mobile Radio Transmitters: Unless deenergized and effectively locked, mobile or portable transmitters shall not be permitted within 100 feet of electric blasting caps or delays not in their original containers. Warning signs at least 36 by 42 inches in size, stating BLASTING ZONE—TURN OFF 2-WAY RADIOS, shall be posted on all public roads within 1,000 feet of blasting operations using electric detonators.

6.3 Transportation of Explosives

6.3.1 Vehicles: Vehicles used to transport explosives shall conform to the following requirements:

1. They shall be in good repair with all electrical wiring completely protected and securely fastened to prevent short circuits.

2. They shall be thoroughly inspected prior to use to ensure that they are in safe condition and comply with the requirements of this section.

3. They shall have tight floors and any exposed spark-producing metal shall be covered with wood or other nonsparking material to prevent contact with containers of explosives.

4. They shall not be loaded beyond rated capacity and the explosives shall be secured to prevent shifting or dislodgment.

5. In open-body-type vehicles, the explosives shall be covered with a fire-resistant tarpaulin or transported in a Class II magazine.

6. Vehicles transporting explosives shall be marked with reflective signs on both sides, the front and rear, with the word EXPLOSIVES in red letters not less than 4 inches high on a white background or placarded in accordance with 49 CFR Part 172, Subpart F "Placarding".

7. They shall be equipped with two or more fire extinguishers having a rating of at least 2A40B:C.

6.3.2 Vehicle Operators: Operators of vehicles transporting explosives shall be licensed, physically fit, competent, able to read and understand instructions, and not addicted to the use of intoxicants or use narcotics.

6.3.3 Caps and Detonators: Blasting caps and detonators shall not be transported with other explosive materials, unless the blasting caps or detonators are contained in a closed metal storage container having at least a 2-inch wood lining. Such containers shall be separated at least 2 feet from other explosives or explosive materials.

6.3.4 Flammable Materials: Spark-producing tools, carbides, oil, matches, firearms, acids, storage batteries, oxidizing or corrosive compounds, or flammable materials shall not be transported with explosive materials.

6.3.5 Parking: Vehicles containing explosives shall not be left unattended nor parked in public garages or other congested areas.

6.3.6 Fueling: Except in emergency, vehicles carrying explosives shall not be refueled.

6.3.7 Smoking Restrictions: Persons employed in the transportation, handling, or use of explosives shall not smoke or carry on their persons or in the vehicle; matches, lighters, firearms, ammunitions, or flame-producing devices of any description.

6.3.8 Riders: Only the authorized driver and helper shall be permitted to ride on trucks transporting explosives or detonators.

6.4 Storage of Explosives

6.4.1 Requirement: Explosives and related materials shall be stored in approved magazines, and in accordance with the applicable provisions of DOE-ID Appendix 0550, "Standard Operational Safety Requirements" Subpart III, I, "Explosives", and/or the Bureau of Alcohol, Tobacco, and Firearms as set forth in 27 CFR Part 55, "Commerce In Explosives." Magazines shall be bullet-proof, rodent-resistant, weather-resistant, ventilated, and constructed to the standards of DOE, the Bureau of Alcohol, Tobacco, and Firearms, or the Institute of Makers of Explosives.

6.4.2 Magazine Location: Explosive magazines shall be located in accordance with the State and local laws, and the proposed site shall be approved by the DOE-ID Operational Safety Division prior to location or construction. The magazines shall be located in accordance with the American Table of Distances for Storage of Explosives.

6.4.3 Detonators: Blasting caps, electric blasting caps, detonating primers, and primed cartridges shall not be stored in the same magazine with other explosives or blasting agents. Detonator magazines shall be located at least 100 feet, if unbarricaded, and 50 feet, if barricaded, from magazines containing other explosives or blasting agents.

6.4.4 Combustible Materials: Smoking and open flame shall not be permitted within 100 feet of storage magazines. Vegetation and combustible material shall be removed for a distance of at least 25 feet from all magazines.

6.4.5 Security: Magazines shall be kept securely locked at all times except for inspection or the movement of explosives. An inventory shall be maintained of all storage and withdrawal of explosives.

6.4.6 Posting: Areas around magazines shall be posted with EXPLOSIVES signs, located so a bullet passing through the sign will not strike a magazine.

6.4.7 Storage: Explosives shall be stored only in their original containers. Containers of explosives shall be stored with the top side up as designated on the container. The oldest stock of explosives shall be used first.

6.4.8 Maintenance: Debris and combustible material shall be promptly removed from magazines. When magazine floors become stained with nitroglycerin, they shall be cleaned with a stiff broom or brush and a fresh solution of one-half gallon of water, one-half gallon of wood alcohol, and 2 pounds of sulfide of sodium.

6.4.9 Transfer In and Out: Provision shall be made for the safe transfer of explosives in and out of magazines, including provision for ramps or walkways as necessary.

6.5 Handling of Explosives

6.5.1 Requirement: Explosives shall be handled carefully, and shall not be dropped, thrown, or slid. Detonators, primers, and other explosives shall be carried in separate containers when transported manually; and when not in their original containers, shall be placed in a suitable nonmetallic container for manual transportation.

6.5.2 Removal from Containers: Explosives shall be removed from original containers only as needed for immediate use. Such containers shall be opened only by means of nonsparking tools or devices. Empty containers

and packing shall be promptly burned in an approved location or disposed of in accordance with the manufacturer's recommendations.

6.6 Loading Explosives and Blasting Agents

6.6.1 Planning: Excavation shall be planned and scheduled in order that drilling and loading operations will not conflict. Loading shall not be permitted within 50 feet of drilling operations.

6.6.2 Loading Areas: Boreholes shall be made ready, and equipment and tools not used for loading shall be removed from the area before explosives are delivered to the site. In major excavation operations, the loading areas shall be isolated by appropriate signs and/or temporary barricades to prohibit access by unauthorized persons.

6.6.3 Boreholes: Boreholes shall be large enough to permit loading of cartridges and explosives without forcing. Priming, loading, tamping, and firing shall be carried on as promptly as possible with a minimum of exposure to personnel.

6.6.4 Tamping: Tamping shall be done only with wooden or plastic tamping poles without exposed metal parts. Nonsparking metal connectors may be used on jointed poles. Cartridges shall be seated by even, steady pressure, and primers shall not be tamped.

6.6.5 Priming: The manufacturer's recommendations shall be followed in priming cartridges. Primers shall be made up only at the loading area, and in quantities limited to the number required for a single round of blasting.

6.6.6 Stemming: All blast holes in open work shall be stemmed with noncombustible material to the collar or to a point which will confine the charge.

6.6.7 Extraneous Electricity: Electric conductors, electric equipment, and all sources of ignition shall be prohibited in or adjacent to the loading area. Where stray currents are suspected, the area shall be thoroughly checked out with suitable instruments. If the elimination of stray currents is not possible, electric detonators, delays, and caps shall not be used or permitted in the area.

6.6.8 Shunts: The manufacturer's shunt shall not be removed from the cap leg wires until loading is completed and the cap is connected into the blasting circuit.

6.6.9 Springing Holes: A borehole shall not be sprung when it is near a loaded hole. Dry cell batteries shall not be used for springing holes.

6.6.10 Blasting Mats: Where blasting may expose persons or property to injury or damage from flying material, blasting mats shall be used to cover the charges. When used, care shall be used to protect the blasting circuits, and the circuits shall not be permitted to contact steel mats.

6.6.11 Loading and Shooting: Loaded holes shall not be left unattended or unprotected. If possible, all holes loaded during a shift shall be fired on the same shift. In the event it is necessary to delay firing due to an emergency, the area shall be isolated and watchmen posted to prevent entry to the area.

6.6.12 Pneumatic Loading Systems: Due to the hazards from static electricity and stray currents associated with pneumatically loading boreholes with blasting agents, the following precautions shall be taken:

1. Only approved pneumatic loaders shall be used.
2. The entire system, including placers, valves, and loading hose, shall be effectively grounded and bonded. In tunnels and shafts, the grounding shall be at the face, and piping and rails shall not be used to ground the system.
3. Checks shall be conducted, following installation of the ground, with an approved meter to ensure that the resistance is within safe limits.
4. Loading hoses shall be of an approved, nonsparking semi-conductive material designed to maintain static electricity with safe limits.

6.7 Wiring Operations

6.7.1 Firing Devices: All blasts shall be fired electrically with an electric blasting machine or a properly designed and installed power source; or by a single safety fuse with the fuse cap, properly crimped thereto, when the presence or threat of stray currents is known or assumed to be present. Electric blasting caps shall not be used within 500 feet of energized high-voltage lines or facilities.

6.7.2 Wiring Procedure: The manufacturer's shunt shall not be removed from the cap leg wires until the cap is connected to the leadlines or to another cap in preparation for the assembly of two or more caps into a single series. When two or more series of caps are to be fired as a series-parallel system, the caps in each series shall be the same in number

(quantity, not delay periods) and each series shall be separately tested with an approved blasting galvanometer to:

1. Ensure that the series is complete, and

2. Ensure that each series has the same resistance and that the resistance is as close to the calculated resistance for the series. If the first reading indicates an incomplete circuit. The fault shall be located and corrected. If the second reading indicates a higher or lower resistance than calculated, the situation shall be corrected prior to final hookup and firing.

6.7.3 Electric Caps and Delays: All caps and delays in a shot shall be of the same manufacture and the number in a circuit shall not exceed the capacity of the blasting machine or power source.

6.7.4 Galvanometer Testing: The following tests shall be made with an approved blasting galvanometer during all wiring operations:

1. The circuit, including all caps, shall be tested before being connected to the firing line, and

2. The firing line shall be checked before being connected to the blasting machine or power source.

6.7.5 Firing Lines: Firing lines shall be of sufficient current-carrying capacity, but not smaller than No. 14 B and S gage solid copper wire sharp or equivalent. The firing line shall not be connected to the blasting machine or power source until the wiring has been completed and tested, and the blast area cleared. A power circuit used for firing electric blasting caps shall not be grounded.

6.7.6 Connecting and Lead Wires: Connecting and lead wires shall be insulated single solid wires of sufficient current-carrying capacity.

6.7.7 Power Circuit: When using a power circuit for firing, the firing switch shall be locked in the "OFF" (open) position at all times, except when firing. It shall be designed so that the firing lines to the cap circuit are automatically short-circuited when the switch is in the "OFF" position. Keys to the firing switch shall be entrusted only to the blaster.

6.8 Firing

6.8.1 Preparation: Prior to connecting the firing line to the power source, all personnel in the danger area shall be notified of the blast and removed to

a safe area. Satisfactory arrangements shall be made for evacuating the danger area and ensuring that no one enters the area prior to the blast.

6.8.2 Responsibility: The blaster shall be in charge of the blasting machine or firing switch, and he shall connect the firing line to the firing device. All connections shall be made from the cap circuit back to the firing device, and the firing line shall remain shorted until connected to the firing device immediately prior to firing.

6.8.3 Blasting Signal: The following blasting signal shall be sounded on a clearly audible whistle, horn, or siren before each blast:

1. Blasting Warning: a 1-minute series of long blasts 5 minutes prior to the blast signal.

2. Blast Signal: a series of short blasts following inspection of the blast area

3. All Clear: a prolonged blast following inspection of the blast area.

6.8.4 Posting Blasting Signals: Blasting signals shall be posted at all access points, and prior to each shot, competent flagmen shall be posted at all access points to the danger area.

6.8.5 Disconnecting: Immediately following the blast, the firing line shall be disconnected from the firing power source or blasting machine, and shunted. Firing switches shall be locked open.

6.9 Inspection Following A Blast

6.9.1 All Blasts: Prior to the all-clear signal, a thorough inspection shall be made by the blaster to determine if all charges have been fired. Wires shall be carefully checked and a search made for unexploded charges.

6.9.2 All-Clear Signal: The all-clear signal shall be sounded only after the inspection of the area has been satisfactorily completed.

6.10 Misfires

6.10.1 Requirement: If a misfire is suspected or found, all personnel, except the blaster and employees necessary to handle the misfire, shall be kept out of the danger area. No work shall be done in the danger area except that necessary to remove the hazard of the misfire.

1. Nonelectric Misfires: Wait 30 minutes after anticipated time of detonation time before approaching a misfire. (This requirement may be waived in emergency conditions.)

2. Electric Misfires: Disconnect the blasting machine or other power source, and shunt the power ends of the firing wires before approaching a misfired charge. Wait 30 minutes unless it can be ascertained that the blasting cap failure is strictly electrical. A malfunctioned cap may have initiated a burning explosive charge.

6.10.2 Refiring: If broken wires or faulty connections are determined as the cause, repairs shall be made, the firing line reconnected, and an attempt made to fire the charge. Prior to removing explosives from a borehole, a new primer shall be placed in the hole and an attempt made to fire the charge. Any stemming shall be floated out with water.

6.10.3 Removal of Explosives: This procedure shall be the last resort and performed only when refiring has failed or when refiring would present a hazard. Explosives may be removed by washing out with water or if the misfire is under water, blown out with air.

6.10.4 Work Restrictions: No drilling, digging, or picking shall be permitted until all missed holes have been detonated or the explosive removed, and the blaster has approved that work can proceed.

6.11 Use of Safety Fuse

6.11.1 Requirement: Safety fuses shall be used only where sources of extraneous electricity make the use of electric caps dangerous. Use of damaged fuse or fuse with sharp kinks is forbidden.

6.11.2 Capping: Prior to capping a safety fuse, a short length shall be cut from the end to ensure a fresh-cut end in each blasting cap.

6.11.3 Crimper: Only cap crimpers of approved design shall be used for attaching blasting caps to safety fuse.

6.11.4 Length of Fuse: The minimum length of safety fuse shall be not less than 72 inches. Sufficient time (minimum 4 minutes) shall be provided to permit the blaster to reach a place of safety.

6.11.5 Multiple Cap and Fuse Use: At least two employees shall be present when multiple cap fuse blasting is done by hand lighting methods. Not more than 12 fuses shall be lighted by each blaster when hand lighting devices are used.

6.11.6 Mudcapping: Cap and fuse shall not be used for firing mudcap charges unless the charges are separated sufficiently to prevent one charge from dislodging other shots in the blast.

6.12 Use of Detonating Cord

6.12.1 Care in Use: Only detonating cord consistent with the type and physical condition of the borehole, stemming, and the type of explosive shall be used. It shall be considered and handled in the same manner as other explosives.

6.12.2 Installation: The line of detonating cord extending out of a bore hole or from a charge shall be cut from the supply spool before loading the remainder of the hole or placing additional charges. All runs shall be free of loops, sharp kinks, or angles that take the cord back toward the oncoming line of detonation.

6.12.3 Connections: Detonating cord connections shall be competent and positive in accordance with approved and recommended methods. Knot-type or other cord-to-cord connections shall be made only with detonating cord in which the explosive core is dry. Connections shall be inspected before firing.

6.12.4 Use of Delays: When detonating cord millisecond-delay connectors or short-interval-delay electric blasting caps are used with detonating cord, the manufacturer's recommendations shall be followed.

6.12.5 Connecting Blasting Caps: When connecting blasting caps to detonating cord, the cap shall be taped or otherwise attached securely along the side or the end of the cord, with the end of the cap containing the explosive pointed in the direction in which the detonation is to proceed.

6.12.6 Detonators: Detonators for firing the trunkline shall not be brought to the loading area nor attached to the detonating cord until everything else is in readiness for the blast.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor, as a minimum, shall be notified prior to all blasting operations.

8.0 RECORDS

8.1 The following records shall be maintained as non-permanent, non-QA records in accordance with Morrison Knudsen Records Management Program.

8.1.1 Approved blasting plans and/or procedures.

8.1.2 Record of explosives received and a perpetual inventory of explosives withdrawn from storage for use.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-221	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 6

TITLE: MOBILE BUILDINGS AND STRUCTURES

APPROVAL

William Piispanen ES&H MANAGER	2/22/99 DATE
Del Bk QUALITY MANAGER	2/22/99 DATE
Bob Wisdom CONSTRUCTION MANAGER	2.22.99 DATE

REV.	DATE	REVISION DESCRIPTION
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ORIGINATOR: KELLY POST (Initial/Date) 2/22/99	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 PROCEDURE 4

7.0 EXTERNAL INTERFACE 6

8.0 RECORDS 6

9.0 ATTACHMENTS 6

10.0 EXHIBITS 6

1.0 PURPOSE

1.1 The objective of this procedure is to provide uniform guidelines for the location, construction, set-up, and use of portable or relocatable structures intended for occupancy.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

National Electrical Code

3.2 Reference Documents

3A-102, ESH Surveillances

4.0 DEFINITIONS

4.1 Portable Structure: This term includes all trailers, mobile homes, semi-trailer vans, portable buildings, and other relocatable structures or structure segments intended for occupancy. These are normally complete modular units with walls, roofs, ceilings, and floors.

4.1.1 This definition does not include plastic or fabric units such as tents or air supported structures, or prefabricated buildings that are designed to be permanently located (not portable) such as a "Butler" or "Strand Steel" buildings.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for ensuring implementation of the requirements of this procedure and monitoring Subcontractor compliance.

5.2 Environment, Safety, and Health (ESH) Manager: Conduct periodic surveillance to assess compliance with this procedure.

6.0 PROCEDURE

6.1 Location

6.1.1 Each portable structure location must be approved by MK prior to set-up.

6.1.2 Portable structures must be sited a minimum of 50 feet from other temporary or permanent buildings and 20 feet from security fences unless approved by MK.

6.1.3 Portable structures, where possible, should not be located around overhead fuel lines.

6.1.4 Locations beneath electrical power lines and/or alarm lines should be avoided where possible.

6.1.5 Locations must permit emergency vehicles to operate within 100 feet of the portable structure.

6.1.6 Locations must not block fire fighting equipment.

6.1.7 Portable structures must not be located near exhaust ducts, over control valves, manholes, sewerline clean-out or other structures requiring access.

6.1.8 The location must not hinder any exit necessary for life safety.

6.1.9 All temporary enclosures erected inside of buildings, or outside of buildings within 50 feet of external wall buildings, shall be constructed of non-combustible or fire-retardant materials.

6.1.10 Plywood, other wood products, and tarpaulins shall be fire retardant.

6.1.11 Portable units may be grouped into complexes with no minimum separation distance between individual units. The maximum complex size should not exceed 5,000 square feet. Separation distances between complexes should be a minimum of 50 feet.

6.2 Construction and Set-Up

6.2.1 Combustible materials should be held to a minimum.

6.2.2 Each exterior door must be equipped with stairs with platform and handrail. A non-skid surface must be applied to steps and platform floor.

6.2.3 Each portable structure must be identified by a readily visible sign containing the owner/occupant, telephone number and contents.

6.2.4 Utility hook-ups must include freeze protection and be approved by MK and the INEEL M&O contractor.

6.3 Life Safety and Fire Protection

6.3.1 All exit doors must be equipped with mechanisms to permit opening from the inside.

6.3.2 Any normally occupied unit shall have at least two exits clear of all obstructions and marked with proper exit signs.

6.3.3 Emergency lighting shall be provided for units occupied at night.

6.3.4 The location of fire alarms and/or emergency notification systems must be clearly marked.

6.3.5 Portable heat-producing devices such as coffee pots, hotplates, ovens and similar devices shall be Underwriters' Laboratory or other accredited testing laboratory labeled and shall be shut off or disconnected during non-work hours.

6.3.6 Electrical heat is the preferred method of heating.

6.3.7 Use of kerosene or oil heater is not permitted.

6.3.8 Liquefied petroleum gas (LPG) heaters must be Underwriters Laboratory and/or American Gas Association approved and may be used only if approved by MK.

6.3.9 A minimum of one, 2A:10B:C rated portable ABC fire extinguishers shall be provided and suitably marked to indicate their location. Access to extinguishers must be maintained at all times. Additional portable fire extinguishers are required where building layout dictates or for areas greater than 3,000 sq ft.

6.3.10 Flammable materials may not be stored except in approved flammable cabinets.

6.3.11 Combustible materials may not be stored under a portable structure.

6.3.12 Lighting shall be properly guarded.

6.3.13 Periodic housekeeping inspections are required in accordance with procedure 3A-102, "ESH Surveillances," to ensure debris and other materials do not present a fire hazard.

6.3.14 Keys must be provided to allow access in the event of an emergency.

6.4 Electrical

6.4.1 All electrical wiring shall be installed to meet the requirements of the National Electric Code.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor provides location and utilities sources as applicable.

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-222	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 7

TITLE: CONSTRUCTION AND VEHICLE INTERFERENCE ON INEEL ROADS

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

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CONSTRUCTION MANAGER — DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 6

8.0 RECORDS 6

9.0 ATTACHMENTS 6

10.0 EXHIBITS 7

1.0 PURPOSE

1.1 This procedure defines the minimum requirements for Morrison Knudsen (MK) when construction or construction vehicles may interfere with traffic on Idaho National Engineering and Environmental Laboratory (INEEL) site roads.

2.0 SCOPE

2.1 This procedure applies to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), INEEL.

3.0 REFERENCES

3.1 Source Documents

NONE.

3.2 Reference Documents

FHWA 1988, Manual on Uniform Traffic Control Devices

DOE-ID Appendix 0550, to Subpart X.A, Permit Procedure for Work and Traffic on INEEL Roads

4.0 DEFINITIONS

4.1 Escorts: Vehicles which are used by MK, equipped with appropriate lights and placards and used to escort other vehicles/equipment safety over site roads.

4.2 Flags: Must be at least 144 in^2, made of red cloth. One is to be mounted on the left front of the vehicle and one mounted on the outermost left edge of the vehicle or protruding object. A tied rag does not satisfy this requirement.

4.3 Site Roads: Those designed and intended for traffic between operational facilities on the INEEL and within areas inside facilities that are not otherwise marked for construction activities.

4.4 Wide Load Placards: Shall have letters at least six inches high. Placard reading "Wide Load" shall be displayed on the front of all escorting vehicles and the rear of the trailing vehicle. "Wide Load" placards shall be displayed on the front of any piece of equipment eight feet wide or more whenever moved on site roads without escort.

5.0 RESPONSIBILITIES

5.1 Environmental, Safety and Health (ESH) Manager: Responsible for conducting surveillances to assure compliance with this procedure.

5.2 Supervision: Responsible for implementing this procedure and for ensuring that employees understand their responsibilities.

5.3 Employee: Responsible for complying with the requirements of this procedure.

6.0 REQUIREMENTS

6.1 General

6.1.1 When work is to be done which may interfere with traffic on INEEL roads, MK will use proper flagging, placards, and escorts and secure a permit number from the INEEL Protective Force Dispatch Office at 6-2321 before the work may begin.

6.1.2 Permits may be issued on a daily basis covering continuing movement of wide loads over a designated route. Should it be necessary to change the route, or make operational changes which differ from the permit, the INEEL Protective Force and MK General Superintendent must be notified and the load not moved until new permit conditions are met.

6.1.3 Upon completion of construction, the INEEL Protective Force and the MK General Superintendent will be notified.

6.2 Specific

6.2.1 All equipment described below will be moved only during the day during off-peak traffic times.

6.2.2 Over-width loads and requirements include:

1. Vehicles wider than eight feet, empty or loaded, with no object protruding beyond the vehicle, must have a "Wide Load" sign, be flagged, and have over-width permit.

2. Vehicles wider than eight feet with objects protruding outside the confines of the vehicle must have a "Wide Load" sign, be flagged, be escorted by MK, and have over-width permit.

3. Vehicles with protruding objects such that the overall width is more than eight feet must have a "Wide Load" sign, be flagged, be escorted by MK, and have over-width permit.

6.2.3 Over-length loads and requirements include:

1. Over-length loads include any single vehicle exceeding 40 feet in overall length and any vehicle with semi-trailer exceeding 65 feet overall. Over-length permits are required.

2. Over-length vehicles will be escorted by MK where the situation demands. Over-length vehicles will not exceed 35 mph.

3. When loads extend more than three feet beyond the front or rear bumper, the overhangs will be flagged at the extreme points.

6.2.4 Over-height loads and requirements include:

1. Vehicles, loaded or unloaded, that exceed a height of 14 feet, will require an over-height permit, an escort to stop and supervise passage under all overhead lines, and notification of Supervision to determine if an electrical clearance or outage is required.

2. Mobile crane booms, elevated dump truck beds and similar equipment that may be raised to a height over 14 feet shall be physically restrained to prevent inadvertent height increases during passage under high voltage lines. Where the work requires repetitive passes under high voltage lines, a permit which recognizes an alternative safe procedure (perhaps requiring an electrical clearance or outage) may be required.

6.2.5 Over-weight loads and requirements include:

1. Over-weight loads are those in excess of 800 pounds per inch width of tire for tires five inches or more in width, or 18,000 pounds per axle.

2. The requirements for over-weight loads are over-weight permit and providing indemnity for any damage to site roads, bridges, persons or property resulting from such operations.

6.2.6 Mobile crane movement on site roads and requirements include:

1. Mobile cranes with the boom in the cradle and no other protruding objects must have a wide load permits, placard reading "Wide Load", and be flagged. One flag will be properly displayed from the low point of the hook.

2. Mobile cranes which do not have the boom in the cradle must be flagged, escorted by MK and have an over-width permit.

6.2.7 Special road use requirements include:

1. A road use permit will be required when moving equipment that, by its nature, requires special adaptation to prevent damage to the roadway. This includes equipment with metal tires, lugs, or tracks.

2. No equipment shall be moved on site roads when the equipment has unprotected metal tires or tracks or when, because of its load it is likely to damage the surface of the road, unless the road is protected by putting down solid planks or other suitable material, or by attachments to the wheels. The INEEL Protective Force will check the protection measures provided and will refer any questions to ID Operational Safety Division for clarification before issuance of permits.

6.2.8 Road blockage requirements include:

1. A Road Blockage Permit will be required before any activity that may necessitate blocking a road during darkness or that will physically interfere with traffic flow at the INEEL. Security will notify the Fire Department of such activity. When road blockage occurs, adequate and properly signed barricades and warning lights shall be provided to warn, advise and/or protect highway users. When the blockage is completed, such devices will be promptly removed.

2. MK shall provide traffic control where the operation of equipment or construction activity may pose a safety hazard to either personnel or users of the roadway. Traffic control shall consist of meeting the requirements of the Federal Highway Administration as, described in the "Manual on Uniform Traffic control Devices" (1988).

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-223	EFFECTIVE DATE: JUNE 1, 1999
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TITLE: FALL PROTECTION

APPROVAL

William Pierson — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 10

8.0 RECORDS 10

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 The purpose of this procedure is to provide all employees with adequate fall protection, and to specifically provide 100 percent fall protection for all employees exposed to falls of 6 feet or greater.

2.0 SCOPE

2.1 This procedure is applicable to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926, Subparts C, General Safety and Health Provisions; E, Personal Protective Equipment; M, Fall Protection; Q, Concrete and Masonry Construction; R, Steel Erection; and X, Stairways and Ladders

29 CFR 1910.66 App C, Personal Fall Arrest Systems

3.2 Reference Documents

3A-201, Job Safety Analysis

3A-206, Ladders/Scaffolding

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Active Fall Protection System: A system of fall protection which requires the exposed worker to perform some positive action before any level of protection is afforded.

4.2 Anchor Point: A portion a of building structure capable of supporting 5400 pounds per person attached.

4.3 Body Belt: A device utilized only for positioning or restraint which is secured around the worker's waist. These devices are also referred to as a "safety belt", but are totally unacceptable to provide safety in fall protection systems.

4.4 Locking Hook: A hardware connector with self-closing, self-locking keepers which remain closed until unlocked and opened for connection or disconnection.

4.5 Dropline: A vertical connection between an anchor point and lanyard capable of supporting 5400 pounds per person attached.

4.6 Elevated Work: All work performed between 18 inches and 6 feet.

4.7 Fall Exposure: All work performed above 6 feet.

4.8 Full Body Harness: A device designed to distribute the fall arrest force over the thighs, buttocks, chest and shoulders of the worker and specifically designed to eliminate the hazard of fall-out.

4.9 Lanyard: The portion of an active fall protection system which provides a connection between the worker and the anchor point.

4.10 Lifeline: A rope wire secured above the point of operations and capable of supporting a minimum dead weight of 5400 pounds.

4.11 Mandatory Fall Protection: Required to address all fall exposures above 6 feet. This protection may consist of standard handrails, restraint systems, or fall protection systems, either active or passive.

4.12 Non-Locking Snap Hook: A hardware connector which can be engaged and disengaged with a single motion. These devices are specifically excluded for use in a fall protection system.

4.13 Passive Fall Protection System: A system of fall protection which affords some level of protection without any positive action from the exposed worker.

4.14 Shock Absorber: A device specifically designed to reduce the fall arrest force imparted to the worker.

4.15 Shock-absorbing Lanyard: Lanyards with built-in shock absorbers to reduce the fall arresting forces by 65-80 percent compared to forces by traditional lanyards.

4.16 Static line or Horizontal Lifeline: A horizontal connection between two or more fixed anchors, each capable of supporting 5400 pounds per person attached, with a minimum force of 1000 pounds per person applied at the center of the line.

5.0 RESPONSIBILITIES

5.1 Environmental, Safety, and Health (ESH) Manager:

5.1.1 Providing assistance to employees in the implementation of this procedure including, but not limited to, guidance regarding the level of protection anticipated, the selection of appropriate equipment, and the identification of potential anchor points.

5.1.2 Conducting surveillances to ensure employees exposed to falls greater than 6 feet have received training regarding the hazards involved and the use of protective measures provided.

5.1.3 Conducting surveillance and to ensure compliance with this procedure.

5.2 Supervision:

5.2.1 Providing adequate fall protection for all employees.

5.2.2 Providing 100 percent fall protection for all employees exposed to falls 6 feet or greater.

5.2.3 Identifying all potential fall exposures 6 feet or greater prior to the initiation of work activities.

5.2.4 Selecting the protection methodology most appropriate for the specific fall exposure.

5.2.5 Informing exposed employees of the hazards of the exposure and the protective methods utilized.

5.2.6 Providing employees who may or will be exposed to fall protection requirements with appropriate general training in the selection, care, and use of any specialized equipment.

5.2.7 Providing employees who may or will be exposed to fall protection requirements with job specific training regarding fall protection procedures.

6.0 REQUIREMENTS

6.1 Evaluation of protection levels associated with the various exposure levels associated with falls shall progress through the following sequence:

6.1.1 Tripping Hazard (0 inches to 6 inches)

6.1.1.1 Tripping hazards shall be eliminated whenever possible by removing materials from work walkways.

6.1.1.2 All protruding rebar, or other material which presents an impalement hazard, shall be capped or otherwise protected.

6.1.1.3 All floor hole openings, including open manholes, shall be protected with a standard handrail or a secured floor hole cover.

6.1.2 Step (6 inches to 18 inches)

6.1.2.1 Work heights up to 18 inches may be accessed by a single step.

6.1.3 Elevated Work (18 inches to 6 feet)

6.1.3.1 Access other than a single step shall be provided for work elevated more than 18 inches. Common access methods would include a series of steps, a ladder, or a ramp.

6.1.3.2 Fall exposures shall be protected by a standard handrail in each of the following instances:

- Regardless of height, above or adjacent to dangerous equipment, including but not limited to pickling or galvanizing tanks, degreasing units, and equipment with similar hazards.
- On stairwells with four or more risers or exceeding 30 inches in height.
- On scaffolds four to ten feet in height, having a minimum horizontal dimension in either direction of less than forty-five inches.
- Through a wall opening with a drop of 4 feet or more.
- On all open sided floors or platforms at or over 6 feet in height except where there is a protected entrance to a stairway, ramp, or ladder.

6.1.4 Mandatory Fall Protection (greater than 6 feet)

6.1.4.1 All fall exposures greater than 6 feet require mandatory fall protection which shall be provided by means of approved railings, safety nets, and personal fall arrest systems. all be used.

6.2 Fall Protection System

6.2.1 A fall protection system may be either active or passive.

6.2.2 Passive fall protection systems shall be designed by a Registered Professional Engineer. These systems usually involve the use of safety netting. Submissions to the ESH Vendor Data Submittal Review for a task specific Job Safety Analysis must include the assumptions regarding fall distance, weight, and dynamic force applied at both the center and the outer edge of the net. Air bags and other systems require submittal of similar information.

6.2.3 Active fall protection systems require the employee to intentionally tie-off before any level of protection is afforded. Job Safety Analysis submittals for these systems must include specific employee training requirements as well as identification of the basic system components. Basic system components include the anchor point, lanyard, and body harness.

6.2.3.1 Anchor Points shall be capable of supporting a minimum deadweight of 5400 pounds per worker attached.

6.2.3.1.1 Electrical conduit, sprinkler system pipe, and any pipe containing a hazardous material are specifically excluded from use as an anchor point.

6.2.3.1.2 Portions of building structure capable of supporting 5400 pounds per worker attached are the preferred anchor points.

6.2.3.1.3 Anchor points should be located directly above the worker whenever possible. In some work environments it may be necessary to use an anchor point at the worker's foot level.

6.2.3.1.4 When suitable anchor points are not directly available on the building structure, a dropline or lifeline may be utilized.

6.2.3.1.5 Ropelines shall be as short as possible and must be solely used for fall protection purposes. Chokers used for other lifting are specifically excluded for use as a dropline. Lanyards shall not be doubled to form a dropline. The dropline shall have a minimum tensile strength of 5400 pounds. Droplines shall be protected from abrasion due to sharp edges. If wire rope is used it shall be a minimum 1/4 inches nominal diameter.

6.2.3.1.6 One method used to create an anchor point on steel "I" beams is to secure a body belt around the beam. This method can provide an acceptable anchorage in many instances where drilling holes to insert a shackle is impractical. When a belt is used, it must be latched in no less than the third hole and the lanyard must be attached only to a "D" ring of the belt.

6.2.3.1.7 Static lines shall be of wire rope, minimum 1/4 inches nominal diameter, or equivalent material, attached to at least two fixed anchorages each capable of supporting 5400 pounds per person applied at the center of the lifeline.

6.2.3.2 Lanyards shall be a maximum of four feet length, including shock absorber, and be provided with locking snap hooks. All lanyards shall be used with a shock absorber which may be either a separate unit or integral to the lanyard.

6.2.3.2.1 Shock absorbers shall limit the fall arrest force to no more than 1000 pounds.

6.2.3.2.2 Retracting lifelines or rate of decent devices may be used. These items may develop a fall arrest force of more than 1000 pounds.

6.2.3.2.3 When lanyards are used with horizontal static lines, engineering calculations shall assume a minimum dynamic force applied of 1000 pounds per person applied at the center of the lifeline.

6.2.3.2.4 In order to achieve 100 percent fall protection, it is necessary to provide two lanyards per worker in most situations.

6.2.3.2.5 Wire rope, rope covered, or chain lanyards shall not be used for fall protection.

6.2.3.3 A Full Body Harness shall be the minimal acceptable level of equipment used. These systems are designed to distribute the fall arrest forces over the thighs, buttocks, chest, and shoulders and are designed to eliminate the exposure of fall-out. The single acceptable tie-off point for fall protection is the middle of the back at shoulder level or higher. Other D rings may be used for positioning only.

6.2.3.4 All active fall protection equipment which has been shock loaded, as opposed to static loaded, shall be immediately removed from service and rendered inoperable.

6.3 Procedure Exclusions

6.3.1 Ladders

6.3.1.1 When fixed ladders are used as access to heights under 20 feet in vertical rise of elevation shall not require additional fall protection.

6.3.1.2 When fixed ladders are used as access to heights at or over 20 feet in vertical rise of elevation shall require use of ladder climbing safety devices which conform to criteria established in 29 CFR 1926.1053(a)(22)(i through iv). In this use, the connection between the carrier and the body harness shall be a maximum of nine inches in length and attached at the front of the body.

6.3.1.3. Ladders used as a work platform in accordance with procedure 3A-206, "Ladders/Scaffolding" require the use of a mandatory fall protection system for all heights in excess of 10 feet. The proper sequence when using portable ladders as a work platform is to first secure the ladder, then tie-off the employee. All employees tied-off must continue to adhere to safe ladder work practices as described in procedure 3A-206, "Ladders/-Scaffolding".

6.3.2 Work on Roofs

6.3.2.1 This procedure must be followed for all activities on roofs within 6 feet of the edge except during built-up roofing work.

6.3.3 Special Exceptions

6.3.3.1 Special exceptions may be permitted for qualified Steel Connectors working at less than 25 feet; when these employees are engaged in installation of lifelines, ladder climbing lines, or other specialized work. Sufficient information regarding these activities should be provided in task specific Job Safety Analysis Plans in accordance with procedure 3A-201, "Job Safety Analysis."

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 A copy of an approved task specific Job Safety Analysis for mandatory fall protection systems shall be maintained at the work location.

8.2 A copy of employee training records associated with mandatory fall protection system shall be maintained at the work location.

8.3 Copies of mandatory fall protection Job Safety Analysis and Training Records shall be maintained by MK ESH Manager throughout the duration of the fall exposure for the specific task.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-224	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 10

TITLE: FIRE PREVENTION AND PROTECTION

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

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(Initial/Date) KP 2/22/99

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 9

8.0 RECORDS 9

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with effective fire prevention and protection programs.

2.0 SCOPE

2.1 This procedure applies to MK fire prevention and protection activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910 General Industry Standards, Subpart L Fire Protection

29 CFR 1910, Subpart E, Means of Egress

29 CFR 1926 Construction Standards, Subpart F, Fire Protection and Prevention

ANSI/NFPA-70 (latest edition)

3.2 Reference Documents

3A-102, ESH Surveillances

3A-303, Hazard Communication

3A-225, Fire Watch

3A-226, Hot Work Operations

3A-227, Hot Work Permitting

3A-228, Flammable and Combustible Materials

DOE Order 420.1, Facility Safety

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Approved Heating Appliances: Those heat-producing devices that have been tested and approved, listed, or certified by a nationally recognized testing/certification laboratory (UL, FM, AGA, CSA, ULC, or CGA).

4.2 Flammable Debris: Waste contaminated with flammable liquids, e.g., oil-soaked rags.

4.3 Impairment of Fire System: Any operation which would cause an automatic and/or manual fire protection system to be inoperative or to operate at less than its original design function. This would include all pumping, piping, and valves controlling fire protection water supplies.

4.4 Spontaneous Combustion: A chemical reaction which results in combustion of a substance from its components, without heat from an external source.

5.0 RESPONSIBILITIES

5.1 MK Environmental, Safety and Health (ESH) Manager: Responsible for providing direction administration and enforcement of the MK Fire Prevention and Protection Program. Responsible for managing and supervising the MK Fire Prevention and Protection Program. This includes the coordination of Audit and Inspection Programs, Fire Watch Program, Hot Work Permitting System, Fire Reporting Procedure, Fire Investigation and Recordkeeping responsibilities.

5.2 Safety Specialist: Responsible for providing advice and service in the area of safety, health and fire prevention and for conducting surveillances to assure compliance with this procedure.

5.3 Supervision: Responsible for ensuring compliance with this procedure and for ensuring that employees understand their responsibilities.

6.0 REQUIREMENTS

6.1 The following fire prevention measures are to be taken.

6.1.1 Verify that proper precautions are taken with welding and burning operations. Use a permit system and a fire watch in accordance with procedure 3A-226, "Hot Work Operations", and procedure 3A-227, "Hot Work Permitting".

6.1.2 Tarpaulins and combustible materials shall be moved to avoid the possibility of fire.

6.1.3 Oily rags and waste from flammable or hazardous materials shall be kept in approved covered metal containers and removed from the premises daily.

6.1.4 "No Smoking" or "Open Flame" areas shall be conspicuously marked and employees advised accordingly.

6.1.5 Gasoline shall be stored in approved containers, which are properly marked and vented.

6.1.6 General housekeeping shall be enforced. Portable waste containers shall be emptied at the end of each day's work.

6.1.7 Accumulations of flammable debris are to be placed in suitable metal containers with lids. The containers shall be in remote locations and properly disposed of on a regular basis, at least daily. Combustible material and/or scrap lumber shall be placed in suitable containers and shall be disposed of at least weekly. Contaminated flammable or combustible material shall be handled and disposed of in a manner consistent with the contaminants involved.

6.1.8 Bonding is required during all transfer of flammable liquids. Grounding shall be used when transferring flammable liquids in containers larger than five gallons.

6.1.9 Indoor storage of material shall not obstruct or adversely affect means of exit. All materials shall be stored, handled, and piled with due regard to their fire characteristics.

6.1.10 Electrical wiring and equipment shall be installed in compliance with the National Electrical Code, ANSI/NFPA-70 (latest edition) and the requirements of OSHA Regulations, 29 CFR 1910/1926, "Electrical".

6.1.11 Regular periodic reviews of the job sites shall be conducted by supervision to ensure that they remain in a fire-safe condition. The ESH Manager will monitor job site fire safety and provide assistance to supervision in the correction of deficiencies found in accordance with procedure 3A-102, "ESH Surveillances".

6.1.12 Temporary structures (trailers, storage sheds, etc.) shall be located at least 50 feet away from permanent government-owned buildings and other interests. Temporary building located within the 50-foot limit shall be constructed of non-combustible materials.

6.1.13 Storage and use of flammable and combustible liquids shall require prior approval by the ESH Manager and shall comply with the requirements of procedure 3A-228, "Flammable and Combustible Materials".

6.1.14 Areas within 15-feet of each building shall be maintained free of combustible debris and vegetation.

6.1.15 Manufacturer labels shall be maintained on all products. Product labels shall be read by all handlers to ensure compatible storage and use.

6.1.16 Develop and maintain a current Hazard Communication Program which complies with OSHA requirements and procedure 3A-303, "Hazard Communication".

6.1.17 Ensure employee accessibility to MSDSs for all products in the work area.

6.1.18 Flammable or combustible liquids shall not be stored or used within 50-feet of any source of heat or ignition unless protected.

6.1.19 Flammable and combustible materials shall not be stored in any area where hazardous materials are used or stored or hazardous operations in progress.

6.1.20 Materials which could combust spontaneously (such as rags soaked with organic materials, oil-soaked filings, etc.) shall be stored in non-combustible containers with air-tight lids.

6.1.21 Electric equipment/appliances that have modified power cords shall not be permitted.

6.1.22 Electric equipment/appliances shall not be permitted unless they are approved by Factory Mutual (FM), Underwriters' Laboratory (UL), or another nationally recognized testing/certification laboratory.

6.1.23 Gasoline-powered tools or equipment shall not be permitted inside buildings without the prior approval of the responsible MK Construction Engineer.

6.1.24 Any plastic, tarpaulin, or other material used to construct a hut tent or similar protective structure shall be flame retardant.

6.2 Heating Appliances

6.2.1 Heating appliances will not be used on or near combustible surfaces unless separated by adequate/approved insulation or barriers. The manufacturer's recommendation for required separation distances is mandatory.

6.2.2 Only those heating appliances or burner controls that have been approved/list by a nationally recognized testing/certification laboratory (UL, FM, AGA) will be used.

6.2.3 Heating appliances using gasoline (or other low flash point flammable liquids) are prohibited in all locations.

6.2.4 Heating appliances (other than electric type) that are not provided with approved controls shall be under constant supervision or in areas under constant attendance when in use.

6.2.5 The use of burner type or electric type heaters is not permitted in areas where painting or other flammable/explosive atmospheres are present. These areas shall be heated by steam or indirect forced air.

6.2.6 When heating areas occupied by personnel, heating and appliances should be of the indirect fired type with the combustion exhaust gases discharged into the outside atmosphere. Whenever combustion gases from heating appliances are not discharged to the outside atmosphere, a monitoring program for toxic gases must be established and approved by the construction manager.

6.2.7 Open fires or pot type heaters are prohibited.

6.2.8 Oil or LPG fuel supplies for heaters shall be installed and/or properly contained outside of the building or enclosures. Fuel lines shall be protected against mechanical damage.

6.2.9 Combustible liquids used for refueling must be in safety cans.

6.2.10 A fire extinguisher shall be available at all locations where heating appliances (burner type) are used.

6.2.11 A Job Safety Analysis will be required whenever burner type heaters are used.

6.2.12 The MK Construction Engineer and INEEL Fire Department must be notified prior to using burner type heaters. If heaters require supervision,

the names of the individuals supervising will be submitted to the MK Construction Engineer.

6.3 Fire Protection

6.3.1 All employees shall receive awareness training to fire safety rules/regulations.

6.3.2 Employees required to use extinguishers per procedure 3A-225, "Fire Watch", shall be instructed in their use.

6.3.2.1 Class A Fires: Wood, textiles and rubbish

6.3.2.1.1 Type of extinguisher used: soda acid, foam, dry chemical, water barrels, buckets, water pumps.

6.3.2.2 Class B Fires: Greases, motor vehicles and flammable liquids

6.3.2.2.1 Type of extinguisher used: foam, dry chemical, carbon dioxide.

6.3.2.3 Class C Fires: Live electrical equipment

6.3.2.3.1 Type of extinguisher used: dry chemical, carbon dioxide.

6.3.2.4 Class D Fires: Combustible metal fires

6.3.2.4.1 Type of extinguisher used: Agents should be chosen according to type of metal present and the extinguishing agent manufacturer's recommendations.

6.3.2.5 The ESH Manager may be contacted to determine the proper fire prevention measures and fire equipment for jobs in isolated locations or where special hazards exist.

6.3.3 Emergency phone numbers shall be conspicuously posted in MK managed areas.

6.3.4 For emergency assistance, employees shall dial "777", radio "KID 240" or use the nearest fire pull box to notify the WCC, INEEL Fire Department and the INEEL M&O contractor.

6.3.5 Employees shall evacuate the premises in case of fire in accordance with procedure 3A-107, "Emergency Action".

6.3.6 MK shall be notified immediately of all fire emergency situations as well as any false alarms or impairment of any fire protection alarm or system.

6.4 Fire Protection Appraisal:

6.4.1 A walk through inspection of items required for fire protection will be conducted by the ESH Manager to check for deficiencies in compliance with all applicable NFPA and OSHA requirements. Deficiencies shall be noted in the remarks section of the report.

6.4.2 Follow-up inspections by the ESH Manager shall be made after the date on which corrections are scheduled to be complete in order to verify that deficiencies have been corrected. These corrections shall be noted on the surveillance reports.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor provides essential fire prevention and fire protection services for MK. These services include:

7.1.1 Providing fire protection services in accordance with the appropriate Contract Interface Agreements with MK.

7.1.2 Maintenance of modern fire protection facilities throughout the INEEL.

7.1.3 Outages of fire suppression systems shall be addressed and controlled through the INEEL M&O contractor.

7.1.4 Proper inspection, testing, and maintenance of fixed fire protection systems and fire protection water supplies.

7.1.5 Trained fire department response to handle any creditable fire or fire-related emergency that involves the AMWTP.

8.0 RECORDS

8.1 The Fire Protection Appraisal, if required, will be maintained for outside agency appraisals by MK in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-225	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 7

TITLE: FIRE WATCH

APPROVAL

William Piispanen ES&H MANAGER	2/22/99 DATE
[illegible] QUALITY MANAGER	2/22/99 DATE
Bob Wisdom CONSTRUCTION MANAGER	2.22.99 DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 6

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBITS 7

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with an effective Fire Watch Program.

2.0 SCOPE

2.1 This procedure is applicable to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.252(a), Fire Prevention and Protection

29 CFR 1926, Subpart J, Welding and Cutting and Subpart F, Fire Protection and Prevention

3.2 Reference Documents

3A-224, Fire Prevention and Protection

3A-226, Hot Work Operations

3A-227, Hot Work Permitting

3A-228, Flammable and Combustible Materials

3A-229, Compressed Gas Cylinders

DOE Order 420.1, Facility Safety

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Approved Permanent Welding Area or Shop: A shop or area defined and separated from non-weld areas by easily identified boundaries and approved by designated and authorized MK ESH Manager.

4.2 Fire Watch: A designated individual who has been trained, in accordance with this procedure, to perform specific fire watch duties at MK welding, cutting, and other defined hot work operations.

4.3 Hot Work Operations: All methods of welding, arc and torch cutting, including abrasive cutting, cad-welding, and open flame brazing, burning, smoldering and other portable torch and open flames, including hot slag and spark producing operations.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for implementing this procedure and providing appropriate Fire Watch Personnel, training activities, and support of the Fire Watch Program. Responsible for signing and approving the Hot Work Permit tag when it is issued and for assuring that only authorized personnel are used in the performance of the hot work activities.

5.2 MK Environmental, Safety, and Health (ESH) Manager: Responsible for conducting surveillances of the Fire Watch Program.

5.3 Fire Watch: Responsible for preparing the area for hot work operations, observing the activity as the hot work is in progress, and for inspecting the area for ignition sources for 30 minutes after hot work is complete. Fire watch is their only responsibility during the hot work and 30 minutes afterwards. Fire watch is not required in a permanent welding area.

6.0 REQUIREMENTS

6.1 The procedure followed by the designated Fire Watch at a defined hot work activity/jobsite is to:

6.1.1 Assure that a valid construction cutting, welding, and hot work permit tag is properly completed, issued, and posted prior to starting the job in accordance with procedure 3A-227, "Hot Work Permitting".

6.1.2 Conduct an inspection of the job site (work area) prior to starting the job or hot work activity to ascertain if any condition exists that would contribute to a fire during the performance of the work.

6.1.3 Prepare the work site by removing all combustible materials and placing them in a safe location away from the work site: combustible materials 35 feet away and combustible liquids 50 feet away. Sweep and wet down the floor, if necessary. Additional fire protection requirements are addressed in the following procedures:

- 3A-226, "Hot Work Operations"
- 3A-228, "Flammable and Combustible Materials"
- 3A-229, "Compressed Gas Cylinders"

6.1.4 Use approved, fire retardant drop cloths to cover permanently installed equipment, floors, and combustibles that cannot be removed from the immediate work area.

6.1.5 Maintain the principles of good housekeeping and proper storage of materials at the work site for the duration of the job.

6.1.6 Assure that a sufficient number of the appropriate type of fire extinguishers are available and accessible for immediate use should a fire occur during the welding, cutting, or other hot work operations. Extinguishers other than those used as fixed building protection must be provided for Fire Watch purposes. Employees required to use extinguishers shall be instructed in their use.

6.1.7 Check all compressed gas cylinders at the job site to ensure that they are handled, used, and stored in accordance with procedure 3A-229, "Compressed Gas Cylinders".

6.1.8 Assist the person performing the welding, burning, or other hot work in assuring that the valving, regulators, hose and backflow preventers are not damaged and ready for safe operation.

6.1.9 Cover all openings in the walls, ducts, pipes, floors, ceilings, etc., within 35 feet of the welding, cutting and other hot work activities with approved fire retardant cloths to prevent sparks or hot slag from dropping or entering adjoining areas.

6.1.10 Perform the dedicated Fire Watch prescribed duties during and 30 minutes after the welding, cutting or other "hot work" operations.

6.1.11 Report promptly any serious violation of fire prevention requirements and any unusual conditions or actions to appropriate supervision per the requirements of procedure 3A-224, "Fire Prevention and Protection".

6.1.12 Be familiar with the fire reporting equipment nearest the work site (alarm pull box, telephone [777], etc.), and be familiar with the procedure for directing the response team to the proper location in case a fire occurs.

6.1.13 Review Fire Watch duties periodically to assure that you are knowledgeable and can perform the duties in case of an emergency.

6.2 Fire Reporting Measures: Fire watchers shall sound the alarm immediately when a fire is discovered. An attempt to extinguish the fire should only be made when the fire is obviously within the capacity of the fire protection equipment available.

6.2.1 The steps for sounding an alarm are as follows:

1. Respond immediately by pulling the lever on the nearest Alarm Box or by calling 777 or the General Superintendent.

   NOTE - Pulling a Alarm Box assures maximum response by plant emergency personnel in a minimum time. If you call 777 or a General Superintendent:

   A. Be sure to give your name and location.

   B. Provide a description of the fire.

   C. Remain on the telephone until released by the person receiving the call if not in any immediate danger.

2. Evacuate personnel if conditions are such that evacuation is required.

3. Notify MK ES&H Manager and other pertinent MK personnel.

4. Meet or have someone meet the plant emergency personnel and lead them to the emergency (fire) scene.

5. After reporting a fire, attempt to extinguish or control the fire if it can be done without endangering yourself, until the fire department personnel arrive at the scene.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor provides essential fire prevention and fire protection services for INEEL facilities. These services include:

7.1.1 Appropriate fire protection services for new construction and alterations.

7.1.2 Maintenance of fire protection equipment throughout the complex.

7.1.3 Inspection, testing, and maintenance of fixed fire protection systems and fire protection water supplies.

7.1.4 Trained fire brigade to handle any creditable fire or fire related emergency that involves MK.

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-226	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 12

TITLE: HOT WORK OPERATIONS

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Wisdom — 2.22.99
CONSTRUCTION MANAGER — DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 11

8.0 RECORDS 11

9.0 ATTACHMENTS 12

10.0 EXHIBITS 12

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with guidelines to protect the work place, environment and safety and health of personnel involved in specified hot work activities.

2.0 SCOPE

2.1 This procedure is applicable to all MK hot work activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.252, Welding, Cutting and Brazing

29 CFR 1926, Subpart J, Welding and Cutting

3.2 Reference Documents

3A-227, Hot Work Permitting

3A-229, Compressed Gas Cylinders

ANSI/NFPA 51B-1994, Cutting and Welding Processes

DOE Order 420.1, Facility Safety

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Approved Permanent Hot Work/Welding Area or Shop: A shop or area defined and separated from non-weld areas by easily identified boundaries and approved by authorized MK ESH Manager.

4.2 Enclosed Space: An area without ventilation/draft where toxic vapors or fumes can accumulate, i.e., enclosed room, an area blocked by buildings where there is little air movement, etc.

4.3 Fire Watch: A designated person who has been formally trained to perform specific fire watch duties.

4.4 Hot Work/Welding: All methods of welding; arc and torch cutting; and open flame brazing, burning, soldering; and other portable torch open flame operations.

4.5 Hot Work Permit Tag: Tag containing authorization signatures and precautionary measures to be taken at a hot work operations site.

4.6 Ignition Source: A heat source of sufficient energy to cause ignition of flammable vapors (i.e., open flames, hot surfaces, and electrical or frictional sparks).

4.7 Lower Explosive Limit (LEL): The minimum concentration of a combustible gas or vapor in air which will ignite if an ignition source is present.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for the implementation and administration of the Welding Safety and Hot Work Permit Programs to ensure compliance with applicable requirements.

5.2 Environment, Safety, and Health (ESH) Manager: Responsible for conducting surveillance to assure compliance.

5.3 Welder: The person conducting the work must be trained and certified in the type of welding being performed and the safe use and maintenance of the equipment in use.

6.0 REQUIREMENTS

6.1 Hot Work Permit

6.1.1 Obtain a Hot Work Permit as specified in procedure 3A-227, "Hot Work Permitting."

6.2 Gas Welding and Cutting

6.2.1 Transporting, moving, and storing compressed gas cylinders shall be in accordance with procedure 3A-229, "Compressed Gas Cylinders."

6.2.1.1 Valve protection caps shall be in place and secure.

6.2.1.2 When cylinders are hoisted, they shall be secured on a cradle, slingboard, or pallet. Do not use magnets or choker slings to hoist or transport.

6.2.1.3 When cylinders are transported by powered vehicles, they shall be secured in a vertical position.

6.2.1.4 A suitable cylinder truck, chain or other steadying device shall be used to keep cylinders from being knocked over while in use.

6.2.1.5 The cylinder valve shall be closed when work is finished, when cylinders are empty, or when cylinders are moved.

6.2.2 Placing Cylinders

6.2.2.1 Cylinders shall be kept far enough away from hot work so that sparks, hot slag, or flame will not reach them; otherwise, provide fire-resistant shields for the cylinders.

6.2.2.2 Do not place cylinders where they might become part of an electric circuit.

6.2.2.3 Cylinders containing oxygen or acetylene or other fuel gas shall not be taken into confined spaces.

6.2.3 Treatment of Cylinders

6.2.3.1 Cylinders shall not be used as rollers or supports.

6.2.3.2 Damaged or defective cylinder shall not be used.

6.2.4 Use of Fuel Gas

6.2.4.1 Regulators must have reverse-flow check valves.

6.2.4.2 Before a regulator is connected to a cylinder, the valve shall be opened slightly and closed immediately - "cracked" -to clear dust or dirt that might otherwise enter the regulator.

6.2.4.3 Open cylinder slowly to prevent damage to regulator.

6.2.4.4 For quick closing, valves on fuel gas cylinders shall not be opened more than 1½ turns.

6.2.4.5 Before the regulator is removed, the cylinder valve shall be closed and the gas released from the regulator.

6.2.4.6 Regulators shall be shut off at the end of each shift and removed from the cylinders.

6.2.5 Fuel Gas and Oxygen Manifolds

6.2.5.1 Fuel gas and oxygen manifolds shall bear the name of the substance they contain in letters at least 1-inch high which shall be either painted on the manifold or on a sign permanently attached to it.

6.2.5.2 Fuel gas and oxygen manifolds shall be placed in safe, well ventilated, and accessible locations.

6.2.5.3 When not in use, manifold and header hose connections shall be capped.

6.2.5.4 Manifold hose connections shall be such that the hose cannot be interchanged between fuel gas and oxygen manifolds and supply header connections.

6.2.6 Hose

6.2.6.1 Fuel gas and oxygen hoses shall be easily distinguishable from each other.

6.2.6.2 When parallel sections of oxygen and fuel gas hose are taped together, not more than 4 inches out of 12 inches shall be covered by tape.

6.2.6.3 All hoses in use shall be inspected prior to use; defective hose shall be removed from service.

6.2.6.4 Boxes used to store gas hose shall be ventilated.

6.2.7 Regulators and Gauges

6.2.7.1 Oxygen and fuel gas pressure regulators, including their related gauges, shall be in proper working order while in use.

6.2.8 Oil and Grease Hazards

6.2.8.1 Cylinders, caps, valves, couplings, regulators, and hoses shall be kept free from oil or greasy substances.

6.2.8.2 Do not handle the welding or cutting equipment with oily hands or gloves.

6.2.8.3 Oxygen shall not be directed at oily surfaces, greasy clothes, or within fuel oil or other storage containers.

6.3 Arc Welding and Cutting

6.3.1 Manual Electrode Holders

6.3.1.1 Only manual electrode holders which are specifically designed for arc welding and cutting and are rated to the maximum capacity or current required by the electrodes shall be used.

6.3.1.2 Any current-carrying parts which the welder/cutter grips in hand and the outer surfaces of the jaws of the holder shall be fully insulated against the maximum voltage encountered to ground.

6.3.2 Welding Cables and Connectors

6.3.2.1 All arc welding and cutting cables shall be of the completely insulated, flexible type, capable of handling the maximum current requirements of the work in progress.

6.3.2.2 Cable within ten feet of the end to which the electrode is connected shall be free of repair or splices. Cables with standard insulated connectors or with splices whose insulating quality is equal to that of the cable are permitted.

6.3.2.3 Cables in need of repair shall not be used. When a cable becomes worn to the extent of exposing bare conductors, the portion thus exposed shall be protected by means of rubber and friction tape or other equivalent insulation such as vulcanizing.

6.3.3 Ground Returns and Machine Grounding

6.3.3.1 A ground return cable shall have a safe current carrying capacity equal to or exceeding the maximum output of the arc welding unit it serves.

6.3.3.2 Pipelines containing gases or flammable/oxidizing liquids, or conduits containing electrical circuits shall not be used as a ground return.

6.3.3.3 The frames of all arc welding and cutting machines shall be grounded either through a third wire in the cable containing the circuit conductor or through a separate wire which is grounded at the source of the current.

6.3.4 Operating Instructions

6.3.4.1 When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be placed to prevent them from making electrical contact with employees and conducting objects.

6.3.4.2 Hot electrode holders shall not be dipped in water; to do so may expose the welder to electric shock.

6.3.4.3 When the welder has occasion to leave or stop work for a time, the power supply switch shall be opened.

6.3.5 Shielding

6.3.5.1 Shielding shall be provided to protect other employees from the direct rays of the arc.

6.3.5.2 Shielding is to be constructed of non-combustible materials.

6.4 Fire Protection

6.4.1 When practical, objects to be welded, cut, or heated shall be moved to a designated safe location such as a shop.

6.4.2 If an object is to be welded, cut, or heated, but cannot be moved, move all combustible materials 35 feet away from hot work activities. If combustibles cannot be moved, protect them with flame-proof covers, screens, or shields.

6.4.3 Fire extinguishers shall be within 25 feet and ready for immediate use should a fire occur.

6.4.4 Openings in walls, floors, etc., within 35 feet of hot work shall be covered to prevent sparks or hot slag from entering adjoining areas.

6.4.5 A Fire Watch must be present immediately prior to, during, and following hot work operations, and engaged only in Fire Watch duties. The Fire Watch continues surveillance of the area for 30 minutes after hot work has stopped. More information on Fire Watch can be found in procedure 3A-227, "Hot Work Permitting" and 3A-225, "Fire Watch".

6.5 Ventilation and Protection in Welding, Cutting and Heating

6.5.1 Mechanical Ventilation

6.5.1.1 Mechanical ventilation shall consist of either general mechanical ventilation systems or local exhaust systems.

6.5.1.2 General mechanical ventilation shall be of sufficient capacity to keep fumes and smoke away from operator.

6.5.1.3 Local exhaust systems shall be arranged to remove fumes and smoke at the source.

6.5.1.4 Oxygen shall not be used for ventilation purposes, comfort cooling, blowing dust from clothing or for cleaning the work area.

6.5.2 Welding, Cutting and Heating in Confined Spaces

6.5.2.1 General prechanneled or local exhaust ventilation shall be provided when hot work is performed in a confined space.

6.5.2.2 When sufficient ventilation cannot be obtained without blocking the means of access, employees in the confined space shall be protected by air line respirators, and an employee on the outside of the confined space shall be assigned to maintain communication with workers inside and aid them in an emergency.

6.5.3 Welding, Cutting or Heating of Toxic Metal Substance

6.5.3.1 Welding, cutting or heating in any enclosed spaces involving metals listed below shall be performed with either general ventilation or local exhaust ventilation:

- Zinc-bearing base or filler metals
- Lead base metals
- Cadmium-bearing filler materials

- Chromium-bearing metals or metals coated with chromium-bearing materials

6.5.3.2 Welding, cutting, or heating in any enclosed spaces involving metals listed below shall be performed with local exhaust ventilation, or employees shall be protected by air line respirators:

- Metals containing lead, other than as an impurity, or metals coated with lead-bearing materials
- Cadmium-bearing or cadmium-coated base metals
- Metals coated with mercury-bearing metals
- Beryllium-containing base or filler metals. Because of its toxicity, work involving beryllium shall be done with both local exhaust ventilation and air line respirators

6.5.3.3 Energizing controls and personal protective equipment for welding, cutting or heating of toxic metal substances must be approved by the ESH Manager.

6.5.4 Inert-Gas and Metal-Arc Welding

6.5.4.1 Because of the hazards involved in this type of operation, employees shall not be permitted to engage in, or be exposed to the process until the following special precautions have been taken:

6.5.4.1.1 Chlorinated solvents shall be kept at least 200 feet away, unless shielded from the exposed arc.

6.5.4.1.2 Employees in an area shall be protected from the arc by screening or shall be protected by suitable filter lenses.

6.5.4.1.3 Welders and other employees who are exposed shall be suitably protected to prevent burns and other skin damage by ultraviolet rays.

6.5.5 General Welding, Cutting and Heating

6.5.5.1 Employees performing any type of welding, cutting or heating shall use suitable eye protective equipment.

6.5.5.2 Use personal protective equipment specified on the Job Safety Analysis.

6.5.5.3 Request that ESH Manager monitor the Lower Explosive Limit (LEL) prior to beginning hot work when there is a possibility of flammable vapors being present in the hot work area.

6.5.5.4 Sprinkler systems may have been plumbed to the sewer system. Because of this, methane gas has been known to back up into sprinkler piping. For this reason, monitoring should be done prior to beginning hot work.

6.6 Welding, Cutting and Heating in Way of Preservative Coatings

6.6.1 Before welding, cutting, or heating is commenced on any surface covered by a preservative coating whose flammability is not known, a test shall be made by ESH Manager to determine flammability. Preservative coatings shall be considered to be highly flammable when scrapings burn with extreme rapidity.

6.6.2 When coatings are determined to be highly flammable, they shall be stripped from the area to be heated, to prevent possible ignition.

6.6.3 The following actions provide protection against toxic preservative coatings:

6.6.3.1 In enclosed spaces, all surfaces covered with toxic preservative coatings shall be stripped for a distance of at least 4 inches from the area of heat application or the employees shall be protected by air line respirators.

6.6.3.2 In open air, employees shall be protected by a respirator designed for the gas or fume which will be produced.

6.6.4 The preservative coatings shall be removed a sufficient distance from the area to be heated to ensure that the temperature of the unstripped metal will not be appreciably raised. Artificial cooling of the metal surrounding the heated area may be used to limit the size of the area required to be cleaned.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-227	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 8

TITLE: HOT WORK PERMITTING

APPROVAL

William Piispanen — 2/22/99
ES&H MANAGER — DATE

[illegible] — 2/22/99
QUALITY MANAGER — DATE

Bob Winston — 2.22.99
CONSTRUCTION MANAGER — DATE

REV.	DATE	REVISION DESCRIPTION
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(Initial/Date) KP 2/22/99

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBITS 8

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with an effective Hot Work Permit Program.

2.0 SCOPE

2.1 This procedure is applicable to all MK Hot Work Permit activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Enviromental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Occupational Safety and Health Act (OSHA)

29 CFR 1926, Safety and Health Regulations for Construction

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Morrison Knudsen Records Management Program, January 1996

3A-224, Fire Prevention and Protection

3A-225, Fire Watch

3A-226, Hot Work Operations

3A-228, Flammable and Combustible Materials

ANSI/NFPA 51B, 1994 Cutting and Welding Processes

DOE Order 420.1, Facility Safety

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Approved Welding/Hot Work Area: A shop or area defined and segregated from non-weld areas by easily identified boundaries and approved by designated and authorized MK ESH Manager.

4.2 Designated MK Fire Protection Person: The designated MK fire protection contact point at each installation (e.g., MK ESH Manager).

4.3 Combustible and Flammable Material: Any solid, liquid, or gas that may or can ignite when subjected to flames, sparks, hot slag or other ignition sources.

4.4 Construction Hot Work Permit: The front side of the two-sided "Welding, Cutting, or Other Hot Work Permit" shall be filled out completely, signed, and issued by the appropriate Supervision in accordance with this procedure. As soon as the jobsite and/or permanent weld shop has been properly prepared for "hot work", the back side of the permit is completed by Fire Watch, signed and implemented by the appropriate persons. The permit shall then be attached to the hot work equipment being used in the operation, or posted in the work area. The ESH Manager is responsible for maintaining the format of the permit in accordance with procedure.

4.5 Dedicated Fire Watch: A designated person, trained in fire prevention and suppression, who performs the prescribed duties of a Fire Watch person. This includes site preparation, observation of the operation, and properly reacting to any emergency situation that may occur at the site during the welding, burning, or other hot work operation.

4.6 Effective Date: Dates the Hot Work Permit is valid.

4.7 Welding, Cutting, or Other Defined Hot Work: All methods of welding, arc and torch cutting, including abrasive cutting, cad-welding, and open flame brazing, burning, soldering, and other portable torch open flames, including hot slag and spark producing operations.

5.0 RESPONSIBILITIES

5.1 Supervision: Responsible for:

5.1.1 Evaluating and ensuring that work performed by respective crafts is in conformance with the requirements of the Hot Work Permits and that full consideration is given to all activities related to the work.

5.1.2 Completing the front side of the "Welding, Cutting, or Other Hot Work Permit" for all welding, cutting or other defined Hot work operations

conducted in self operated fabrication shops. The area shall be thoroughly inspected prior to the issuance of the permit.

5.1.3 Completing, signing and/or approving cutting, welding and other defined Hot Work Permit as defined in Section 6.0 of this procedure.

5.1.4 Reviewing and conforming with the requirements, and any other approved special conditions of the welding, cutting, or other Hot Work Permit prior to conducting work.

5.1.5 Ensuring that welding, cutting, or other defined hot work shall not be performed at any time without a current and properly completed Hot Work Permit.

5.1.6 Ensuring that only authorized personnel, trained according to procedure 3A-225, "Fire Watch", are utilized in performance of hot work activities. Training shall be documented in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7. Supervision will maintain training records.

5.1.7 Ensuring inspection of the work area has been completed prior to the start of hot work and ensuring the fire hazards have been eliminated, and that where practicable, all combustibles shall be relocated at least 35 feet (10 feet for TIG welding and grinding) from the work site. Where relocation is impracticable, combustibles shall be protected with flameproof covers or otherwise shielded or guarded. Guards shall be used to confine the heat, sparks and slag to protect combustible items from fire hazard.

5.2 Employee: (person that is properly trained, qualified, and assigned to perform the hot work) Responsible for:

5.2.1 Reviewing and conforming with the requirements, and any other approved special conditions, of the welding, cutting, or other hot work Permit prior to conducting work.

5.2.2 Not performing welding, cutting or other defined hot work, at any time, without a current completed Hot Work Permit attached to the welding rig, cutting torch, etc., to be used in the operation.

5.2.3 Reporting all unapproved or unusual conditions or situations related to the operation to his/her immediate supervisor.

5.3 Fire Watch: (Personnel trained according to procedure 3A-225, "Fire Watch") Responsible for:

5.3.1 Completing the back side of permit.

5.3.2 Acting as a dedicated Fire Watch during and 30 minutes after hot work operations are completed.

5.3.3 Reporting any conditions or actions that are in violation of the MK Permit System to his/her immediate General Supervisors.

5.3.4 Not allowing hot work to be performed at any time, without a current completed Hot Work Permit being attached to the welding rig, cutting torch, etc.

5.3.5 In permanent designated weld areas, a separate fire watch is not required. The welder serves as his own fire watch.

5.4 ESH Manager: Responsible for conducting surveillances to assure compliance to this procedure.

6.0 REQUIREMENTS

6.1 Policy: It is the policy of MK to establish specific requirements for ensuring that an effective fire prevention and control program is administratively maintained at each facility to help prevent personnel injury, loss of life, work interruptions, and property damage from fires initiated by unsafe welding, cutting or other hot work activities.

6.2 Supervision: (See procedures 3A-224, "Fire Prevention and Protection", 3A-226, "Welding, Cutting, and Other Hot Work Operations", and 3A-228, "Flammable and Combustible Materials") This is the individual who will issue Hot Work Permits and must be trained in accordance with procedure 3A-225, "Fire Watch" (excluding hands-on training).

6.3 An ESH Manager must approve permits issued for longer than 24 hours; Hot Work Permits may be issued for a maximum of 30 days.

6.4 Supervision identifies the need for a Hot Work Permit.

6.5 Supervision inspects work area for hot work concerns, completes the front side of permit, signs and issues permit.

6.6 Supervision issues Hot Work Permit.

6.7 Supervision completes the front side of the "Welding, Cutting, or Other Hot Work Permit", inspects work area for hot work concerns, and provides the Permit to the Fire Watch.

6.8 Supervision arranges to have a dedicated Fire Watch present at hot work activities outside of designated shops and indicate name(s) of Fire Watch on permit. If more than one Fire Watch will be used to cover different times during hot work operations, the name of each Fire Watch shall be indicated on the Permit. The Permit does not need to be reissued when Fire Watch changes.

6.9 Dedicated Fire Watch completes the back side of the Permit and prepares the jobsite to conform with requirements of the Hot Work Permit and procedure 3A-225, "Fire Watch".

6.10 Fire Watch posts the Hot Work Permit on the welding rig, cutting torch, etc.

6.11 Personnel performing hot work should review the Hot Work Permit prior to beginning hot work.

6.12 Hot work shall not be performed unless a valid Hot Work Permit is issued, approved, and all the Permit requirements are followed.

6.13 The expired Hot Work Permit is returned to Supervision who issued the Permit.

6.14 Supervision who issued the Hot Work Permit maintains the expired permit in a file for 30 days.

6.15 A Hot Work Permit is void when a change in conditions alters the fire prevention requirements for the work. A new permit is then required.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-228	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 12

TITLE: FLAMMABLE AND COMBUSTIBLE MATERIALS

APPROVAL

William Piispanen ES&H MANAGER	2/22/99 DATE
D. W. Bill QUALITY MANAGER	2/22/99 DATE
Bob Wisdom CONSTRUCTION MANAGER	2.22.99 DATE

REV.	DATE	REVISION DESCRIPTION
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 10

8.0 RECORDS 10

9.0 ATTACHMENTS 11

10.0 EXHIBITS 11

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with guidelines for handling and storage of flammable and combustible materials.

2.0 SCOPE

2.1 This procedure applies to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Occupational Safety and Health Standards for General Industry

29 CFR 1926, Occupational Safety and Health Standards for the Construction Industry

3.2 Reference Documents

3A-102, ESH Surveillances

3A-224, Fire Prevention and Protection

3A-229, Compressed Gas Cylinders

NFPA Standard 30 1996, Flammable and Combustible Liquids Code

NFPA Standard 231 1995, General Storage

DOE Order 420.1, Facility Safety

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Combustible Liquid: Liquid having a flashpoint at or above 100°F. Combustible liquids shall be subdivided as follows:

4.1.1 Class II: Liquids having flash points at or above 100°F and below 140°F

4.1.2 Class IIIA: Liquids having flash points at or above 140°F and below 200°F

4.1.3 Class IIIB: Liquids having flash points at or above 200°F

4.2 Flammable Liquid: Liquid having a flash point below 100°F and a vapor pressure not exceeding 40 psi at 100°F. These liquids are Class I.

Class I - liquids shall be subdivided as follows:

4.2.1 Class IA: Liquids having flashpoints below 73°F and boiling points below 100°F

4.2.2 Class IB: Liquids having flash points below 73°F and having boiling points at or above 100°F

4.2.3 Class IC: Liquids having flashpoints at or above 73°F

4.3 Flammable and Combustible Liquids Cabinet: An approved or listed cabinet specifically designed to safely store flammable/combustible liquids.

4.4 Flammable Debris: Waste tainted with flammable liquids, e.g., oil soaked rags.

4.5 Fire Area: An area of a building separated from the remainder of the building by construction having a fire resistance of at least one hour and having all communication openings properly protected by an assembly having a fire resistance of at least one hour.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for conducting surveillances to assure compliance with this procedure.

5.2 Supervision: Responsible for ensuring compliance with this procedure and ensuring that employees understand their responsibilities.

5.3 Employees: Responsible for complying with this procedure.

6.0 REQUIREMENTS

6.1 Flammable and Combustible Liquids

6.1.1 General Requirements

6.1.1.1 Only UL or FM approved containers shall be used for the storage and handling of flammable liquids except for original containers of one gallon or less. The use of "Jerry" or "G-I" cans, plastic bottles, or glass containers for the storage of flammable liquids is prohibited.

6.1.1.2 Adequate signs prohibiting smoking, open flames, etc., shall be posted near areas of storage and use of flammable liquids.

6.1.1.3 Material Safety Data Sheets (MSDS) shall be provided by manufacturers, vendors or Subcontractors for flammable or combustible materials. MSDSs are available from the ESH Manager.

6.1.1.4 Approved protective equipment such as respirators, clothing, etc., shall be required by all persons handling flammable or combustible liquids as outlined by the Job Safety Analysis and/or MSDS.

6.1.1.5 Flammable and combustible liquids shall be kept 50 feet from hot work, open flames, and other spark producing activities.

6.1.1.6 Flammable debris shall be disposed of in approved metal containers with lids. Lumber tainted with flammable liquids shall be placed in approved containers or stored outside to allow vapors to dissipate. Tainted lumber stored outside shall be posted "Tainted with Flammable Liquids - No smoking, open flames, or other spark producing activities within 50 feet".

6.1.2 Indoor Storage

6.1.2.1 Indoor storage of flammable and combustible liquids shall be kept to a minimum and stored in a flammable storage cabinet.

6.1.2.2 There shall be no more than three flammable and combustible liquids storage cabinets in a fire area unless separated by 100 linear feet in any direction.

6.1.2.3 Flammable and combustible liquids shall be stored to conform to the National Fire Protection Association (NFPA) Code 30, "Flammable and Combustible Liquids Code".

6.1.2.4 Approved storage containers shall be conspicuously marked "FLAMMABLE--KEEP FLAME AWAY".

6.1.2.5 Storage of Liquified Petroleum Gas (LPG) within buildings is prohibited. LPG tanks that are currently in use as the fuel source for forklifts will be allowed inside but shall be turned off when not in use. All other spare/excess tanks shall be stored in designated areas. Additional requirements for LPG are found in procedure 3A-229, "Compressed Gas Cylinders".

6.1.2.6 Storage areas shall be kept free of debris and maintained in good housekeeping order.

6.1.3 Outside Storage

6.1.3.1 A minimum distance of 20 feet shall be maintained between flammable and combustible liquid storage areas and any building.

6.1.3.2 The storage area shall be graded in a manner to divert spills away from buildings and should be surrounded by a curb or earthen dike or container.

6.1.3.3 The storage area shall be kept free from accumulations of unnecessary combustible material. Weeds and grass shall be closely cut. Notify the Subcontractor when weeds and grass need to be cut.

6.1.3.4 Outdoor storage of liquids shall be in accordance with "Outdoor Liquid Storage in Containers" (Attachment 1).

6.2 Portable Tank Construction and Design Requirements

6.2.1 Portable atmospheric tank capacity will be a minimum of 61 gallons and a maximum of 660 gallons.

6.2.2 Tanks must be designed in accordance with NFPA 30, "Flammable and Combustible Liquids Code".

6.2.3 A breather vent having a minimum inside diameter of 1¼ inches shall be provided. Breather vents shall be equipped with flame arresters for liquids with a low flashpoint (Class 1 liquid - 100° F or less).

6.2.4 Emergency vents shall be set to open at 5 PSI and be capable of limiting internal tank pressure to 10 PSI or 30 percent of the tank busting pressure.

6.2.5 Dispensing nozzles and hoses shall be of the approved type (listed).

6.2.6 The nozzles shall be the automatic self-closing type and shall be padlocked to their hangers to prevent tampering.

6.2.7 The bottom draw off gravity flow tank will be equipped with a valve located on the tank discharge pipe ahead of the hose and equipped with a fusible link. The fusible link shall operate at a temperature not exceeding 225° F.

6.2.8 Top dispensing tanks shall be equipped with UL listed anti-siphoning pumps.

6.3 General Requirements

6.3.1 Tanks will be grounded by a metallic grounding cable with an electrical resistance not to exceed 10 ohms (1 megohm) and be permanently connected.

6.3.2 Ground rods will be eight feet in length, ¾ inches internal diameter for hollow rods and ½ inch diameter for solid rods. Rod will be driven not less than eight feet into the ground.

6.3.3 Top dispensing tanks will be mounted at least four inches above the ground.

6.3.4 Bottom gravity flow tank supports shall be made of steel and will not exceed seven feet in height.

6.3.5 Tanks will be properly labeled to identify its contents (gasoline, diesel, etc).

6.3.6 Signs reading "No Smoking Within 50 Feet" will be displayed at the tank location.

6.3.7 At least one portable fire extinguisher having a rating of not less than 20-BC shall be located within 50 feet but no closer than 20 feet from the tank storage area.

6.4 Tank Storage Locations

6.4.1 Tanks shall not be located within 50 feet of any facilities, major equipment, or other hazardous material.

6.4.2 A minimum clearance of five feet will be maintained between tanks.

6.4.3 Ground around the tanks will be sloped away from exposures such as buildings, major equipment and other hazardous material.

6.4.4 Tank locations will be diked, sloped, or otherwise designed to contain and control spills from adjacent exposures.

6.4.5 The capacity of the diked area will not be less than the capacity of the largest tank.

6.4.6 The minimum distance between the tanks and the inside toe of the dike will be at least five feet.

6.4.7 Storage of combustible materials, empty drums, or full drums in diked areas is prohibited.

6.4.8 Weeds and other debris will be kept a minimum of 20 feet from the tank storage area.

6.4.9 Collision protection will be provided. Dikes may be considered as collision protection if they are three feet or more in height.

6.4.10 Tank storage will not be located under power lines.

6.4.11 Electrical equipment located or being used within 20 feet of filling or dispensing operations/areas will be rated for Class I, Group D locations.

6.5 Storage, Handling, Use and Transportation of Flammable/Combustible Liquids in 55 Gallon Drums

6.5.1 During transportation, drums (empty or full) will be secured to the vehicle.

6.5.2 Drums will be labeled with the name of the contents, e.g., gasoline, diesel.

6.5.3 A placard reading "No Smoking Within 10 Feet" will be on the vehicle.

6.5.4 A fire extinguisher with a 20-BC rating will be available within 25 feet during transfer of flammable liquids.

6.5.5 The motors of all equipment being fueled shall be shut off during the fueling operation.

6.5.6 The pump, hose and nozzle shall be approved (UL type) and the nozzle shall be an automatic-closing type without a latch open device.

6.5.7 Fueling operations shall be conducted at least 50 feet from buildings and in an area free from open flames, smoking or other ignition sources.

6.5.8 Grounding and/or bonding between the drum and the vehicle being refueled is required during fuel transfer of Class 1 liquids.

6.5.9 Drums will not be transported with the pump installed in the drum.

6.5.10 Fuel spills in excess of one gallon will be reported to MK (Construction Engineer or ESH Manager) immediately.

6.5.11 Portable Fire Protection

6.5.11.1 A minimum of a 20# ABC multipurpose dry chemical fire extinguisher shall be provided as follows:

- Within 10 to 50 feet of outside storage area
- Not closer than 10 feet of inside storage
- On dispensing vehicles

6.5.11.2 Placards/markers shall be posted to identify where the fire extinguishers are located.

6.5.12 Servicing and Refueling Areas

6.5.12.1 All equipment being refueled shall have engines/motors shut off prior to fueling.

6.5.12.2 Smoking is prohibited within 50 feet of where vehicles and/or equipment are being fueled.

6.6 Combustible Materials Storage and Handling

6.6.1 The site shall be kept free from accumulations of unnecessary combustible materials. Weeds and grass shall be closely cut.

6.6.2 Combustible material shall not be stored outdoors within 10 feet of a building or structure, unless the walls are masonry construction with no windows and storage is not restricted.

Exception: During construction activities, supplies of materials for immediate use may be stacked in close proximity to a building. Potential ignition sources shall be prohibited in these areas, e.g., smoking, hot work.

6.6.3 Storage indoors shall not obstruct or adversely affect means of exit.

6.6.4 Non-compatible materials which may create a fire hazard shall be segregated by a barrier having a fire resistance of at least one hour. Employee using/storing materials shall review MSDS to assure that non-compatible items are not stored together. ESH Manager can be contacted for assistance in interpreting or clarifying requirements.

6.6.5 Material shall be piled to minimize the spread of fire and permit convenient access for firefighting.

6.6.6 Clearance of at least 36 inches shall be maintained between the top level of the stored material and the sprinkler deflectors.

6.6.7 Clearance of at least three feet shall be maintained around unit heaters, space heaters, duct furnaces, and flues.

6.6.8 Clearance of at least 24 inches shall be maintained as aisles between stored/stacked materials.

6.6.9 Material shall not be stored within 36 inches of a fire door opening.

6.6.10 Flammable debris shall be accumulated only in locations which will not endanger property in the event of fire and is to be placed in approved containers with lids, or no closer than 20 feet to any building or structure.

6.7 Fire Preventions Appraisals shall conducted in accordance with procedure 3A-224, "Fire Prevention and Protection" and procedure 3A-102, "ESH Surveillances".

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor provides fire response in accordance with procedure 3A-224, "Fire Prevention and Protection".

8.0 RECORDS

NONE

9.0 ATTACHMENTS

9.1 Outdoor Liquid Storage in Containers

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
PAGE 1 OF 1

OUTDOOR LIQUID STORAGE IN CONTAINERS

1			2	3
CLASS	CONTAINER STORAGE-MAX. PER STACK		DISTANCE BETWEEN STACKS OR RACKS (FT.)	DISTANCE TO STREET, ALLEY, OR A PUBLIC WAY (FT.) (3)
	GALLONS (1) (2)	HEIGHT (FT.)		
IA	1,100	10	5	10
IB	2,200	12	5	10
IC	4,400	12	5	10
II	8,800	12	5	5
III	22,000	18	5	5

SI Units: 1 ft. = 0.30 m; 1 gal = 3.8 L.

NOTES:

1. For storage in racks, the quantity limits per stack do not apply, but the rack arrangement shall be limited to a maximum of 50 feet in length and two rows or nine feet in depth.

2. When two or more classes of materials are stored in a single stack, the maximum gallonage shall be the smallest of the two or more separate gallonages.

3. When total quantity stored does not exceed 50 percent of maximum per stack, the distance in column three may be reduced by 50 percent, but not to less than three feet.

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: 3A-229	EFFECTIVE DATE: JUNE 1, 1999
	REVISION: 0	PAGE: 1 OF 15

TITLE: COMPRESSED GAS CYLINDERS

APPROVAL

ES&H MANAGER	2/22/99 DATE
QUALITY MANAGER	2/22/99 DATE
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3
2.0 SCOPE 3
3.0 REFERENCES 3
4.0 DEFINITIONS 3
5.0 RESPONSIBILITIES 4
6.0 REQUIREMENTS 4
7.0 EXTERNAL INTERFACE 9
8.0 RECORDS 9
9.0 ATTACHMENTS 9
10.0 EXHIBITS 9

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) with safety requirements for compressed gas cylinders. Where a conflict between the procedure and OSHA Requirements exists, the more stringent requirement will apply. The Environment, Safety, and Health (ESH) Manager may be consulted.

2.0 SCOPE

2.1 This procedure applies to MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, OSHA Standards Subpart H, Hazardous Material (Compressed Gases), and Subpart Q, Welding, Cutting, and Brazing

29 CFR 1926.350, OSHA Standards Subpart J, Gas Welding and Cutting

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Compressed Gas Association Pamphlet P.1, Safe Handling of Compressed Gases

NFPA 50A 1994, Gaseous Hydrogen Systems at Consumer Sites

DOE Order 440.1A, Worker Protection for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Approved: Approved shall mean listed or approved by a nationally recognized testing laboratory, such as Underwriters Laboratory.

4.2 Empty cylinders: Cylinders are considered "empty" if their pressure is less than 25 psig.

4.3 General Supervisor: For purposes of this procedure, General Supervisor shall mean the employees' immediate General Supervisor.

5.0 RESPONSIBILITIES

5.1 General Superintendent: The General Superintendent is responsible for ensuring that employees know and follow the requirements in this procedure.

5.2 Employees: The employee is responsible for complying with the requirements of this procedure.

5.3 ESH Manager: The ESH Manager is responsible to ensure that surveillances are conducted to ensure proper implementation of this procedure and to provide consultation on safety related concerns applicable to compressed gas cylinders. The ESH Manager is responsible for providing training to the requirements of this procedure.

5.4 INEEL M&O Contractor: The INEEL M&O contractor is responsible for providing response services in the event of a leaking gas cylinder requiring containment and control actions.

6.0 REQUIREMENTS

6.1 General Practices: The following safe practices must be followed in the handling and storage of gas cylinders:

6.1.1 Compressed gases shall be handled only by properly trained personnel (see paragraph 6.7 for Training Requirements).

6.1.2 Each cylinder that is received must have the following items, as verified by the designated receiver:

1. the contents identified by stenciling or labels,
2. the appropriate Department of Transportation (DOT) label,
3. a valve protection cap, if so designed,
4. a current hydrostatic test date, if applicable. Cylinders not in compliance shall not be accepted, and ESH Manager and Procurement shall be notified immediately.

NOTE: No label or other identification shall be removed or altered without approval by ESH Manager.

6.1.3 Prior to connecting a regulator, the cylinder valve is opened slightly and closed immediately to blow out dirt or debris from the valve assembly. The

valve shall be aimed away from operator and other personnel during this maneuver.

6.1.4 Before opening the cylinder valve, fully close the hand control knob (turn counterclockwise) on the regulator.

6.1.5 Always open a cylinder valve slowly. Never force a cylinder valve. If the valve cannot be opened by the wheel or small wrench provided, the cylinder should be returned.

6.1.6 Cylinders shall be placed where they cannot become part of an electrical circuit.

6.1.7 Cylinders containing oxygen or fuel gas shall not be taken into confined spaces.

6.1.8 During construction related activities, welding carts shall be used for all welding and cutting operations which involve the use of fuel and oxygen compressed gas cylinders. Written approval from the MK ESH Manager is required for any exception to this policy.

6.1.9 Relieve all pressure from a hose that is not being used. To shut down a system, close the cylinder valve and relieve the pressure from the entire system.

6.1.10 Never drop cylinders or permit them to strike each other.

6.1.11 Cylinders in use and in storage shall be chained, strapped, or fixed in a manner that prevents them from falling.

6.1.12 Cylinders may be stored in the open, but shall be protected against extremes of weather and from the dampness of the ground to prevent rusting. During the summer, cylinders stored in the open shall be shaded against the continuous direct rays of the sun.

6.1.13 The valve protection cap shall be left on each cylinder until the cylinder has been secured against a wall or bench or placed in a cylinder stand and is ready to be used.

6.1.14 Never drag, roll or slide cylinders. They shall be moved by using a suitable hand truck or other approved method. Cylinders moved in pickups or flatbed trucks shall be secured in an upright position.

6.1.15 Do not use white lead, oil, grease, or any other non-approved pipe-sealing compound to make a joint in an oxygen system.

6.1.16 Never interchange regulators and hose lines among different types of gases.

NOTE: Explosions can occur if oil or other hydrocarbons come into contact with oxygen under pressure.

6.1.17 Cylinders must be kept far enough away from actual welding or cutting operations so sparks, hot slag or flame will not reach them.

6.1.18 Never use oxygen to purge lines in pneumatic tools or in any way as a substitute for compressed air.

6.1.19 All cylinders shall be considered full unless properly identified as empty by the user. Empty cylinders should be returned to the proper storage area and not be permitted to accumulate at or near the work site.

6.1.20 Gas cylinder caps shall not be used to lift cylinders.

6.1.21 Gas cylinders shall not be stored in mechanical or electrical equipment rooms.

6.1.22 Never tamper with safety devices in valves or cylinders.

6.1.23 All cylinders shall conform to DOT 49 CFR 178, Subpart C.

6.1.24 In the event that a leaking cylinder or valve poses a threat to employee(s), facility or other equipment, the INEEL or facility emergency response team shall be notified by phone (777) or by radio (KID 240).

6.2 Storage: The following are minimum safety requirements for cylinder storage:

6.2.1 Cylinders, storage areas, and manifold installations shall be dry, well ventilated, and located away from ignition sources or excessive heat, including direct sunlight.

6.2.2 Cylinders shall be stored upright, and properly secured with chains, bars, brackets, or other approved devices.

6.2.3 Oxygen cylinders shall be stored a minimum of 20 feet from fuel gas cylinders or combustible materials, or separated by a barrier 5 feet high having a fire resistance rating of at least 1/2-hour.

6.2.4 Empty cylinders shall be stored separately from full cylinders. Both storage areas shall be clearly marked.

6.2.5 Gas cylinders shall not be subjected to temperatures in excess of 125° F.

6.2.6 Cylinder storage shall be limited to the maximum number of cylinders that the storage facility is designed to accommodate.

6.3 Manifolds: The following requirements apply to manifolds for gas pressurized systems:

6.3.1 A pressure manifold from a gas cylinder to a closed pressure system must contain a vent valve, fill valve, and relief device unless these features are integral parts of the pressure system.

6.3.2 A regulator is required if the operating pressure of the system is less than the pressure of a filled bottle.

6.3.3 A gauge is required unless the system is provided with a gauge indicating system pressure.

6.3.4 Whenever possible, an approved two-stage regulator shall be used for efficiency and safety.

6.3.5 Incompatible gases shall not be connected to a common manifold nor to common purge manifold (see Attachment 1).

6.4 Piping Tubes and Hoses: Requirements for use of pipes, tubes, and hoses in pressurized systems are as follows:

6.4.1 Use metal pipe and tubing with a maximum allowable working pressure (MAWP) rated at or above system MAWP.

6.4.2 Secure pipes and tubes to a firm foundation.

6.4.3 Use flexible tubing or hose only when metal piping and tubing cannot be used. Keep hose lengths as short as possible.

6.4.4 Flash arresters shall be installed at the regulator on all oxygen and fuel gas cylinders.

6.4.5 Chain hose ends (not fittings) together or substantially anchor the ends to prevent whipping if the hose or hose fitting fails.

6.4.6 Avoid sharp hose bends; follow hose manufacturer's recommendations.

6.4.7 PVC and other brittle materials shall not be used in a pressurized gas system.

6.4.8 Use approved hose repair kit only. Never use copper pipe/fittings in an acetylene line.

6.5 Gauges: The following safe practices apply to the use of gauges in pressurized systems:

6.5.1 Gauges shall be removed from cylinder and protective caps replaced at the end of each work shift.

6.6 Safety Relief Devices

6.6.1 Safety relief devices require the following safe operating practices:

1. Never set a relief device higher than the maximum allowable working pressure (MAWP) of the lowest rated system component it is intended to protect.

2. A valve shall never be placed between a relief device and the component the device is intended to protect.

3. Locate and orient relief devices so that their discharge is not hazardous to personnel.

4. Pipe discharge of hazardous gases to a safe location.

5. Install relief devices of adequate total flow capacity.

6. Pressure relief devices shall be constructed, located, and installed so that they are accessible for inspection and repair and cannot be readily rendered inoperative.

NOTE: There are two types of relief devices in common use: spring-loaded relief valves and rupture discs. All devices shall have the approval of a recognized independent testing laboratory, such as Underwriters Laboratory.

6.6.2 For systems in which the pressure source is a gas cylinder with a regulator, the flow capacity of the relief device must be equal to or greater than the maximum rate at which the regulator will supply gas if it undergoes a failure. If this flow rate under failure condition is not known, it must either be determined or an orifice which has a known flow-limiting effect must be installed on the output side of the regulator.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor will be notified if a leaking cylinder requires containment and control actions. The INEEL M&O contractor is responsible for providing the necessary response service.

8.0 RECORDS

NONE

9.0 ATTACHMENTS

9.1 Commonly Used Compressed Gases

10.0 EXHIBITS

NONE

"COMMON COMPRESSED GASES"

PRECAUTIONS:	The following contains the properties of some of the commonly used compressed gases and specific precautions for the use of each.
Acetylene	Acetylene, which sometimes carries the trade name Prestolite, is a colorless gas with an odor of garlic and is highly flammable and explosive under certain conditions. It is an anesthetic and, when breathed in large quantities, may cause death. Copper fittings or pipe shall never be used on acetylene cylinders because the combination of acetylene with copper produces an explosive compound. This gas must not be piped at pressures greater than 15 psig without special precautions (consult ESH Manager)
Argon	Argon is colorless and non-flammable. The gas is a simple asphyxiant. The liquid can cause frostbite.
Oxygen	Oxygen is a colorless, odorless, nonpoisonous gas. Although it is non-flammable, it is the natural supporter of combustion and it greatly enhances the rate of burning. Oil and grease must not be permitted to come in contact with oxygen cylinders, valves, regulators, gauges, or fittings. Explosive mixtures can result when oxygen and hydrocarbons are combined.
Hydrogen	Hydrogen is the lightest gas known. Hydrogen is colorless, odorless, nontoxic, and tasteless. It is flammable and will burn in concentrations between 4.1% and 74.2% in air.
More than Two Cylinders	Hydrogen installations of three or more cylinders shall meet the requirements of OSHA, and NFPA Standard 50A. Cylinders shall be located outdoors.

COMMON COMPRESSED GASES

System Criteria Two or Less

All applicable requirements identified for previously in this section shall be satisfied. Additionally, the following apply:

- Cylinders One or two cylinders are permitted in a room having high-point exhaust ventilation and no pockets where hydrogen can accumulate under the ceiling, upper floor, or roof. Hydrogen systems should be shut off during non-operational hours in buildings where full-time ventilation is not provided.

- Cylinders shall be protected from the sun's rays and from all heat.

- Cylinders shall be protected from physical damage. Leaking cylinders must be carefully removed from the building and tagged as leaking (Refer to Section 6.0).

- Cylinders containing oxygen or chlorine are not permitted within 10 feet of the hydrogen cylinder unless an intervening noncombustible wall separates them.

- Under the right conditions, hydrogen passing through a piping leak to the atmosphere can self-ignite. No combustible material shall be within 12-inches of the high-pressure pipe, upstream of the regulator valve.

- Each installation shall be marked with a sign stating:

  HYDROGEN, FLAMMABLE GAS

  NO SMOKING

- The shut-off valve shall be readily accessible.

- A suitable restricting orifice shall be installed downstream of the regulator.

- Because a regulator valve could fail, a relief valve shall discharge or be piped to a safe location

COMMON COMPRESSED GASES

- As a rule, an exhaust hood over the equipment will usually suffice to remove leaking gas.
- Possible hydrogen embrittlement should be considered when choosing containers, piping, and fittings.
- After installation and after any modification to the piping, the piping shall be leak-checked, using an inert gas.

Carbon Dioxide

Carbon dioxide is a heavy, inert gas which is colorless and odorless. While it is neither an anesthetic nor an irritant, an atmosphere of the gas will not support life. It is in liquid form in a cylinder.

Chlorine

Chlorine is a greenish-yellow toxic gas, about 2-1/2 times as heavy as air. It is a corrosive, suffocating, and irritating gas. It is in nonflammable liquid form in the cylinders.

The following precautions apply:

- Chlorine cylinders should be stored and used in an upright position to keep the liquid away from valves.
- Appropriate respirators or shields shall always be readily available where chlorine is used.
- Protective clothing and respiratory equipment needs shall be discussed with the ESH Manager.

Ammonia

Ammonia gas is less toxic than chlorine but deserves similar respect in handling.

COMMON COMPRESSED GASES

The following precautions apply:

- Ammonia cylinders should be stored and used in an upright position to keep the liquid away from valves.
- Appropriate respirators or shields shall always be readily available in places where ammonia is used.
- Copper, zinc, or alloys containing copper as a major element should not be used in contact with ammonia.
- Never remove check valves since suckback into the ammonia tanks may cause an explosion.
- Protective clothing and respiratory equipment needs shall be discussed with the ESH Manager.

Liquid Air, Liquid Oxygen, and Liquid Nitrogen

The following precautions apply:

- When handling liquid air, liquid oxygen, or liquid nitrogen, protective clothing shall be worn as specified by ESH Manager.
- Liquid air, liquid oxygen, and liquid nitrogen shall be transported
- Liquid air, liquid oxygen, and liquid nitrogen shall never be stored in small, closed compartments without adequate ventilation. A well-ventilated storage space shall always be provided.
- To prevent spontaneous combustion, containers of liquid oxygen or mixtures of liquid oxygen must never be stored or used where they may come in contact with combustible gases or other combustible materials.

COMMON COMPRESSED GASES

- Liquid air, liquid oxygen, and liquid nitrogen are hazardous and their handling shall be entrusted only to competent persons trained to use them. Because of their extremely low temperature (about 320° F below zero), these liquids will seriously burn the skin much as hot liquids would: they should never be permitted to come in contact with the skin or be allowed to soak clothing.

- Liquid oxygen must never be poured on clothing, fabrics, rags, waste, or other combustible materials, nor should the gaseous oxygen arising from liquid oxygen be allowed to penetrate clothing. Combustible substances in the presence of oxygen are extremely flammable.

- Liquid oxygen shall never be used or stored in proximity to an open flame. Any flame may expand enormously in an oxygen-enriched atmosphere and may result in an explosion. Liquid air or liquid oxygen must never be put in containers contaminated with oil, grease, or carbonaceous materials of any kind. They shall never be used in combination with other substances without knowing what the result may be. When in doubt, call the ESH Manager.

- The composition of liquid air changes as the liquid evaporates. If liquid air is allowed to remain in the container, the proportion of oxygen will increase. If it is allowed to remain in a container until a large portion of it is used for any purpose where high oxygen content would be dangerous. The proportion of oxygen in mixtures of liquid oxygen and nitrogen will also increase if allowed to remain in the container. The liquid mixture should be analyzed before it is used for any purpose where a high oxygen content would be dangerous.

- Air entrained in insulation around nitrogen pipes may be liquefied near points where the nitrogen vaporizes within the pipe system. Oxygen enrichment of the liquefied air can result in an explosive hazard in combustible insulation.

COMMON COMPRESSED GASES

Liquefied Petroleum	• Liquefied petroleum gases are known under various trade names, the most common being Instro-gas, Pyrofax, and Phil-Gas gas, and are either propane, isobutane, propylene (propenes), butylenes (butenes), butane, and any mixtures of these hydrocarbons. These gases are flammable, colorless, and odorless and are required to have an odorant added to indicate the presence of gas in case of leakage.

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-301	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 9

TITLE: RESPIRATORY PROTECTION

APPROVAL

ES&H MANAGER — DATE: 081700

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 5

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 8

8.0 RECORDS 8

9.0 ATTACHMENTS 9

10.0 EXHIBITS 9

1.0 PURPOSE

1.1 This procedure establishes a written respiratory protection program defining the responsibility and requirements of Morrison Knudsen (MK) personnel.

2.0 SCOPE

2.1 This procedure applies to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL) where potential exposures of employees to air contaminants exists.

2.2 This procedure shall not be used in lieu of feasible engineering controls to maintain air contaminant levels as low as reasonably achievable (ALARA).

2.3 This procedure shall be used to provide standards for respirator selection, issue, training, use, and care of respiratory protective devices.

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.134, Respiratory Protection Standard

29 CFR 1926.103, Subpart E -Personal Protective and Life Saving Equipment

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Morrison Knudsen Industrial Hygiene Procedures Manual, January 1999, Procedure 14.0.

Morrison Knudsen Records Management Program, January 1996

American National Standards Institute (ANSI), Z88.2-1992; Respiratory Protection

Compressed Gas Association, Commodity Specification G-7.1-1989

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Management

4.0 DEFINITIONS

4.1 Air-Purifying Respirators (APR): Respirators that remove contaminants from the ambient air via filtration, adsorption, or some other method, but are not designed to provide supplemental breathing air. This category includes all cartridge and canister respirators, powered air purifying respirators (PAPRs) and all disposable respirators.

4.2 Atmosphere Supplying Respirators: Respirators that supply breathing air from a source independent of the surrounding environment. This classification of respirators includes self-contained breathing apparatus (SCBA), airline respirators, and emergency escape units.

4.3 Breathing Air: Respirable air that meets the Compressed Gas Association specifications for Grade D or better and has the following limiting characteristics:

Oxygen	19.5-23.5%
Hydrocarbons	less than 5 mg/m^3
Carbon monoxide	less than 20 ppm
Carbon dioxide	less than 1000 ppm
No detectable odors	

4.4 Canister, Cartridge: A single container attached to a respirator that contains an air purifying media, i.e., sorbents, catalysts, or filter media that will remove gases, vapors, dust, radioactive particles or radionuclides, fumes, and/or mists as air is drawn through it.

4.5 Clean Shaven: Facial hair or stubble removed prior to an employee reporting for a work shift so that it does not interfere with a respirator seal.

4.6 Contaminant: A harmful, irritating or nuisance airborne material.

4.7 Disposable Respirator: A respirator that is designed to be used only once.

4.8 Face-piece: That portion of a respirator that covers the wearer's nose and mouth or nose, mouth, and eyes. It is designed to make a gas-tight or dust-tight fit with the face

4.9 Hazardous Atmosphere: Any atmosphere that is oxygen deficient, oxygen rich, or contains a toxic contaminant exceeding OSHA Permissible Exposure Limits (PEL) or American Conference of Governmental Industrial Hygienist Threshold Limit Values (TLV).

4.10 Immediately Dangerous to Life or Health (IDLH): Any atmosphere that poses an immediate hazard to life or produces immediate, irreversible, or debilitating health effects.

4.11 Oxygen Deficiency: Any atmosphere with an oxygen concentration less than 19.5 percent.

4.12 Oxygen Rich: Any atmosphere with an oxygen concentration greater than 23.5 percent.

4.13 Respirator Fit Test: A recommended or mandated testing method used to determine the adequacy of a face-to-face piece seal.

5.0 RESPONSIBILITIES

5.1 Environment, Safety and Health (ESH) Manager: Responsible for implementation of this procedure including the following duties.

5.1.1 Ensure a hazard analysis is performed that includes identification of potential respirator users, exposure evaluation, methods to control respiratory hazards.

5.1.2 Ensure workers who are required to wear a respirator are medically qualified, and trained and fit tested to the selected respirator; and issue a Respirator Qualification Card (RQC) to employees successfully completing these requirements.

5.1.3 Ensure the Respiratory Protection Program is evaluated annually, and conduct routine surveillance of tasks requiring respirator usage to assess compliance with AMWTP requirements.

5.1.4 Ensure the confidentiality of medical records resulting from this program is preserved in accordance with applicable regulations and company policy.

5.2 General Superintendent and other supervisory personnel: Responsible for overseeing the day-to-day implementation of this procedure.

5.2.1 Coordinate task hazard analyses with the ESH Department, including development of the list of employees required to use a respirator.

5.2.2 Ensure only NIOSH-approved respirators are issued whenever such equipment is determined necessary to protect the health of a MK or Subcontractor employee.

5.2.3 Ensure the prompt correction of any deficiencies, including misuse, noted as a result of task assessments or personal observation.

5.2.4 Schedule medical examinations, including opthomological examinations, through the site Nurse or ESH Department.

5.2.5 Schedule training and fit testing through the Training Manager or ESH Department.

5.3 Employees: Responsible for using issued respirators in accordance with the instructions and training received. Other responsibilities include the following:

5.3.1 Wear respiratory protection where it has been determined necessary and for the duration it is required.

5.3.2 Inspect respirator before use and promptly report any defects, malfunctions, etc. to your immediate Supervisor.

5.3.3 Have their RQC available during work hours. A respirator will not be issued without a RQC.

5.3.4 Clean and store issued respirators in accordance with training received and as directed by your immediate supervisor.

5.3.5 Change cartridges immediately at the first sign of contaminant breakthrough or increased resistance in breathing.

6.0 REQUIREMENTS

This section describes the requirements for adequate implementation of compliance with this program.

6.1 Respirator Training

6.1.1 Respirator training, medical qualification, and fit testing will be completed prior to issue of a respirator to any employee.

6.2 Task-Specific Training

6.2.1 All employees required to use a respirator while performing a task will be given specific task training. The responsible supervisor shall coordinate the training through the Training Manager or ESH Department. The training shall include, as a minimum:

- Type of respirator to be used and why it was selected
- Type of cartridge/canister to be used
- Contaminants present
- Engineering and administrative controls in place
- Established exposure criteria

6.3 General Practice

All persons using respirators shall comply with the following:

6.3.1 Beards or other facial hair, apparel, or equipment, which prevents an adequate face to mask seal, are prohibited.

6.3.2 Individuals who wear prescription lenses will be issued custom spectacle inserts for use with issued fullface respirators. MK will provide the inserts. These shall be available to the worker for quantitative fit testing.

6.3.3 Positive and negative pressure fit tests of all facepieces are required prior to entering a potentially contaminated environment.

6.3.4 Workers are permitted to leave the work area whenever they experience facial irritation or other discomfort associated with respirator use. They must inform their immediate supervisor.

6.3.5 Cartridges for air purifying respirators are to be replaced at the first sign of increased breathing resistance or containment breakthrough. The useful life of a particular cartridge is based on the extent of use and quantitative estimates of the contaminant as detected in the worker's breathing zone. At a minimum, cartridges will be discarded at the end of each shift.

6.4 Breathing Air Systems

6.4.1 All breathing air used used on the AMWTP shall meet Grade D specifications or better, as defined in paragraph 4.3 above.

6.4.2 Compressors

6.4.2.1 All breathing air compressors will be equipped and situated in compliance with the manufacturer's instructions.

6.4.2.2 The compressor must be fitted with a supply tank large enough to allow escape in the event of compressor failure. Oil lubricated compressors must have a high temperature and carbon monoxide (CO) alarms.

6.5 Cleaning and Disinfection

6.5.1 Respirators shall be cleaned and disinfected in accordance with manufacturer's instructions, or by any method determined equally effective by the ESH Manager.

6.6 Distribution

6.6.1 Supervisors shall ensure workers pick up the appropriate respirators as described on the Job Safety Analysis from the storage/issue location. Supervisors will also ensure employees clean and disinfect their respirators before returning them (no later than) at the end of the shift.

6.6.2 Employees shall exchange their Respirator Qualification Card (RQC) for the make and model of respirator indicated on the Card. Employees shall clean and disinfect their respirators, as instructed. Returned respirators (no later than the end of the shift) shall be exchanged for their RQC.

6.7 Inspections: The respirator wearer shall inspect their issued respirator before use and in accordance with the instructions and training they have received.

6.8 Respirator Storage and Maintenance

6.8.1 All respirators shall be stored in a clean and sanitary location away from direct sunlight, extremes in heat and cold, and potential contamination. Respirators are to be stored in sealed plastic bags or their original container when not in use. Stored respirators shall be protected from damage.

7.0 EXTERNAL INTERFACE

7.1 The Site Nurse shall schedule and coordinate all medical qualification and eye examinations.

8.0 RECORDS

8.1 Respirator training, fit testing, and medical qualification records are permanent non-QA records and shall be maintained in accordance with the MK Records Management Program.

8.2 Employees who lose their RQC may obtain a replacement by completing the requisite affidavit available from the ESH Department.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-302	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 8

TITLE: HEARING CONSERVATION

APPROVAL

ES&H MANAGER — DATE: 081700

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 8

8.0 RECORDS 8

9.0 ATTACHMENTS 8

10.0 EXHIBITS 8

1.0 PURPOSE

1.1 This procedure prescribes the general requirements necessary to assess and prevent occupational hearing loss.

2.0 SCOPE

2.1 This program applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL) which may expose employees to noise equal to or above 85 dBA, based on an 8-hour time-weighted average (TWA).

3.0 REFERENCES

3.1 Source Documents

29 CFR Code of Federal Regulations, Section 1926.52, Occupational Noise Exposure

29 CFR Code of Federal Regulations, Section 1910.95, Occupational Noise Exposure

3.2 Reference Documents

Morrison Knudsen Industrial Hygiene Manual, January 1999, Procedure 13.0

Morrison Knudsen Records Management Program, January 1996

American Conference of Governmental Industrial Hygienist, Threshold Limit Values and Biological Exposure Indices

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Action Level: An eight-hour time-weighted average of 85 decibels measured on the A-scale, slow response.

4.2 Audiogram: A chart, table or graph resulting from an audiometric test showing an individual's hearing threshold levels as a function of frequency.

4.3 Audiologist: A professional, certified by the American Speech-Language-Hearing Association or licensed by a state board of examiners, specializing in the study and rehabilitation of hearing.

4.4 A-Weighted Sound Level: A frequency weighing network that is incorporated into sound level meters and noise dosimeters to duplicate the response of the human ear to various sounds.

4.5 Baseline Audiograms: The audiogram against which future audiograms are compared.

4.6 dBA: (Decibels - A-Weighted) - A unit of logarithmic measurement of sound level corrected to the A-weighted scale.

4.7 Hearing Protection: Devices inserted into or over the ear to reduce noise levels.

4.8 Hertz (Hz): Unit of measurement of frequency, numerically equal to cycles per second.

4.9 Impulse Noise (Impact Noise): Noise of short duration (typically, less than one second) especially of high intensity, abrupt onset and rapid decay.

4.10 Noise: Noise is defined as unwanted sound.

4.11 Noise Reduction Rating (NRR): A numeric indication of the relative attenuation (noise reduction) provided by a hearing protection device.

4.12 Representative Exposure: Measurements of an employee's noise dose or 8-hour time-weighted average sound level that the employer deems to be representative of exposures of other employees in the work place.

4.13 Standard Threshold Shift (STS): Hearing loss, defined by OSHA as a change in hearing threshold, relative to the baseline audiogram, of an average of 10 dB (decibels) or more at frequencies of 2000, 3000, and 4000 Hz in either ear.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for managing the hearing conservation program and shall:

5.1.1 Perform timely sound level surveys and report results to supervisory personnel and affected employees.

5.1.2 Establish noise control areas.

5.1.3 Recommend engineering, administrative, or personal protective equipment controls for areas in which noise levels exceed 85 dBA.

5.1.4 Ensure affected employees attend hearing conservation training.

5.2 General Superintendent and other Supervisory Personnel: Responsible for ensuring compliance with this procedure and shall:

5.2.1 Request the ESH Manager conduct noise monitoring in areas which may exceed 85 dBA. Request repeat monitoring when a change in the process, equipment, or controls affects employee noise exposures.

5.2.2 Identify noise-exposed employees and provide a list of these to the ESH Manager initially and whenever employees are deleted or added.

5.2.3 Ensure noise hazard signs are posted in compliance with ESH recommendations in designated noise hazard areas.

5.2.4 Ensure identified employees have completed the formal Hearing Conservation training course, and have an adequate supply of suitable hearing protective devices available to them and are worn when necessary.

5.2.5 When advised by the ESH Manager, inform employees of monitoring results when the noise exposure is at or above an 8-hour TWA of 85 dBA.

5.3 Employees: Responsible for complying with the requirements of this procedure, including wearing hearing protection, when required, and participating in the AMWTP Hearing Conservation Program.

6.0 REQUIREMENTS

6.1 General Program Requirements

6.1.1 A continuous, effective hearing conservation program shall be implemented when noise levels are suspected or shown to exceed a time-weighted average of 85 dBA.

6.1.2 The Hearing Conservation Program shall consist of the following:

6.1.2.1 Monitoring of the work place to determine the representative employees exposure to excessive noise levels.

6.1.2.2 Posting of high-noise areas and equipment generating excessive noise levels as "Hearing Protection Required" areas.

6.1.2.3 Employees exposed to noise levels ≥85 dBA shall participate in an audiometric testing programl. The program requires a baseline audiogram; an annual audiogram for each exposed employee; analysis of audiogram results with retesting and/or referral to a qualified audiologist or physician when a Standard Threshold Shift occurs; and written employee notification of the Standard Threshold Shift.

6.1.2.4 A training program for all employees exposed to noise levels equal to or in excess of the Action Level.

6.1.2.5 Implementation of feasible engineering noise control measures consisting of modification of the noise source and altering or controlling the noise transmissions.

6.1.2.6 Provision of hearing protection to all affected employees when administrative or engineering controls fail to reduce sound levels to within the levels of the standards.

6.2 Specific Program Requirements

6.2.1 Sound Level Survey or personal dosimetry data shall be collected as needed with appropriate instrumentation. All survey or dosimetry data shall be collected as follows:

6.2.1.1 In all shops. Surveys will include noise levels during equipment (grinders, planers, saws, etc.) operation. Dosimetry shall be collected in accordance with the Morrison Knudsen Industrial Hygiene Manual.

6.2.1.2 Evaluation of specific job class and work areas shall be as stated in the Annual Sampling Plan.

6.2.2 Posting - All stationary equipment and work areas with noise levels of 85 dBA or greater shall be posted as "Hearing Protection Required Areas".

6.2.3 Audiometric Testing - Sound level meter survey and noise dosimetry results shall be used by the ESH Manager to determine which employees are to be included in the audiometric testing program.

6.2.3.1 Baseline audiograms shall be performed for all such employees within six months of exposure to noise at or above the action level.

6.2.3.2 Testing to establish a baseline audiogram shall be preceded by a minimum of 14 hours without exposure to workplace noise.

6.2.3.3 Employees shall be notified of the need to avoid high levels of non-occupational noise exposure during this 14-hour period.

6.2.3.4 Audiograms shall be repeated on an annual basis for all employees exposed at or above the action level.

6.2.3.5 All audiometric testing shall be performed by a licensed or certified audiologist, physician, or technician who is certified by the Council of Accreditation in Occupational Hearing Conservation.

6.2.3.6 If audiogram evaluation indicates that Significant Threshold Shift has occurred, the employee will be informed in writing within 21 days of the determination and retested within 30 days. If Significant Threshold Shift is still indicated, the employee shall be referred to an audiologist or physician.

6.2.3.7 Audiometric testing and evaluation shall be performed in accordance with the requirements of 29 CFR 1910.95(g), (h), and Appendices C-F.

6.2.4 Employee Training and Information - All employees who are subject to exposure to noise levels at or above the action level shall complete a formal training program, which shall include, as a minimum, the following information:

6.2.4.1 The effects of noise on hearing.

6.2.4.2 The purpose of hearing protectors, the advantages, disadvantages, and attenuation capabilities of various types, and instructions on selection, fitting, use, and care.

6.2.4.3 The specific nature of the operations which could result in exposure to excessive noise levels.

6.2.4.4 A description of the medical surveillance program, including a description of the purpose of audiometric testing and an explanation of the test procedures.

6.2.4.5 The engineering controls and safe work practices associated with the employee's job assignment. A copy of 29 CFR 1910.95 shall be available for affected employee's review.

6.2.5 Engineering controls shall be evaluated by qualified personnel, and if feasible, implemented to control excessive noise levels. If engineering

controls are not feasible, administrative and personal protective equipment controls shall be used.

6.2.6 Hearing protective devices are required when engineering controls are not feasible or do not reduce employee exposure below the action level. All employees working where noise levels equal or exceed 85 dBA are required to wear hearing protection.

6.2.6.1 Personnel will be offered at least two different types of hearing protectors at no cost to employees and shall be replaced as necessary.

6.2.6.2 Supervisor shall ensure that hearing protectors are worn by all affected employees. Use of the protectors is ultimately the responsibility of the employee.

6.2.6.3 The ESH Manager shall approve the type of hearing protection worn, based on survey and dosimetry data and the calculated attenuation of the protector. Selected hearing protectors should attenuate employee exposures to below the 85 dBA, 8-hour TWA.

7.0 EXTERNAL INTERFACE

7.1 The Site Nurse will coordinate audiometric testing with selected physicians.

8.0 RECORDS

8.1 Noise monitoring and audiometric testing records are permanent non-Quality Assurance (QA) records and shall be maintained in accordance with Morrison Knudsen Records Management Program.

8.2 All records required by this section shall be provided to employees or others as stated in CESHM-1-05, Access to Exposure and Medical Records."

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-303	EFFECTIVE DATE: September 1, 2000
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TITLE: HAZARD COMMUNICATION

APPROVAL

ES&H MANAGER — DATE: 081700

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 9

8.0 RECORDS 10

9.0 ATTACHMENTS 10

10.0 EXHIBITS 10

1.0 PURPOSE

1.1 This procedure establishes the requirements for the AMWTP Hazard Communication Program.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910, Subpart Z, Toxic and Hazardous Substances

29 CFR 1926.59, Hazard Communication

3.2 Reference Documents

Morrison Knudsen Industrial Hygiene Manual, January 1999, Procedure 12.0

Morrison Knudsen Records Management Program, January 1996

Morrison Knudsen Environmental Policy and Guidance Manual, July 1998

Morrison Knudsen Engineering Standards, Vol. I and II, Section 9.6

American Conference of Governmental Industrial Hygienist, Threshold Limit Value Booklet, Latest Edition

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

International Agency For Research on Cancer Monographs, Latest Edition

National Toxicology Program Annual Report on Carcinogens, Latest Edition

4.0 DEFINITIONS

4.1 Carcinogen: Chemicals meeting one or more of the following criteria shall be considered a carcinogen or suspect carcinogen.

4.1.1 Chemicals listed as a carcinogen or suspect carcinogen in American Conference of Government Industrial Hygienists, Threshold Limit Values (ACGIH-TLV) Booklet.

4.1.2 Chemicals listed as a carcinogen or suspect carcinogen in 29 CFR Part 1910, Subpart Z, Toxic and Hazardous Substance, Occupational Safety and Health Administration (OSHA).

4.1.3 Chemicals listed in the National Toxicology Program (NTP) annual report on carcinogens (latest edition).

4.1.4 Chemicals listed in the International Agency for Research on Cancer (IARC) monographs (latest edition).

4.2 Hazardous Chemical: Any chemical that presents a potential physical hazard or health hazard.

4.3 Incompatible Chemicals: Substances that, when mixed together, produce an unwanted reaction such as a fire, explosion, or extremely toxic vapors or gases.

4.4 Label: Any written, printed, or graphic data displayed on or affixed to a chemical container identifying the material and the hazards associated with it.

4.5 Material Safety Data Sheet (MSDS): A technical bulletin containing information about a substance such as chemical composition, chemical and physical characteristics, health and safety hazards, and precautions for safe handling and use.

4.6 Toxic Substance: Any substance that destroys or damages an organ or organ system.

5.0 RESPONSIBILITIES

5.1 The Environment, Safety and Health (ESH) Manager: Manages the hazard communication program, including the following elements.

5.1.1 Ensures a master hazardous chemical inventory and a MSDS master file are maintained.

5.1.2 Ensure employees receive appropriate training.

5.1.3 Evaluate the hazards posed by materials proposed for use on the project, and deny use or approve for use.

5.1.4 Reviews and signs off on all purchase requisitions.

5.1.5 Publish and distribute reports as required.

5.1.6 Ensures that designated supervisors receive training in the following areas:

- Elements of the hazard communication program
- Who is covered by the hazard communication standard
- Hazard Communication Standards, 29 CFR 1926.59.
- MSDSs
- In-house labeling system
- Elements of hazard communication training sessions
- Location of the written hazard communication program.

5.2 General Superintendent and other Supervisory Personnel: Responsible for:

5.2.1 Informing employees of operations in their work area where hazardous chemicals are present and their associated health and safety precautions through review of Construction Safe Work Permits (CSWP) toolbox meetings and/or other means.

5.2.2 Providing to employees (upon request) a list of hazardous materials used in the work area as contained on the "Construction Safe Work Permit" and/or shop inventories as applicable.

5.2.3 Providing employees with ready access to MSDSs for hazardous materials in the work area.

5.2.4 Providing shop and/or work order specific employee hazard communication.

5.2.5 Ensuring that all hazardous materials in the work area are properly labeled based on site characterization by the Contractor and/or process knowledge.

5.2.6 Utilizing the Construction Safe Work Permit to inform employees of the hazards associated with non-routine tasks.

5.2.7 Identifying hazardous materials as shipments arrive on-site. One method that may be used is screening each receiving shipment report for hazardous materials.

5.2.8 Inspecting containers of hazardous materials to ensure that they are properly labeled by the manufacturer in accordance with 29 CFR 1926.59.

5.2.9 Providing the ESH Manager with a copy of the MSDS for each new chemical received on-site.

5.2.10 Immediately notifying the ESH Manager if hazardous materials are received with no MSDS and no MSDS is on file.

5.3 Employee: Responsible for:

5.3.1 Ensuring containers of hazardous materials used are properly labeled.

5.3.2 Reporting all unlabeled containers to his/her supervisor immediately.

5.3.3 Practicing safe handling and usage of hazardous materials, observing all precautionary recommendations.

5.3.4 Reviewing MSDS for hazardous chemicals prior to use, if not already familiar with appropriate safety practices.

5.3.5 Requesting information on hazardous materials from supervision as required.

6.0 REQUIREMENTS

6.1 Inventory of Hazardous Chemical

6.1.1 ESH personnel shall inventory the hazardous chemicals stored and used during MK operations once each calendar quarter.

6.1.1.1 Department Managers and the General Superintendent or their designees shall cooperate and aid with the inventory, when requested.

6.1.2 A quarterly inventory report of the hazardous chemicals shall be prepared and distributed by the ESH Manager to supervision and the INEEL M&O contractor. This inventory shall include a designation indicating availability of MSDSs maintained by the ESH Department.

6.1.2.1 Department Managers and the General Superintendent shall use the inventory information to improve chemical acquisition controls to maintain minimum reasonable quantities of chemicals on-site and reduce existing inventories.

6.2 Non-Routine Tasks

6.2.1 Prior to performing work, hazards shall be evaluated and control measures shall be stipulated in accordance with procedure 3A-201, "Job Safety Analysis." Hazard control measures beyond general control measures routinely employed shall be specified on the Job Safety Analysis.

6.2.2 The General Superintendent or other supervisory personnel should consult with the ESH Manager or designee when performing a Job Safety Analysis of non-routine tasks.

6.3 Multi-Employee Work-places

6.3.1 Subcontractors shall submit a Hazardous Materials List with expected quantities and MSDS as required in the subcontract Special Conditions. The Subcontractor shall submit revisions to the Hazardous Materials List as new products are identified for use and prior to bringing them on site. The Subcontractor shall submit an updated Hazardous Materials List at the conclusion of construction activities.

6.3.2 The ESH Manager will provide Subcontractors with chemical hazard information in the form of MSDS. General site work hazards are discussed during General Employee Training provide to all employees.

6.3.3 Additional information, which becomes available on work hazards, shall be provided to subcontractors during coordination meetings, or transmitted as required by contract.

6.4 Labels and Others Forms of Warning

6.4.1 Hazardous chemicals shall be inspected at receiving to ensure that containers are properly labeled and include the identity of the material, appropriate hazard warnings, and name and address of manufacturer.

6.4.2 Containers not properly labeled shall be rejected by Supervisor or individual receiving the shipment.

6.4.3 Containers that once contained a hazardous chemical and are now empty are to be labeled as "EMPTY".

6.4.4 Employees who dispense hazardous chemicals to a portable container, which are intended only for the immediate use of the employee during the shift, need not label the receiving container.

6.4.5 Signs and barricades or other forms of warning shall also be used as needed.

6.4.6 Supervisory personnel shall ensure employees make every effort to maintain original container labels.

6.4.6.1 Supervisory personnel shall replace damaged or missing labels with a Hazardous Materials Information System label available from the ESH Department.

6.5 Material Safety Data Sheets (MSDS)

6.5.1 The ESH Manager shall review purchase requisitions in order to identify materials that require an MSDS. The ESH Manager shall review chemical requisitions for possible safety or environmental problems prior to processing and shall identify these concerns in writing per procedure Morrison Knudsen Engineering Standards, Section 9.6. A notation shall be made on the purchase requisition indicating the need to request an MSDS from the supplier for both new and re-ordered chemicals.

6.5.2 Procurement shall request MSDSs from suppliers for both new and reordered chemicals as indicated by the ESH Manager.

6.5.3 MSDSs received with shipments or in separate transmittals shall be forwarded to the ESH Manager.

6.5.4 The ESH Manager shall review MSDSs and determine whether the MSDS are duplicates of previously received MSDS, updates of previously received MSDSs, or new MSDSs.

6.5.5 The INEEL Material Exchange Program shall be considered as a waste-minimizing alternative to ordering new chemicals from the vendor.

6.5.6 The ESH Manager shall advise affected supervisors of new hazards based on updated or new MSDSs.

6.5.7 Supervisory personnel shall inform employees that MSDSs are available for review at the Document Control points established within the construction area, and other selected locations on-site. Supervisory personnel who maintain a file of MSDSs for commonly used and/or special

hazardous chemicals used in their respective work areas must ensure the MSDS are current , complete, and legible.

6.5.8 Hazardous chemicals for which an MSDS cannot be obtained shall be returned to supplier.

6.6 Information and Training

6.6.1 Employees shall be informed of the following:

6.6.1.1 The requirements of 29 CFR 1926.59 and 29 CFR 1910.1200 to include employee information and training.

6.6.1.2 Operations in their work areas where hazardous chemicals are present.

6.6.1.3 The location and availability of this Hazard Communication Procedure.

6.6.2 Employees are trained on the following:

6.6.2.1 The methods and observations that may be used to detect hazardous chemicals in the work area.

6.6.2.2 The physical and health hazards of chemicals in the work area.

6.6.2.3 The measures employees can take to protect themselves.

6.6.2.4 The details of this Hazard Communication Procedure.

6.6.2.5 How to read and interpret information on labels and MSDS's.

7.0 EXTERNAL INTERFACE

7.1 Subcontractors shall provide a copy of their Hazard Communication Program to the MK ESH Manager for approval.

7.2 MK shall provide MSDS information to subcontractors on potential hazards that may be encountered in work areas.

7.3 MK provides quarterly reports of hazardous materials to BNFL Inc.'s Operations Manager and INEEL Fire Department.

7.4 The Subcontractor shall provide quarterly reports of hazardous materials to the ESH Manager, as requested.

8.0 RECORDS

8.1 A master file of MSDSs is maintained by ESH as non-permanent non-Quality Assurance (QA) Records in accordance with Morrison Knudsen Records Management Program.

8.2 Hazardous Material Inventory Log: Master list will be maintained and updated by the ESH Manager. These records are non-permanent non-QA records.

8.3 Subcontractor Hazard Communication Program: These records will be maintained as non-permanent non-QA Records in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-304	EFFECTIVE DATE: September 1, 2000
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TITLE: TEMPERATURE EXTREMES

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SITE QUALITY MANAGER	08-17-00 DATE
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 10

8.0 RECORDS 10

9.0 ATTACHMENTS 10

10.0 EXHIBITS 11

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) AMWTP Site Management with guidelines to protect the safety and health of employees working in hot or cold environments.

2.0 SCOPE

2.1 This procedure is applicable to all MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL) involving hot or cold environments.

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.20, General Safety and Health Provisions

3.2 Reference Documents

29 CFR 1926.65, Hazardous Waste Operations and Emergency Response

29 CFR 1910.120, Hazardous Waste Operations and Emergency Response

Morrison Knudsen Records Management Program, January 1996

U.S. Department of Health, Education, and Welfare, National Institute for Occupational Safety and Health, Publication 72-10269, Criteria for a Recommended Standard - Occupational Exposure to Hot Environment, 1972

American Conference of Governmental Industrial Hygienists, Threshold Limit Values and Biological Exposure Indices, Latest Edition

4.0 DEFINITIONS

4.1 Acclimatization: Physiological adaptation of the body to environmental conditions such as heat, humidity, and cold leading to improved tolerance.

4.2 Cold Environment: Generally, an environment with an ambient temperature ≥32°F. However, 50°F-60°F temperatures combined with certain environmental and personal conditions can produce cold injury.

4.3 Hot Environment: Environment in which temperature, humidity, radiation, and wind speed combine to create a wet bulb globe temperature (WBGT) that exceeds 79°F.

4.4 WBGT (Wet Bulb Globe Temperature): The index used to measure the environmental factors contributing to heat stress in humans. The WBGT combines the effect of humidity, air temperature, air movement, and radiant heat.

4.5 Windchill Factor: The cooling effect of any combination of temperature and wind velocity or air movement.

5.0 RESPONSIBILITIES

5.1 General Superintendent and other Supervisory Personnel: Responsible for:

5.1.1 Evaluating all work activities for potential heat or cold environments.

5.1.2 Ensuring that employees conduct activities in accordance with this procedure.

5.1.3 Ensuring that potentially exposed employees are properly trained for work in hot or cold environments

5.1.4 Ensuring that proper personal protective equipment is provided to and worn by employees working in hot or cold environments.

5.1.5 Ensuring that employees receive physiological monitoring as required during work in hot or cold environments.

5.1.6 Ensuring that employees adhere to work/rest schedules.

5.2 Employees: Responsible for complying with the requirements of this procedure, and performing tasks in hot or cold environments in accordance with the instructions and training received.

5.3 ESH Manager: Responsible for:

5.3.1 Monitoring the work environment hot or cold stress, as warranted, including physiological monitoring.

5.3.2 Establish work/rest schedules in accordance with this procedure.

5.3.3 Ensure appropriate personal protective equipment is available.

6.0 REQUIREMENTS

6.1 Hot Environments

6.1.1 Heat stress is caused by a number of interacting factors, including environmental conditions, clothing, workload, and the individual characteristics and physical condition of the worker. It shall be the responsibility of each Supervisor, in coordination with the ESH Manager, to evaluate the conditions at a specific operation and make final determinations of the work/rest regimen. Physiological monitoring, as discussed in the following section, shall be used to establish more stringent regimens.

6.1.2 When environmental measurements are needed, they should be as follows:

6.1.2.1 Hourly Wet Bulb Globe Temperatures (WBGTs) should be calculated as specified in "Measurement of Wet Bulb Globe Temperature" (Attachment 1) for the combination of jobs, including all scheduled or unscheduled rest periods. These can be compared to the ACGIH values in "Permissible Heat Exposure Threshold Limit Values" (Attachment 2) to determine work/rest regimen.

6.1.2.2 Measurements are made at, or as close as possible to, the specific work area where the worker is exposed.

6.1.2.3 When a worker is not continuously exposed in a single hot area but moves between two or more areas having different levels of environmental heat, or when the environmental heat varies substantially at a single hot area, environmental exposure should be measured for each area and for each level of environmental heat to which employees are exposed.

6.1.3 Acclimatized Workers - The total heat exposure to acclimatized healthy workers not wearing protective clothing shall not exceed the guidelines given in Attachment 2. The work regimen should be 50 percent exposure on day one, 60 percent on day two, 80 percent on day three, and 100 percent on day four.

6.1.3.1 The guidelines shown in Attachment 2 are for the worker not wearing chemical protective clothing. If the worker is wearing chemical protective clothing, add 4°F to the WBGT reading and use this adjusted WBGT in Attachment 2.

6.1.4 Unacclimatized Workers - The total heat exposure to unacclimatized workers not wearing protective clothing shall not exceed the guidelines given in Attachment 2. For new workers who will be similarly exposed, the regimen should be 20 percent on day one, with a 20 percent increase in exposure each additional day.

6.1.5 For construction activities, which require workers to wear chemical protective clothing, physiological monitoring is necessary when the ambient temperature exceeds 78°F (25.5°C).

6.1.6 After the initial work/rest regimen is established, it is necessary to perform physiological monitoring to determine if the established work/rest regimen should be adjusted. The following guidelines shall be used to adjust the regimen and should be recorded by the ESH Manager on the "Employee Physiological Monitoring Record for Heat Stress" (Exhibit A).

1. Baseline Information - Determining a baseline heart rate for each employee prior to on-site activities by counting the radial pulse.

2. Increasing Work Rate

   A. If a worker's heart rate does not increase, or only increases slightly (10 percent or less) from the baseline readings after the first work cycle, the work period (according to the established work/rest regimen) can be increased by 20 percent.

   B. The worker shall be monitored closely after the next work cycle period and, if there are still no significant increases in heart rate, the work period can be increased by an additional 10 percent and the rest period remains the same.

   C. Increases in the work period can be made throughout the shift if there are not significant increases in the physiological monitoring indices.

   D. Note that the increases to the work period are made based on the work/rest regimen established from WBGT readings. These WBGT readings will change throughout the day as the temperature rises or falls.

3. Decreasing Work Rate

   A. Count the radial pulse as early as possible in the rest period.

   B. If a worker's heart rate exceeds 110 beats per minute immediately after a work period, shorten the next work cycle by 30 percent and keep the rest period the same.

C. If the heart rate still exceeds the 110 beats per minute after the next work period, shorten the following work cycle by 30 percent.

D. Continue to shorten the employee's work cycle until the heart beat is below 110 beats per minute.

6.1.7 Prevention

1. Establish a work/rest regimen according to the guidelines given in this procedure.

2. Adequate liquids must be provided to replace electrolytes. Employees must replace water lost from sweating. Employees must be encouraged to drink more than the amount required to satisfy thirst. Thirst satisfaction is not an accurate indicator of adequate salt and fluid replacement.

3. Cool (50-60°F) water or any cool liquid other than alcoholic beverages should be made available to workers in such a way that they are stimulated to frequently drink small amounts, e.g., one cup (8 ounces) every 20 minutes. Ample supplies of liquids should be placed close to the work area. Although some commercial replacement drinks contain salt, it is not necessary for acclimatized individuals, because these people generally add enough salt in their summer diets. Unacclimatized individuals may need salted drinking water in a concentration of 0.1 percent.

4. Cooling devices such as vortex tubes, core cooling systems, or cooling vests can be worn beneath protective garments. If cooling devices are worn, only physiological monitoring will be used to determine work activity.

5. All breaks are to be taken in a cool, shaded rest area (77°F is best).

6. Employees shall remove chemical protective garments during rest periods.

7. Employees shall not be assigned other tasks during rest periods.

8. All employees shall be informed of the importance of adequate rest, proper diet, and the harmful effects of excessive alcohol consumption in the prevention of heat stress.

6.1.8 Engineering Controls

1. Ventilation - Local air cooling can be effective in reducing air temperature in specific areas. Two methods have been used successfully in industrial settings.

   A. In type one, cool rooms can be used to enclose a specific work place or to offer a recovery area near hot jobs.

   B. The second type is a portable blower with built-in air chiller. The main advantage of a blower, aside from portability, is its minimal set-up time.

2. Convection - Another way to reduce heat stress is to increase the air flow or convection using fans, etc., in the work area (as long as the air temperature is less than skin temperature).

   A. Changes in air speed can help workers stay cooler by increasing both the convective heat exchange (the exchange between the skin surface and the surrounding air) and the rate of evaporation. Because this method does not actually cool the air, any increases in air speed must impact the worker directly to be effective.

   B. If the temperature is higher than 95EF, the hot air passing over the skin may actually make the worker hotter and offset any increase gained in evaporative cooling. Increases in air speed have no effect on workers wearing vapor-barrier clothing.

3. Radiant Heat - Simple engineering controls, such as shields, can be used to reduce the problem of radiant heat (heat coming from hot surfaces within the worker's line of sight).

6.1.9 Those employees and subcontractor employee potentially exposed to heat stress condition shall have the following training:

- Sources of Heat Stress, Influence of Protective Clothing, and Importance of Acclimatization
- How the Body Handles Heat
- Recognition of Heat-Related Illness "Heat Stress Symptoms" (Attachment 4)
- Preventative/Corrective Measures
- First Aid Procedures

6.1.10 Supervisors shall receive additional training in:

- Environmental and Physiological Monitoring

- Establishing work/rest regimens.

6.2 Cold Environments - Employees shall be protected from exposure to cold so that the deep core temperature does not fall below 98.6EF (36EC). Lower body temperature will very likely result in reduced mental alertness, reduction in rational decision making, or loss of consciousness with the threat of fatal consequences.

NOTE: Most cold related worker fatalities have resulted from failure to escape low environmental air temperatures, or from immersion in low temperature water. The single most important aspect of life-threatening hypothermia is a fall in the deep core temperature of the body.

6.2.1 Workers should wear warm clothing, such as mittens, heavy socks, etc., when the air temperature is below 40EF.

6.2.2 When the calculated air temperature is below 35EF (determined by using the "Windchill Index" (Attachment 3). Clothing should be worn as follows:

1. Insulated suits, such as whole-body thermal underwear.
2. Wool socks or polypropylene socks to keep moisture off the feet if there is a potential of work activity which would cause sweating.
3. Insulated gloves. When air temperatures are extremely low (less than 5-10EF), gloves with reflective surfaces, which reflect body heat back to the hand, should be used.
4. Boots.
5. Insulated head cover, such as knot caps (ski caps).

6.2.3 At air calculated temperatures below 35EF, the following work practices should be followed:

1. If the clothing of an employee might become wet on a job site, the outer layer of the clothing should be impermeable to water.
2. If an employee's underclothing (socks, mittens, etc.) becomes wet in any way, the employee should change into dry clothing immediately. If the clothing becomes wet from sweating, the employee may finish the task which caused the sweating before changing into dry clothing.
3. Employees should be provided a warm area (65EF or above) to change from work clothing into street clothing.
4. Employees should be provided a warm break area (60 F or above).

5. If appropriate, space heaters may be provided in the work area to warm the hands, feet, etc. Note: Hazardous areas (i.e., gas, water, etc.) to be considered.

6. Hot liquids, such as soups, warm, sweet drinks, etc., should be consumed during lunch and breaks. The intake of coffee should be limited because of its dehydration and circulatory effects.

7. The buddy system shall be practiced at all times. Any employee observed with severe shivering shall leave the cold area immediately.

8. Employees should layer their clothing, i.e., wear thinner, lighter clothing next to the body with heavier clothing layered outside the inner clothing.

9. Avoid overdressing when going into warm areas or when performing activities that are strenuous. This could lead to heat stress problems.

10. Auxiliary heated versions of handwear, footwear, etc., can be used in lieu of mittens, insulated socks, etc., if extremely cold conditions exist.

11. Employees handling evaporator liquids (gasoline, hexane, alcohol, etc.) shall take special precautions to avoid soaking of clothing or gloves with the liquids because of the added danger of cold injury to evaporative cooling.

12. Work should be arranged in such a way that sitting still or standing for long periods is minimized.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 The ESH Manager shall maintain heat or cold stress monitoring records for at least one year. These records are not Quality Assurance records and shall be maintained in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

9.1 Measurement of Wet Bulb Globe Temperature

9.2 Permissible Heat Exposure Threshold Limit Values

9.3 Windchill Index

9.4 Heat Stress Symptoms

9.5 Cold Stress Symptoms

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
PAGE 1 OF 1

Permissible Heat Exposure Threshold Limit Values
(Values are given in °F [°C] WBGT)

WORK-REST REGIMEN	WORK LOAD		
	LIGHT	MODERATE	HEAVY
Continuous Work	86 (30.0)	80 (26.7)	77 (25.0)
75% Work - 25% Rest, each hour	87 (30.6)	82.4 (28.0)	78.6 (25.9)
50% Work - 50% Rest, each hour	88.5 (31.4)	84.9 (29.4)	82.2 (27.9)
25% Work - 75% Rest, each hour	90 (32.2)	88 (31.1)	86 (30.0)

Light Work Load - Small energy expenditure with a heart rate of approximately 90 beats per minute.

Medium Work Load - Associated with approximately 100 heart beats per minute.

Heavy Work Load - Associated with a heart greater than or equal to 120 beats per minute.

ATTACHMENT 9.2
PAGE 1 OF 1

WINDCHILL INDEX

Wind Speed in mph	ACTUAL THERMOMETER READING (°F)									
	50	40	30	20	10	0	-10	-20	-30	-40
	EQUIVALENT TEMPERATURE (F)									
calm	50	40	30	20	10	0	-10	-20	-30	-40
5	48	37	27	16	6	-5	-15	-26	-36	-47
10	40	28	16	4	-9	-21	-33	-46	-58	-70
15	36	22	9	-5	-18	-36	-45	-58	-72	-85
20	32	18	4	-10	-25	-39	-53	-67	-82	-96
25	30	16	0	-15	-29	-44	-59	-74	-88	-104
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116
Over 40 mph (little added effect)	**LITTLE DANGER (for properly clothed person)**				**INCREASING DANGER**			**GREAT DANGER**		
					(Danger from freezing of exposed flesh)					

The human body senses "cold" as a result of both the air temperature and the wind velocity. Cooling of exposed flesh increases rapidly as the wind velocity goes up. Frostbite can occur at relatively mild temperatures if wind penetrates the body insulation. For example, when the actual air temperature of the wind is 40°F (4.4°C) and its velocity is 30 mph (48 km/h), the exposed skin would perceive this situation as an equivalent still air temperature of 13°F (-11°C).

ATTACHMENT 9.3
PAGE 1 OF 2

MEASUREMENT OF WET BULB GLOBE TEMPERATURE

The Wet Bulb Globe Temperature Index (WBGT) is the simplest and most suitable technique to measure these environmental factors. WBGT values are calculated by the following equations:

1. Indoors or outdoors with no solar load:
   WBGT = 0.7 NWB + 0.3 GT

2. Outdoors with solar load:
   WBGT = 0.7 NWB + 0.2 GT + 0.1 DB
   where:
   WBGT = Wet Bulb Globe Temperature Index
   NWB = Natural Wet-Bulb Temperature
   DB = Dry-Bulb (air) Temperature
   GT = Globe Thermometer Temperature.

The determination WBGT requires the use of a black globe thermometer, a natural (static) wet-bulb thermometer, and a dry-bulb thermometer. The measurement of environmental factors shall be performed as follows:

1. The range of the dry and the natural wet-bulb thermometers should be 23°F (-5°C) to +122°F (50°C), with an accuracy of +/- 0.9°F (0.5°C). The dry bulb thermometer must be shielded from the sun and other radiant surfaces of the environment without restricting the airflow around the bulb. The wick of the natural wet bulb thermometer should be kept wet with distilled water for at least 1/2 hour before the temperature reading is made. It is not enough to immerse the other end of the wick into a reservoir of distilled water and wait until the whole wick becomes wet by capillarity. The wick must be wetted by direct application of water from a syringe 1/2 hour before each reading. The wick must cover the bulb of the thermometer and an equal length of additional wick must cover the stem above the bulb. The wick should always be clean and new wicks should be washed before using.

2. A globe thermometer, consisting of a 15 cm (6-inch) in diameter hollow copper sphere painted on the outside with a matte black finish or equivalent, must be used. The bulb or sensor of a thermometer (range 23°F [-5°C] to 212°F [+100°C] with an accuracy of +/- .9°F [0.5°C])must be fixed in the center of the sphere. The globe thermometer should be exposed at least 25 minutes before it is read.

ATTACHMENT 9.3
PAGE 2 OF 2

MEASUREMENT OF WET BULB GLOBE TEMPERATURE

(Continued)

3. A stand should be used to suspend the three thermometers so that they do not restrict free air flow around the bulbs and the wet-bulb and globe thermometer are not shaded.

4. It is permissible to use any other type of temperature sensor that gives a reading similar to that of a mercury thermometer under the same conditions.

5. The thermometers must be so placed that the readings are representative of the employee's work or rest areas, as appropriate.

Once the WBGT has been estimated, employers can estimate workers' metabolic heat load and use the ACGIH method to determine the appropriate work/rest regimen, clothing, and control equipment to use to control the head exposures of workers in their facilities.

ATTACHMENT 9.4
PAGE 1 OF 1

HEAT STRESS SYMPTOMS AND TREATMENT

Employee shall be aware of the symptoms of heat related illness as follows:

1. Heat Stroke: Red, hot, dry skin, lack of perspiration, high body temperature, rapid pulse, dizziness, confusion, delirium, coma, death. Medical emergency.

   Treatment: Rapid cooling of the body is vital and immediate medical follow-up is required.

2. Heat Exhaustion: Skin is pale, cool and moist, heavy sweating, dizziness, fainting, headache, nausea, weakness.

   Treatment: Rest in a cool place and provide water.

3. Heat Cramps: Involuntary constrictions of muscles due to loss of salt.

   Treatment: Water intake with salt supplement as recommended by a doctor or nurse.

4. Heat Collapse: Fainting due to excessive pooling of blood in the extremities reducing oxygen supply to the brain.

5. Heat Rash: Red papules appear on skin where clothing is restrictive.

6. Heat Fatigue: Impaired performance of skilled sensorimotor, mental or vigilance jobs.

ATTACHMENT 9.5
PAGE 1 OF 1

COLD STRESS SYMPTOMS

1. Vasoconstriction: Reduced peripheral circulation: Increased flow to vital organs.

2. Frostbite: Grayish/yellow skin, pain in extremities which often subsides, intense cold and numbness.

3. Hypothermia: Shivering, numbness, drowsiness, muscular weakness, low internal body temperature, unconsciousness, death.

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-305	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 7

TITLE: SANITATION

APPROVAL

ES&H MANAGER — DATE: 081700

SITE QUALITY MANAGER — DATE: 08-17-00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBITS 7

1.0 PURPOSE

1.1 The objective of this procedure is to provide Morrison Knudsen (MK) guidelines for compliance with sanitation requirements.

2.0 SCOPE

2.1 This procedure is applicable to all MK activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.141, Sanitation

29 CFR 1926.51, Sanitation

3.2 Reference Documents

3A-102, ESH Surveillances

3A-306, Drinking Water for Portable Containers

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

4.0 DEFINITIONS

4.1 Hazardous Material: Any substance or mixture of substances having properties capable of producing adverse effects on the health and safety or the environment of a human being.

4.2 Nonpotable Water: Water that does not meet the quality standards mandated by the State of Idaho. Nonpotable water shall not be used for washing of the person, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms.

4.3 Potable Water: Water, which meets the quality standards prescribed by the State of Idaho (16.01.08). Only potable water shall be used for washing of the person, washing of foods, washing of cooking or eating utensils, washing of food preparation or processing premises, and personal service rooms.

4.4 Toilet Facility: A room with fixtures maintained for the purpose of defecation, urination, or both. The area shall be maintained in a sanitary condition.

4.5 Toxic Material: A material in concentration or amount which exceeds the applicable limit established by a standard, such as 29 CFR 1910.1000 or the American Conference of Governmental Industrial Hygienist (ACGIH) "TLV's Threshold Limit Values and Biological Exposure Indices", or in the absence of an applicable standard, which is of such toxicity so as to constitute a recognized hazard that is causing or is likely to cause death or serious harm.

4.6 Washing Facility: A room with a fixture maintained for cleansing the all of or a part of the body with soap and water. The area shall be maintained in a sanitary condition.

5.0 RESPONSIBILITIES

5.1 Environment, Safety, and Health (ESH) Manager: Responsible for assuring compliance with this procedure.

5.2 General Superintendent and other Supervisory Personnel: Responsible for:

5.2.1 Overseeing day-to-day operations to ensure compliance with the provisions of this procedure.

5.2.2 Requesting assistance from the ESH Department in evaluation and interpretation of sanitation requirements as necessary.

6.0 REQUIREMENTS

6.1 Waste Disposal

6.1.1 Any receptacle used for perishable solid or liquid waste or refuse shall be so constructed that it does not leak and may be thoroughly cleaned and maintained in a sanitary condition. Such a receptacle shall be equipped with a solid tight-fitting cover, unless it can be maintained in a sanitary condition without a cover. This requirement does not prohibit the use of receptacles, which are designed to permit the maintenance of a sanitary condition without regard to the aforementioned requirements.

6.1.2 All sweepings, solid or liquid wastes, refuse, and garbage shall be removed in such a manner as to avoid creating a menace to health and as often as necessary or appropriate to maintain the place of employment in a sanitary condition.

6.2 Vermin Control

6.2.1 Every enclosed workplace shall be so constructed, equipped, and maintained, so far as reasonably practicable, as to prevent the entrance or harborage of rodents, insects, and other vermin. A continuing and effective extermination program shall be instituted where their presence is detected.

6.3 Potable Water

6.3.1 Potable water shall be provided in all places of employment.

6.3.2 Drinking water provided in portable water containers shall conform to procedure 3A-306, "Drinking Water in Portable Containers".

6.3.3 Connections to potable water supplies are prohibited unless a backflow prevention device is installed prior to making the connection.

6.4 Nonpotable Water

6.4.1 Outlets for water from non-potable sources shall be posted or otherwise marked in a manner that will indicate clearly that the water is not to be used for drinking, or other improper usages.

6.4.2 Nonpotable water may be used for cleaning work premises, other than food processing and preparation areas and personal service rooms, provided that this nonpotable water does not contain concentrations of chemicals, fecal coliform, or other substances which could create unsanitary conditions or be harmful to employees.

6.4.3 There shall be no cross connection, open or potential, between potable and nonpotable water supply systems.

6.5 Toilet Facilities at Construction Jobsites

6.5.1 The requirements of this section do not apply to mobile work crews having transportation readily available to nearby toilet facilities.

6.5.2 An adequate number of toilet facilities will be provided for employees as indicate below:

- 20 < workers - 1 toilet
- 20 – 200 workers - 1 toilet and 1 urinal per 40 workers
- 200 > workers or more - 1 toilet and 1 urinal per 50 workers

6.5.3 Where sanitary sewers are not provided, one of the following facilities, unless prohibited, shall be provided:

- Chemical toilets, or
- Recirculating toilets, or
- Combustion toilets.

6.5.4 Under temporary field conditions, provisions shall be made to ensure that at least one toilet facility is available.

6.5.5 Provisions for routinely servicing and cleaning all toilets and disposing of the sewage shall be established before placing toilet facilities into operation. This shall include removal of any graffiti or other such writing, pictures, drawings, etc. which an employee may find objectionable.

6.5.6 Toilet facilities in MK buildings shall conform to requirements specified in 29 CFR 1910.141(c)(l).

6.6 Washing Facilities

6.6.1 Adequate washing facilities will be provided for employees engaged in the application of paints, coating, herbicides, or insecticides, or in other operations where contaminants may be harmful to the employees. Such capability shall be in near proximity to the worksite and shall be so equipped as to enable employees to remove such substances. The area shall be maintained in a sanitary condition.

6.6.2 Each washing facility within a building shall be provided with hot and cold running water, or tepid running water, and shall be maintained in a sanitary condition.

6.6.3 Hand soap or similar cleansing agents shall be provided.

6.6.4 Individual hand towels, of cloth or paper, or warm air blowers convenient to the facility shall be provided for drying purposes.

6.7 Change Rooms

6.7.1 Whenever employees are required to wear protective clothing because of the possibility of contamination with toxic materials, change rooms equipped with storage facilities for street clothes and separate storage facilities for the protective clothing shall be provided.

6.8 Consumption of Food and Beverage

6.8.1 This paragraph shall apply only where employees are permitted to consume food or beverages, or both, on the premises.

6.8.2 No employee shall be allowed to consume food or beverages in a toilet room nor in any area exposed to a toxic and/or hazardous material. Designated areas for eating and drinking will be provided as necessary.

6.8.3 Receptacles constructed of smooth, corrosion resistant, easily cleanable, or disposable materials shall be provided and used for the disposal of waste food. The number, size, and location of such receptacles shall encourage their use and not result in overfilling. They shall be emptied not less frequently than once each working day, and shall be maintained in a clean and sanitary condition. Receptacles shall be provided with a solid tight-fitting cover unless sanitary conditions can be maintained without use of a cover.

6.8.4 No food or beverages shall be stored in toilet rooms or in an area exposed to a toxic material.

6.8.5 Inspections and Surveillances: Inspections and Surveillances shall be conducted in accordance to procedure 3A-102, "ESH Surveillances".

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-306	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 5

TITLE: DRINKING WATER IN PORTABLE CONTAINERS

APPROVAL

ES&H MANAGER — DATE: 081700

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3
2.0 SCOPE 3
3.0 REFERENCES 3
4.0 DEFINITIONS 3
5.0 RESPONSIBILITIES 3
6.0 REQUIREMENTS 4
7.0 EXTERNAL INTERFACE 5
8.0 RECORDS 5
9.0 ATTACHMENTS 5
10.0 EXHIBITS 5

1.0 PURPOSE

1.1 This procedure establishes requirements to ensure employees are provided a safe drinking water supply dispensed from portable containers.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

29 CFR 1926.51, Sanitation

3.2 Reference Documents

DOE Order 440.1A, Worker Protection Management for DOE Federal and Contractor Employees

Idaho Department of Health and Welfare, Division of Community Programs, Title 1, Chapter 8, Idaho Regulations for Public Drinking Water.

4.0 DEFINITIONS

4.1 Potable Water: Water, which meets the quality standards prescribed by the State of Idaho (IDAPA 16.01.08).

4.2 Approved Source: Any building faucet designated by the INEEL M&O contractor for drinking water.

4.3 Air Gap: Free air space distance between the water outlet tap and the top of the sink or basin.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for assuring compliance with this procedure.

5.2 General Superintendent and other Surpervisory Personnel: Responsible for ensuring compliance with and implementation of this procedure.

5.3 Employee: Responsible for complying with this procedure.

6.0 REQUIREMENTS

6.1 Filling Containers

6.1.1 Portable water containers shall be checked prior to filling to ensure that the inside of the container is free from dirt, food, or other contaminants.

6.1.2 Containers shall be triple rinsed prior to filling. The water used to rinse the containers may be dumped into the sanitary sewer system.

6.1.3 Containers shall **ONLY** be filled from approved water sources.

6.1.4 All containers shall be equipped with a lid to keep foreign matter out of the container.

6.1.5 A clean stirring utensil shall be used whenever mixing flavored drink mix (electrolyte replacement solutions such as "Gatorade") with water. Hands shall never be used to mix flavored solutions.

6.1.6 A clean ice scoop shall be used whenever ice is taken from an ice-maker and placed in portable drinking water containers. To prevent contamination of ice, the container shall never be placed inside the ice machine.

6.1.7 Portable water containers shall be emptied and refilled on a daily basis.

6.1.8 Containers used for drinking water shall only be used for that purpose and be labeled, "POTABLE WATER" or "DRINKING WATER".

6.1.9 Use of a common drinking cup is prohibited.

6.1.10 Disposable cups shall be kept in their original carton or suitable dispenser.

6.1.11 Containers shall not be opened to obtain ice. They shall remain closed except during filling or cleaning.

6.1.12 A covered trash receptacle will be provided at each drinking water location.

6.2 Approved Sources of Drinking Water

6.2.1 All temporary water outlets on the AMWTP site are connected to the Radioactive Waste Management Complex (RWMC) potable water system, and are approved sources of drinking water.

6.3 Cleaning Containers

6.3.1 When flavored drink mix is used, the container shall be cleaned daily with mild dishsoap and hot water. This solution can be discarded into the sanitary sewer.

6.3.2 Containers that have become soiled shall be cleaned and sanitized with common household bleach. Mix one teaspoon of liquid chlorine bleach to two gallons of water and let stand for 15 minutes inside the container. This solution yields 50 parts per million (ppm) of residual chlorine to disinfectant the containers. This solution shall be allowed to stand overnight prior to dumping into a sanitary sewer line.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor shall notify all users of RWMC drinking water whenever the maximum contaminant levels are exceeded and/or when water quality standards are not maintained as specified by Idaho Department Health and Welfare.

8.0 RECORDS

8.1 Water monitoring records will be maintained by the ESH Department as non-QA records, and in accordance with the requirements found in Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-307	EFFECTIVE DATE: September 1, 2000
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TITLE: BLOODBORNE PATHOGEN PROTECTION

APPROVAL

ES&H MANAGER	081700 DATE
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 5

8.0 RECORDS 6

9.0 ATTACHMENTS 6

10.0 EXHIBITS 6

1.0 PURPOSE

1.1 The purpose of this procedure is to specify bloodborne pathogen exposure control for personnel engaged in work or responding to medical emergencies.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

2.2 Employees are not normally required, as part of their regular job duties, to perform emergency care or come in contact with other potential exposures to bloodborne pathogens such as body fluids. However, those employees who are trained in standard first aid methods and/or adult cardiopulmonary resuscitation are encouraged to render first aid care in case of an accident or illness.

2.3 This procedure will address standard practices for those MK employees who on occasion render first aid care, or may have the opportunity to be exposed to bloodborne pathogens.

3.0 REFERENCES

3.1 Source Documents

29 CFR 1910.1030, Bloodborne Pathogens

3.2 Reference Documents

NONE

4.0 DEFINITIONS

4.1 Bloodborne pathogens: A bacteria or viral disease producer present in blood or body fluids.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for managing AMWTP site bloodborne pathogen protection program.

6.0 REQUIREMENTS

6.1 All employees whose assigned job duties include the potential of exposure to bloodborne pathogens will be provided with the following training and information:

6.1.1 An explanation of OSHA Standard Part 1910.1030 and where the employee can obtain a copy of the text.

6.1.2 A general explanation of the epidemiology, systems of bloodborne diseases, and the modes of transmission of bloodborne pathogens.

6.1.3 Where this written control procedure can be located.

6.1.4 An explanation of the basis for selecting personal protective equipment (PPE), proper usage, location, removal, handling, decontamination and disposal of PPE.

6.1.5 The limitations of safe work practices, engineering controls and PPE.

6.1.6 Information on Hepatitis B Virus vaccinations.

6.1.7 Procedures to follow if an exposure occurs, including reporting and medical follow-up.

6.1.8 Information on post-exposure evaluation and follow-up required in the event of an exposure.

6.1.9 Warning signs, labels, and color coding.

6.2 MK employees trained in First Aid and/or CPR will receive information on the OSHA Bloodborne Pathogen Standard as part of their First Aid and/or CPR training.

6.3 MK assumes that all human blood and human body fluids contain infectious agents (bloodborne pathogens). Any exposures to the same will be treated as if infected.

6.4 Engineering and work practice controls are the primary methods used to prevent occupational transmission of bloodborne pathogens. With the extreme remote possibility of employees being pierced with sharps, such as needles, work practice controls will be the primary method to protect against bloodborne pathogens.

6.4.1 The following work practices are mandatory:

6.4.1.1 Disposable rubber or latex gloves and disposable paper masks or equivalent will be worn when handling any body fluid such as urine for bioassay, cleaning blood stains, performing emergency first aid or cleaning the lavatories.

6.4.1.2 Hands will be washed with soap and water immediately after any of the actions above is completed.

6.4.1.3 Disposable gloves and masks will be disposed of in a leak proof approved container immediately after usage.

6.4.1.4 Any employee exposure must be reported immediately to the ESH Manager or the company nurse. The employee will be offered the Hepatitis B Virus vaccination series.

6.5 PPE will be used or made available for the times engineering controls and work practices are not feasible, such as first aid care. The following PPE will be stocked in first aid kit stations:

6.5.1 Disposable latex or equivalent gloves and paper face masks.

6.5.2 Microshield or a similar CPR protective device.

6.5.3 Other PPE such as eye protection and head protection is standard equipment at all field work locations.

6.6 Contaminated PPE shall be removed prior to leaving the work area and/or immediately after becoming contaminated.

6.7 The following housekeeping procedures are mandatory to provide a clean and sanitary work place:

6.7.1 Clean and decontaminate all equipment and work surfaces that have been contaminated with blood and other potentially infectious materials.

6.7.2 Lavatories must be cleaned and disinfected using the required PPE.

6.7.3 Discard all wastes according to federal, state and local regulations.

7.0 EXTERNAL INTERFACE

NONE

8.0 RECORDS

8.1 Records will be maintained in accordance with the requirements identified in Morrison Knudsen Records Management Program. Records regarding the bloodborne pathogen program will be maintained as non-QA records.

8.2 MK will maintain a complete, confidential record of any occupational exposure. The record will contain the following information:

8.2.1 Employees name and other personal identifiers.

8.2.2 Employees Hepatitis B Virus vaccination status, including dates and any medical records related to the employee's ability to receive vaccinations.

8.2.3 Results of examinations, medical testing, post exposure evaluation, and follow-up procedures, Health care professional's written opinions, and a copy of the information provided to the health care professional.

8.3 Training records must include training dates/specific job classifications, content or summary of training, names and qualifications of trainer, and the names and job titles of trainees.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-401	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 11

TITLE: RCRA HAZARDOUS WASTE MANAGEMENT

APPROVAL

ES&H MANAGER — DATE: 08 17 00

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 10

8.0 RECORDS 10

9.0 ATTACHMENTS 11

10.0 EXHIBITS 11

1.0 PURPOSE

1.1 This procedure provides instructions and assigns personnel responsibilities to assure consistency and regulatory compliance for the management of hazardous waste.

2.0 SCOPE

2.1 This procedure applies to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 260 *et seq. Hazardous Waste Management System: General*

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, July 1998

Morrison Knudsen Environmental Policy and Guidance Manual, July 1998

3A-405, Waste Characterization

DOE Order 5400.1, General Environmental Protection Program

4.0 DEFINITIONS

4.1 90-Day Temporary Accumulation Area (TAA): A designated storage area for large quantity generators (LQG) managed by the INEEL M&O contractor in which hazardous waste can be stored without a Resource Conservation and Recovery Act (RCRA) permit for up to 90 days.

4.2 Acute Hazardous Waste: Extremely hazardous wastes identified by the EPA (p and f lists) as specifically listed in 40 CFR 261.30, 40 CFR 261.31, and 40 CFR 261.33.

4.3 Generator: Any person, by site, whose act or process produces hazardous waste or whose act first causes a hazardous waste to become subject to regulation. In general, the term "Generator" refers to a facility that produces a hazardous waste. As such, the DOE would be considered the generator at DOE facilities and a DOE

representative will certify and sign all regulatory submittals and shipping documentation.

4.4 Hazardous Waste: A discarded, abandoned, or rejected substance or material determined to be capable of posing an unreasonable risk to health, safety or the environment. Such materials are uniquely listed or exhibit hazardous characteristics as outlined by the Environmental Protection Agency, Department of Transportation, and Occupational Safety and Health Administration, other federal agencies, or state agencies. The waste generating process (i.e., source of the waste) is commonly referred to as the "waste stream."

4.5 Hazardous Waste Satellite Accumulation Area (SAA): An initial accumulation point near the point of generation of a hazardous waste where a generator may collect up to 55 gallons of hazardous waste or one quart of acutely hazardous waste.

4.6 Hazardous Waste Storage Facility: Hazardous waste storage facilities operated by the INEEL M&O in accordance with an approved RCRA permit.

4.7 Material Safety Data Sheet (MSDS): Documentation developed for each chemical product by the manufacturer (or importer) that describes physical/chemical hazards. The MSDS provides detailed information about hazardous ingredients, physical and health hazard data, special precautions and protection and spill or leak procedures. Material Safety Data Sheets are maintained in the Environment, Safety, and Health (ESH) Department.

5.0 RESPONSIBILITIES

5.1 ESH Manager is responsible for supervising the AMWTP construction site Hazardous Waste Management Program.

5.2 Environmental Engineer: Responsible for administration of the day-to-day hazardous waste activities at the AMWTP construction site. Duties include coordinating training with the Training Manager and operations with the General Superintendent; maintaining appropriate documentation, markings, and labels; ensuring proper handling, segregation, and interim storage; and routine inspection of the MK accumulation area.

5.2.1 The Environmental Engineer is designated as the primary Accumulation Area Attendant.

5.2.2 The following individuals are designated alternate Accumulation Area Attendants:

5.2.2.1 Safety Supervisor

5.2.2.2 Safety Specialist

5.2.2.3 Superintendents, supervisors, or Foremen selected by the General Superintendent, ESH Manager, and Environmental Engineer.

5.3 Accumulation Area Attendant (Primary and Alternate): Responsible for compliance and implementation of the requirements of this procedure at the MK SAA. Duties include acceptance or rejection of hazardous waste delivered for storage; coordination of shipments of hazardous waste; maintenance of the SAA and ensuring deficiencies are corrected; initiating transfer requests of containers to a TAA or TSD (Temporary Storage and Disposal) facility just before 55 gallons of hazardous wastes or one quart of acutely hazardous wastes are collected at the SAA; logging in wastes when placed in or added to a container at the SAA; and performing weekly inspections of satellite areas.

5.4 General Superintendent: Responsible for ensuring hazardous waste generation is minimized, and that all such waste deliveries to the MK SAA are coordinated with the Accumulation Area Attendant, including providing all information necessary to store the waste.

6.0 REQUIREMENTS

6.1 General Requirements

6.1.1 The Environmental Engineer shall ensure the following information is collected for each waste stream:

6.1.1.1 Point of waste production

6.1.1.2 Quantities and potential variations in waste production rate

6.1.1.3 Potential locations for waste storage SAAs and TAAs

6.1.1.4 Assigned SAA or TAA attendent(s)

6.1.1.5 Waste minimization efforts

6.1.1.6 Waste packaging and labeling requirements

6.1.1.7 Hazardous waste characteristics to include the potential for contamination and non-hazardous waste constituents

6.1.2 When the information noted above is obtained and it is determined that the waste is classified as a hazardous waste, site requirements which govern hazardous waste satellite accumulation areas shall apply. Hazardous waste classification will be in accordance with procedure 3A-405, "Waste Characterization."

6.1.3 The Environmental Engineer shall review the pertinent waste stream information and establish a suitable hazardous waste satellite accumulation area (SAA). The Environmental Engineer shall notify the INEEL M&O contractor of the appropriate site of new waste streams in order to approve the proposed SAA.

6.1.4 The Environmental Engineer should be contacted if any questions arise or problems develop during waste classification, hazardous waste shipments, or if conditions are encountered which are not specifically addressed by this procedure.

6.2 Hazardous Waste Satellite Accumulation Area (SAA)

6.2.1 The SAA should be as close as practicable to the point where hazardous waste is produced, with adequate provisions for material/container handling and transportation.

6.2.2 A visible boundary shall be installed to define the storage area (e.g., chains, tape, ribbon, gate).

6.2.3 At least one sign containing the following information shall be installed:

6.2.3.1 Hazardous waste satellite accumulation area

6.2.3.2 Construction location

6.2.3.3 Primary attendant and phone number

6.2.3.4 Alternate attendant and phone number

6.2.3.5 Personal protective equipment requirements, as applicable

6.2.3.6 Person(s) to be notified in case of a spill

6.2.4 At least one "NO SMOKING" sign shall be installed.

6.2.5 For liquid waste, the waste accumulation container shall be placed within a secondary containment (e.g., dike, drum or sandbags). The containment

system must have sufficient capacity to contain 110 percent of the volume of the container. Any existing floor drains shall be plugged to avoid releases to the environment, as required.

6.2.6 The Environmental Engineer and the responsible attendant shall ensure that each SAA is designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion or any unplanned sudden or non-sudden release of hazardous waste constituents to the air, soil, or surface water which could threaten human health or the environment.

6.2.7 A copy of the spill prevention, control and countermeasure plan(s) shall be available for each SAA or TAA.

6.3 Hazardous Waste Containers

6.3.1 The containers shall be compatible with the waste being stored (both structural material and internal liner) and appropriately labeled and marked.

6.3.2 The containers shall be compatible with available handling and transportation equipment.

6.3.3 The containers shall conform to DOT regulations for hazardous wastes which are to be transferred to the INEEL M&O contractor for subsequent off-site disposal. Generally DOT IA1 drums are used for liquids and DOT IA2 drums are used for sludges and solids.

6.3.4 If the containers are to be shipped directly to the INEEL M&O contractor, the containers shall conform to permitted facility requirements for hazardous wastes. Current container requirements shall be verified through the INEEL M&O contractor.

6.3.5 The containers shall be in good condition with no visible leaks, defects, or severe rusting.

6.3.6 The containers shall have removable heads, caps, or plugs to facilitate the filling/accumulation process. Containers are to remain closed except when adding or removing waste.

6.3.7 The containers shall be covered (e.g., drum covers) when stored outdoors and provisions be made to prevent freezing.

6.3.8 All containers shall be kept closed during storage.

6.4 Hazardous Waste Container Labels

6.4.1 Each container within a SAA shall be properly labeled. Labels must have the following information:

6.4.1.1 Hazardous Waste

6.4.1.2 Federal Law Prohibits Improper Storage or Disposal

6.4.1.3 Waste Identification (e.g., paint solvents)

6.4.1.4 Waste Characteristics and EPA hazardous waste ID number (e.g., ignitable, D001)

6.5 Housekeeping

6.5.1 The responsible attendant shall coordinate housekeeping within the storage area with the General Superintendent.

6.6 Full Containers

6.6.1 The responsible attendant shall notify the Environmental Engineer when the container is 80 percent full.

6.6.2 The responsible attendant shall date the container(s) when the quantity limit has been accumulated or the waste accumulation has stopped.

6.6.3 The responsible attendant shall complete the paperwork necessary to transfer the hazardous waste to the INEEL M&O contractor 90-Day Temporary Accumulation Area or to the Hazardous Waste Storage within three days of when the container is full.

6.7 Logging of Wastes

6.7.1 When a container is placed in the SAA or a waste is added to a container in the SAA, the responsible attendant will document the information in a log maintained at the satellite accumulation area. The following data is required for logging wastes:

6.7.1.1 Material description of waste placed in SAA.

6.7.1.2 Date material placed in SAA.

6.7.1.3 Amount of material placed in SAA.

6.7.1.4 Container number in which waste was placed

6.7.1.5 Signature or initials of attendant

6.8 Inspections

6.8.1 The responsible attendant shall conduct, at a minimum, weekly inspections of each SAA. These inspections are intended to identify potential problems and correct them before they affect human health or the environment. A Weekly Inspection Report shall include the acceptance or rejection of each attribute, date of inspection, actions taken to remedy rejected items, and the signature of the responsible attendant. The following inspections shall be performed and documented:

6.8.1.1 Staging Area

6.8.1.1.1 Location

6.8.1.1.2 Warning Signs

6.8.1.1.3 Area Definition

6.8.1.1.4 Evidence of leaks or spills

6.8.1.1.5 Containment Integrity

6.8.1.2 Container Labels

6.8.1.2.1 Hazardous waste label

6.8.1.2.2 Hazard class label

6.8.1.3 Containers

6.8.1.3.1 Deformities, corrosion, or defects

6.8.1.3.2 Evidence of leaks or spills

6.8.1.3.3 Proper storage and containment

6.8.1.3.4 Closed lids and caps

6.8.1.4 Housekeeping

6.8.1.4.1 Adequate aisle space

6.8.1.4.2 Clean and orderly area

6.8.1.5 Preparedness and Prevention

6.8.1.5.1 Secondary containment for liquid wastes

6.8.2 The responsible attendant should correct noted inspection deficiencies at the time of the inspection when practicable (e.g., providing container labels). All deficiencies shall be noted on the inspection report and a copy provided to the Environmental Engineer for coordination of corrective action. Follow-up shall be performed as required to verify satisfactory correction of deficiencies.

6.9 Closure of Satellite Accumulation Area

6.9.1 The SAA attendant shall notify the Environmental Engineer when the waste stream has stopped and the SAA is to be closed. Reusable containers, signs, and labels should be returned to the Environmental Engineer.

6.9.2 When the SAA is to be closed, the Environmental Engineer shall assess the area for potential contamination. If necessary, coordinate soil sample collections and appropriate testing to characterize the affected area (contaminated soil will be excavated and appropriately handled).

7.0 EXTERNAL INTERFACE

7.1 MK will request INEEL M&O contractor technical guidance for the handling, testing, and collection of hazardous wastes as required.

7.2 MK will request INEEL M&O contractor support relative to a fire, explosive, or other incident requiring implementation of the INEEL M&O contractor's contingency plan.

7.3 MK will request INEEL M&O contractor waste treatment, storage, and/or disposal services per Tri-Party Memorandum of Agreement.

8.0 RECORDS

8.1 Training records shall be maintained by the Training Manager.

8.2 Weekly Inspection Reports, logs, and other accumulation area and waste documention shall be maintained as non-permanent records by the ESH Department.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-402	EFFECTIVE DATE: September 1, 2000
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TITLE: NON-HAZARDOUS WASTE MANAGEMENT

APPROVAL

ES&H MANAGER — DATE: 08/17/00

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 6

6.0 REQUIREMENTS 6

7.0 EXTERNAL INTERFACE 11

8.0 RECORDS 11

9.0 ATTACHMENTS 12

10.0 EXHIBITS 12

1.0 PURPOSE

1.1 This procedure defines Morrison Knudsen (MK) landfill and recycling procedures for non-radioactive and non-hazardous wastes in accordance with the Idaho National Engineering and Environmental Laboratory (INEEL) "Landfill Operations Waste Acceptance Criteria."

2.0 SCOPE

2.1 This procedure applies to all MK construction activities and will be used for identifying, segregating, collecting, recycling, and disposing of all non-radioactive and non-hazardous wastes at the Advanced Mixed Waste Treatment Project (AMWTP), INEEL.

3.0 REFERENCES

3.1 Source Documents

40 CFR 243, Guidelines for the Storage and Collection of Residential, Commercial, and Industrial Solid Waste

40 CFR 244, Solid Waste Management Guidelines for Beverage Container

40 CFR 246, Source Separation for Materials Recovery Guidelines

40 CFR 261, Identification and Listing of Hazardous Waste

40 CFR 268, Land Disposal Restrictions

3.2 Reference Documents

3A-401, RCRA Hazardous Waste Management

3A-404, Waste Minimization and Pollution Prevention Awareness

INEEL Landfill Operations Waste Acceptance Criteria, DOE-ID 10334, September 1992

Idaho Department of Health and Welfare Rules, Title 0I, Chapter 06, Solid Waste Management Rules and Standards

4.0 DEFINITIONS

4.1 Bulky Waste: Large or heavy non-hazardous and non-radioactive materials that require heavy equipment (e.g., asphalt, gravel, concrete).

4.2 Cold Waste: Non-radioactive and non-hazardous waste materials.

4.3 Conditional Item: A waste item that can be disposed of at the sanitary landfill if the specified packaging conditions are met; e.g., crushed and drummed fluorescent light bulbs.

4.4 Empty Container: A container that has held any non-hazardous waste is empty if no free liquids remain in container.

4.4.1 A container that has held any hazardous waste, except compressed gases or acute hazardous waste, is empty if:

- All wastes have been removed using practical methods (i.e., pouring, pumping, etc.); and
- No more than 2.5 centimeters (1 inch) of residue remains on the bottom of the container or inner liner, or
- No more than 3% by weight of the total capacity of the container remains if the container is less than or equal to 110 gallons, or no more than 0.3% by weight of the total capacity of the container remains if the container is greater than 110 gallons. For further clarification, see 40 CFR 261.7.

4.4.2 A compressed gas hazardous waste container is empty when the inside pressure approaches that of local atmospheric pressure. An acute hazardous waste container is empty if it has been triple rinsed using a solvent capable of removing the product. For further clarification, please see 40 CFR 261.7.

4.5 Excess Material: Material no longer needed for its intended purpose, but which can be used by others in its existing state (e.g., 8 ft., 2" x 4" lumber).

4.6 Free Liquid: A substance that fails the paint filter test defined by Method 9095 as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA SW-846.

4.7 Generator: Any Subcontractor or entity that generates solid and/or hazardous waste.

4.8 Hazardous Wastes: Wastes that are listed or exhibit any of the characteristics as outlined in 40 CFR 261.

4.9 Landfill Operations (LO): An entity established through contractual agreement with DOE to manage and oversee handling and disposal of INEEL non-hazardous and non-radioactive solid wastes.

4.10 Landfill Operations Waste Acceptance Criteria (WAC): Procedures used to identify, verify, and direct disposal of solid waste. The Waste Acceptance Criteria also establishes authority, responsibility and administrative controls for the management of INEEL's Landfill.

4.11 Non-standard Shipment: A waste shipment to the sanitary landfill containing questionable or conditional items that meet landfill requirements as stated in the Landfill Operations Waste Acceptance Criteria (e.g., asbestos, crushed light tubes). A Waste Certification Statement is necessary for all non-standard shipments.

4.12 Off-Normal Operations: An occurrence that identifies restricted landfill disposal item(s) at the transfer station or landfill that could have an adverse effect on safety and health of personnel and/or the environment. The situation causes immediate closure of the transfer station or landfill and directs all clean up responsibilities/costs to the generator.

4.13 Prohibited Items: Waste items excluded from sanitary landfill disposal.

4.14 Questionable Items: Wastes that can be disposed of in a sanitary landfill (via dumpster) if packaging conditions are met (e.g, empty aerosol cans).

4.15 Radioactive Material: Material that spontaneously emits ionizing radiation and whose specific activity is greater than 0.002 microcuries per gram (µCi/g). Radioactive material is often referred to as being radionuclide-contaminated.

4.16 Recyclable Material: Material collected for the purpose of reprocessing into a new product. The material is marketed to an off-site recycler.

4.17 Sanitary Landfill: A permitted site where cold waste (standard or non-standard shipments) is placed and buried for ultimate disposal in conformance with Landfill Operations and Recycling Center Waste Acceptance Criteria.

4.18 Solidification: A process used to stabilize free liquids through the use of cement or similar bonding products to produce a concrete-like product. The use of "floor dry" or "kitty litter" for solidification is no longer an accepted practice.

4.19 Solid Waste: Discarded materials to include radioactive, hazardous, or cold wastes.

4.20 Standard Shipment: A waste shipment to the transfer station or sanitary landfill that contains non-questionable, non-hazardous, non-radioactive domestic solid waste (e.g., glass, paper, plastics, metal). A Waste Certification Statement is not required.

4.21 Transfer Station: A designated and controlled site where standard and non-standard shipments of solid wastes are accumulated for later shipment to a sanitary landfill.

4.22 Waste Certification Statement: A form required for all non-standard shipments certifying that conditions have been satisfied to allow sanitary landfill disposal.

5.0 RESPONSIBILITIES

5.1 Designated MK Representative: Individual selected by MK ESH Manager to organize and coordinate MK solid waste disposal activities within the INEEL.

5.2 INEEL M&O Contractor: Responsible for waste leaving their area, to include the immediate clean up and decontamination of hazardous and/or radioactive materials at waste operations sites. Manage transportation of non-routine waste deliveries and/or special shipments to the landfill. INEEL M&O contractor also ensures "Landfill User's Permit" has been obtained from Landfill Operations and "Waste Certification Statements" accompany all non-standard shipments. The INEEL M&O contractor will ensure that the "Waste Acceptance Criteria Checklist" for the INEEL Landfill is completed as necessary.

5.3 Equipment Operators: Selected by INEEL M&O contractor (or designees) to transport and deliver waste to the sanitary landfill. Must complete the generator portion of "Industrial and Sanitary Solid Waste Log" for each shipment.

5.4 Employees: Responsible for following the requirements of this procedure.

6.0 REQUIREMENTS

6.1 Training

6.1.1 All personnel, regardless of position, will receive an orientation to this procedure during General Employee Training.

6.2 Waste Identification and Characterization

6.2.1 All solid waste generated by employees or Subcontractors of MK shall be identified as radioactive, hazardous, or cold waste.

6.2.2 Radioactive materials shall not be mixed with other waste. Disposal of radioactive materials will be conducted by the INEEL M&O contractor.

6.2.3 Wastes identified as hazardous wastes shall not be mixed with other waste. Disposal of hazardous waste shall be reported to the INEEL M&O contractor.

6.2.4 Identified cold wastes are acceptable for sanitary landfill disposal and/or recycling and are described below.

6.2.4.1 Disposable, compactible, cold wastes include trash, paper, sweepings, weeds, compost material, office waste, non-hazardous laboratory wastes, etc. Empty aerosol cans and empty hazardous materials containers can also be sent to the sanitary landfill but must meet the guidelines in paragraph 6.2.4.5.

6.2.4.2 Disposable, non-compactible cold wastes include wood and scrap lumber, concrete, masonry materials, scrap metal, asphalt, soil and gravel, etc.

6.2.4.3 Recyclable materials include white paper (copy, laser printer, newsletters, ledger, etc.); colored paper (green engineering graph, internal news bulletin, colored bar computer paper, colored ledger paper, etc.); cardboard (corrugated and flattened); and aluminum cans (emptied and uncrushed beverage cans).

6.2.4.4 Conditional items are wastes that can be disposed of in a sanitary landfill if certain conditions are met. All conditional items are considered non-standard shipments and must be transported to the landfill independent of the standard waste shipments. A "Waste Certification Statement" must accompany the shipment to the disposal site. Conditional items include the following:

6.2.4.4.1 Color-coded materials, such as radiation signs, safety clothing, yellow tape, and other items predominately used for controlling radiation/contamination. These items are to be packaged in clear plastic bags.

6.2.4.4.2 Oil filters from compressors, automobiles, trucks, etc. are conditional items, if drained for 48 hours. Crushing of oil filters may be done in lieu of the 48-hour drainage.

6.2.4.4.3 Empty drums, large wooden boxes, and bulky items are acceptable if plugs and/or lids have been removed. Two days advance notice must be provided to Landfill Operations personnel for large quantities.

6.2.4.4.4 Fluorescent light tubes are acceptable if they have been crushed or pulverized and packaged in 55-gallon drums. These drums must have the lids in place when they arrive at the landfill for disposal.

6.2.4.5 Questionable items are wastes that can be disposed of in a landfill or a dumpster if certain conditions are met. A Waste Certification Statement is not necessary. Questionable items include the following:

6.2.4.5.1 Aerosol cans are acceptable if they are empty of any contents. (Any contents detected in aerosol cans may render the can as a hazardous waste.)

6.2.4.5.2 Spilled virgin petroleum product disposal procedures will be followed as outlined in the "INEEL Landfill Operations Waste Acceptance Criteria."

6.2.4.5.3 Empty hazardous materials containers and pesticide containers are acceptable; the hazard label must be removed, painted over, or marked out. Paint containers must be lead-free, totally empty, and dried. No leaded paint containers are permitted. Empty containers of pesticides, herbicides, insecticides, and rodenticides are acceptable of they have been triple-rinsed and punctured (form 1266 must accompany them). Industrial poisons are not allowed.

6.2.4.5.4 Scrap iron, metal, and lumber are acceptable if they are less than eight feet in length.

6.3 <u>Waste Segregation, Shipment and Disposal</u>

6.3.1 Waste segregation is essential for proper waste handling and volume reduction. Cold waste is to be separated and directed to one of the following categories.

6.3.2 Excess Materials

6.3.2.1 In accordance with procedure 3A-404, "Waste Minimization and Pollution Prevention Awareness," every attempt is made to reuse a material prior to declaring it a waste.

6.3.3 Asbestos Wastes

6.3.3.1 Asbestos or asbestos-contaminated materials shall be declared a conditional waste and segregated from the cold waste stream. Such asbestos waste shall be managed according to 29 CFR 1910.1001, and INEEL Landfill Operations Waste Acceptance Criteria. Asbestos waste generators are responsible for packaging and delivering all double-bagged and labeled asbestos wastes to the INEEL's asbestos pit. Twenty-four hour notice must be provided to INEEL Landfill Operations for large quantity shipments.

6.3.4 Bulky Waste

6.3.4.1 The bulky waste pit is used for disposal of large or heavy non-radioactive and non-hazardous materials that require heavy equipment for handling. Bulky wastes are disposable, non-compactible wastes such as wood, scrap lumber, concrete, masonry items, scrap metal, asphalt, soil and gravel, etc. Every attempt must be made to reduce the volume of waste generated through waste minimization, recycling, and/or excessing.

6.3.5 Solid Sanitary Wastes

6.3.5.1 Solid sanitary wastes consist of disposable compactible wastes, conditional items, or questionable items. Solid sanitary wastes are trucked to either a transfer station for off-site disposal or to the sanitary pit for INEEL on-site disposal. All large or bulky non-standard shipments require 24-hour prior notice to Landfill Operations personnel, and a completed Waste Certification Statement must accompany the waste to the landfill.

6.3.6 Prohibited Waste Materials

6.3.6.1 The following materials may not be disposed of in the INEEL sanitary landfill in accordance with "INEEL Landfill Operations Waste Acceptance Criteria":

- Free liquids exceeding one gallon per container or any quantity of any unknown liquid. No free liquids is the goal.
- There shall be no free liquid quantities of volatile organic compounds.
- Radioactive/contaminated items that exceed the limits outlined in DOE-ID Order 5400.5, "Radiation Protection of the Public and the Environment," Chapter II, Section 5.c (Reference 16). This includes any material enhanced by a DOE Operation.
- "Mixed waste" per DOE 435.1, "Radioactive Waste Management."
- Hazardous wastes, either "listed" or "characteristic," as per 40 CFR 261 (Reference 9).
- Rubber tires (auto, truck); all batteries; printed circuit boards; scrap wood or metal with the longest dimension greater than 8 feet; mercury and sodium vapor lights; PCBs above 25 ppm; lead; lead and chrome-based paints; solder; telephone cable.
- Pesticides, herbicides, insecticides, and rodenticides.
- Medical wastes consisting of medical sharps (anything used to inject, draw blood, cut, or scrape tissue such as needles and scalpels).
- Liquid absorbed into an absorbent material such as kitty litter and floor dry.

  NOTE: Liquids (in excess of one gallon) **must** be solidified using cement or similar product to produce a solid form such as concrete.

6.4 Administrative Controls

6.4.1 Generator of the waste shall meet the minimum requirements in the "INEEL Landfill Operations Waste Acceptance Criteria."

6.4.2 Receipt of noncompliance items at the landfill requires immediate generator response for retrieval and cleanup activities. If the receipt of noncompliance items constitutes an immediate threat to health or safety of personnel or the environment, the landfill will be closed to all traffic and access. The landfill will remain closed until cleanup activities are complete.

All cleanup costs associated with noncompliance items will be borne by the generator.

6.4.3 A Landfill User's Permit shall be completed by all casual transporters, including MK Subcontractors, acknowledging landfill policies and training requirements. (Landfill User's Permits are issued by Landfill Operations.)

6.4.4 Waste operators and equipment operators delivering waste to any of the landfills (asbestos, bulky, and sanitary) shall complete the generator portion of the "Industrial and Sanitary Solid Waste Log," available from Landfill Operations.

6.4.5 Scavenging is not permitted unless directed for official government business and only with authorization from INEEL Safeguards and Security Management, INEEL Property Management, and INEEL Waste Operations Management.

6.4.6 Dumpsters are placed at the generator's site upon request to Landfill Operations. Dumpsters will be located as near building exits as practical, given access and weather conditions. Dumpster relocation requests or dumpster damages are to be reported to Landfill Operations. Generators are prohibited from relocating dumpsters without Landfill Operations concurrence. Vehicles or equipment blocking dumpster access will be reported to the INEEL M&O Contractor.

7.0 EXTERNAL INTERFACE

7.1 Cold waste disposal at the INEEL Landfill and Recycling Center shall be coordinated through the INEEL M&O contractor.

8.0 RECORDS

8.1 Landfill User's Permit

8.2 Industrial and Sanitary Solid Waste Log

8.3 Waste Certification Statement

8.4 The ESH Department will maintain records in accordance with 40 CFR 262 Subpart D, and the Morrison Knudsen Records Management Program as non-QA records.

9.0 ATTACHMENTS

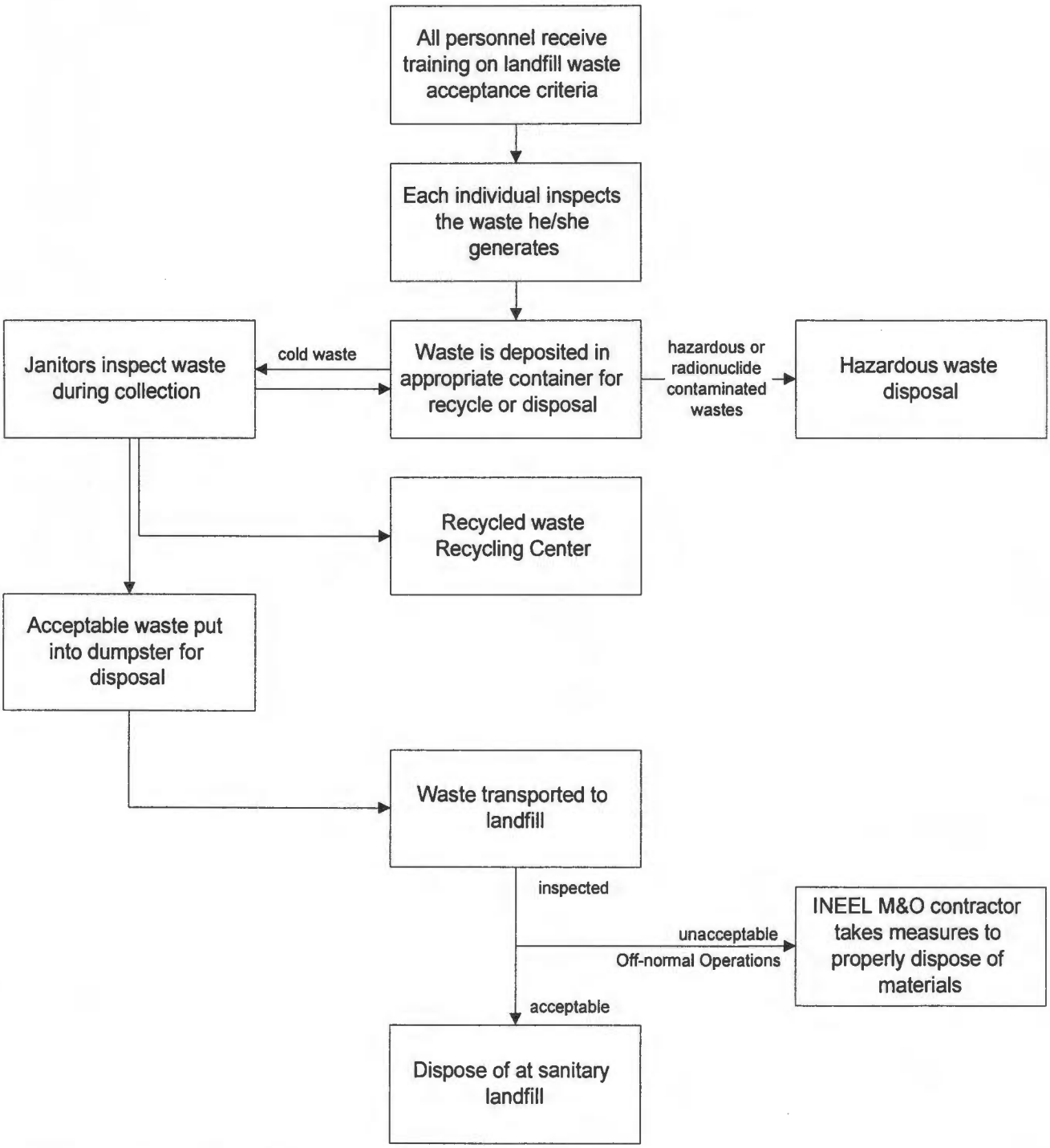
9.1 Solid Waste Monitoring and Flow Diagram

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
PAGE 1 OF 1

Solid Waste Monitoring and Flow Diagram



ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-404	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 10

TITLE: WASTE MINIMIZATION AND POLLUTION PREVENTION AWARENESS

APPROVAL

ES&H MANAGER — DATE: 081700

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8.17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBITS 8

1.0 PURPOSE

1.1 This procedure establishes a program for waste minimization and pollution prevention awareness to comply with Morrison Knudsen's (MK) Waste Minimization Policy.

2.0 SCOPE

2.1 This procedure is applicable to MK construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 243, Guidelines for the Storage and Collection of Residential, Commercial, and Industrial Solid Waste

40 CFR 244, Solid Waste Management Guidelines for Beverage Containers

40 CFR 246, Source Separation for Materials Recovery Guidelines

40 CFR 261, Identification and Listing of Hazardous Waste

40 CFR 262, Standards Applicable to Generators of Hazardous Wastes

3.2 Reference Documents

Morrison Knudsen Environmental Policy and Guidance Manual, March 1996, Section 3

Morrison Knudsen Safety Procedures and Guidelines Manual, October 1995, Section 7

3A-303, Hazard Communication

3A-405, Waste Characterization

Morrison Knudsen Records Management Program, January 1996

4.0 DEFINITIONS

4.1 Process Waste Assessment: Waste streams will be assessed annually to determine areas where the greatest reductions in wastes can be made through product substitution, equipment improvements, process changes, or by other means. Wastes, which cannot be reduced, will be evaluated for potential materials recovery through recycling and reclamation activities.

4.2 Pollution Abatement: Reducing the degree of, or intensity of, or eliminating, pollution.

4.3 Pollution Prevention: Equates with source reduction or elimination of waste per the Pollution Prevention Act of 1990.

4.4 Recycled Material: A material that is used in place of a primary, raw or virgin material in manufacturing a product and consists of materials derived from post consumer use, industrial scrap, and other items, all of which can be used in the manufacture of new products.

4.5 Recycling: Converting solid waste into new products by using the resources contained in discarded materials.

4.6 Risk Reduction Hierarchy: Steps taken in reducing the risks to human health and the environment from pollution. Steps include - prevention or source reduction, recycling, treatment, and finally disposal of treatment residues.

4.7 Site-Generated Waste: Wastes generated during project actions and support activities. Such wastes include contaminated Personal Protective Equipment (PPE), purge and development water, cleaning solvents, paint thinners, decontamination shower water, and used motor oil.

4.8 Waste Minimization: EPA defines as pollution prevention, or source reduction and recycling.

4.9 Waste Minimization Goals: Annual goals should be established to reduce the volume and/or toxicity of waste streams.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for managing the program.

5.2 Environmental Engineer: Responsible for the day-to-day administration of the program, including waste stream assessment and management, disposal, and wastes reduction

5.3 General Superintendent: Responsible for ensuring the proper allocation and use of supplies and materials to minimize waste generation and limit pollution risks.

6.0 REQUIREMENTS

6.1 Waste Analysis

6.1.1 Waste analysis shall be performed as necessary to determine the characteristics of individual waste streams. Assessments shall serve as basis for MK waste minimization and pollution prevention activities at the INEEL.

6.2 Process Waste Assessment

6.2.1 A process waste assessment shall be conducted for each MK waste stream and updated quarterly by the Environmental Engineer.

6.2.2 The process waste assessment will include the following:

6.2.2.1 A listing of all products and raw materials used. It shall include quantities and frequency of delivery.

6.2.2.2 A listing of waste products. The listing shall include quantities, frequency of generation, and current disposal methods.

6.2.3 The assessment will also evaluate existing source reduction and recycling reports:

6.2.3.1 The Toxic Chemical Inventory Report, which is annually updated and included in the site-wide report on an annual basis.

6.2.3.2 The Annual Waste Minimization Reduction Report, which is submitted to BNFL Inc.'s Operations Manager in January for the previous year's waste minimization activities.

6.2.3.3 Quarterly Waste Reduction Reports (Section 6.3).

6.2.4 The process waste assessment shall be documented and the results included on the Quarterly Waste Reduction Report (Section 6.3).

6.3 Quarterly Waste Reduction Report

6.3.1 A "Quarterly Waste Reduction Report" (Exhibit A) shall be completed quarterly by the Environmental Engineer. The report shall be submitted by the 7th of the month following the end of the quarter.

6.3.2 A copy of the "Quarterly Waste Reduction Report" shall be retained on file by MK in accordance Morrison Knudsen Records Management Program.

6.4 Waste Minimization and Pollution Prevention

6.4.1 Based on the information gathered in the process waste assessment, the following shall be done:

6.4.1.1 The Environmental Engineer shall contact the requisitioner, Procurement, the supplier, or the manufacturer as necessary to assess the acceptability of the material for its intended use, suggest a substitute material, place restrictions, or provide guidance on the materials use, handling, and disposal.

6.4.1.2 Procurement shall evaluate materials to be purchased in accordance with Procurement procedures and by:

6.4.1.2.1 Checking with the vendor for substituting materials, which are less toxic or non-toxic.

6.4.1.2.2 Checking with vendors about the possibility of returning damaged or outdated materials for re-stocking.

6.4.1.2.3 Where possible, purchasing materials which have been recycled.

6.4.1.2.4 Where possible, purchasing products packaged in recycled packaging.

6.4.1.3 Once a material has been approved for use, it shall be added to the MK MSDS List, in accordance with procedures 3A-303, "Hazard Communication."

6.5 Recycling

6.5.1 As part of MK's participation in the INEEL site-wide Waste Minimization Plan, the following categories of materials shall be recycled to reduce MK's contribution to the sanitary landfill:

- scrap metal
- wood

6.5.1.1 These materials shall be placed in bins provided by the INEEL M&O contractor.

6.5.1.2 Employees shall be instructed to separate waste.

6.5.1.3 Waste that cannot be recycled shall be kept to the minimum level consistent with performance of the specific task.

6.5.2 MK shall participate in future recycling programs offered by the INEEL M&O contractor, as mandated by agreement or contract. As other parts of the INEEL site-wide Waste Minimization Plan are developed, more employees training will be provided as applicable.

6.5.3 Waste motor oil shall be returned to an outside firm for recycling as it is accumulated.

6.6 Training

6.6.1 Training shall be provided on Waste Minimization and Pollution Awareness in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual, Section 7.

7.0 EXTERNAL INTERFACE

7.1 MK will coordinate with INEEL M&O contractor's Waste Minimization Program.

8.0 RECORDS

8.1 All waste minimization records shall be maintained by the MK ESH Department in accordance with Morrison Knudsen Records Management Program as non-permanent, non-Quality Assurance (QA) records.

8.2 "Waste Minimization Annual Report" for AMWTP construction operations shall be published on direction from BNFL, Inc. When required, the report will be submitted in January to the INEEL M&O contractor's Pollution Prevention Department through BNFL, Inc..

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

Exhibit A: Quarterly Waste Reduction Report with instructions. Not a QA Record.

EXHIBIT A
PAGE 1 OF 2

QUARTERLY WASTE REDUCTION REPORT
INSTRUCTIONS

The revised Quarterly Waste Reduction Report (QWRR) is broken into two forms. Information required and the philosophy behind the requirement for both forms is described below.

Part A - Waste stream Description

The intent of Part A is to allow the coordinator to fully describe, once, all processes and all waste streams under their reporting jurisdiction, and assign a waste number to each. Afterward data are reported by waste code on Part B, and Part A information need not be resubmitted unless processes are added, deleted, or otherwise changed. Part A is relatively fixed, Part B changes quarterly.

Completion of the first five columns results in the assignment of the waste code, a thirteen-digit code consisting of:

Area - 3 digit facility abbreviation
Building Number - 3 digit building identifier
Process Number - 2 digit sequential,
- assigned by WMin coordinator,
- number assigned in WMin Plan (if possible)

Waste stream Id Number - 4 digit usually assigned by the INEEL TSD facility,
- number used in shipping to these facilities,
- temporary number be assigned by the WMin coordinator if no number is currently assigned by TSD,
- precede existing code with zeroes for four digit code

Waste Type - hazardous (H),
- low-level (L),
- mixed (M),
- sanitary (S)

EXAMPLE: CFA689010264H - Process 01, 264 is the waste stream ID number assigned by the bunker, waste is hazardous.

Process Description - use description in WMin Plan or old QWRR if possible

Waste Description - use description in WMin Plan or old QWRR if possible, identification of waste type unnecessary

Status - Existing (E) or New (N)

Frequency - Routine (R) or Non-routine (N)

Disposition - Examples are WERF, RWMC, Bunker, Landfill, Recycle

Reduction - Housekeeping (HK)
- Inventory Control (IC)
- Material Substitution (MSUB)
- Process/Equipment Modification (PMOD)
- Waste Segregation (WS)

Part B - Waste Generation and Reduction Data

Part B is used to record dynamic features of waste reduction reporting. The Waste Code in column one refers back to all of the information contained in Part A. Waste Code and Units remain unchanged once identified. The remainder of the form is used to record quarterly and year to date activities.

The column on the far right is used for PWA status. The PWA may be considered completed when a reviewed copy is on file with the Pollution Prevention Unit. Draft PWAs may be indicated by the word "draft".

Completion of the QWRR becomes a simple task once Part A and the first two columns of Part B are completed. It is suggested that this information be saved on a copy of the Wordperfect file. That way when it comes time for QWRR submittal, the only additional data necessary are the generation, disposal, recycling, and avoided rates (waste may be avoided through material exchange, return to vendor, etc.)

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-405	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 6

TITLE: WASTE CHARACTERIZATION

APPROVAL

ES&H MANAGER	081700 DATE
SITE QUALITY MANAGER	08-17-00 DATE
CONSTRUCTION MANAGER	8.17.00 DATE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE....3
2.0 SCOPE....3
3.0 REFERENCES....3
4.0 DEFINITIONS....3
5.0 RESPONSIBILITIES....4
6.0 REQUIREMENTS....4
7.0 EXTERNAL INTERFACE....5
8.0 RECORDS....6
9.0 ATTACHMENTS....6
10.0 EXHIBITS....6

1.0 PURPOSE

1.1 This procedure supplements the Advanced Mixed Waste Treatment Project's (AMWTP) Waste Management and Minimization Plan for Construction by specifying Morrison Knudsen's (MK) responsibilities at the AMWTP in managing hazardous wastes at staging or satellite accumulation areas.

2.0 SCOPE

2.1 This procedure applies to MK construction activities at the AMWTP, Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 261, Identification and Listing of Hazardous Waste

3.2 Reference Documents

3A-401, RCRA Hazardous Waste Management

3A-402, Non-Hazardous Waste Management

DOE Order 5400.1, General Environmental Protection Program

4.0 DEFINITIONS

4.1 Acutely Hazardous Waste: Extremely hazardous wastes identified by the EPA (f and p lists) and as specifically listed in 40 CFR 261.30, 261.31, and 261.33.

4.2 Characterization: Sampling and analysis of waste material or collection of process knowledge in order to classify the waste as non-hazardous, radioactive, or mixed.

4.3 Generator: Any person or organization, by site, whose act or process produces hazardous waste or whose act first causes a hazardous waste to become subject to regulation. In general, the term "Generator" refers to a facility that produces a hazardous waste. The DOE is the acknowledged generator at the INEEL facilities.

4.4 Hazardous Waste: A discarded, abandoned, or rejected substance determined to be capable of posing an unreasonable risk to health, safety or the environment. Specifically, hazardous waste means a solid waste which is not excluded under 40

CFR 261.4 and which is listed or exhibits a characteristic of a hazardous waste as defined in 40 CFR 261.20 *et seq.*

4.5 Hazardous Waste Satellite Accumulation Area: An initial accumulation point near the point of generation of hazardous waste where a generator may store up to 55 gallons of hazardous waste or one quart of acutely hazardous waste without a permit or restriction of accumulation time.

4.6 Mixed Waste: A hazardous waste that also contains radioactive constituents.

4.7 Resource Conservation and Recovery Act (RCRA): The regulatory statute that mandates "cradle-to-grave" control of specified hazardous waste by imposing management requirements on hazardous waste generators and transporters, and owners/operators of treatment, storage, and disposal (TSD) facilities for hazardous waste.

4.8 Toxic Substance Control Act (TSCA): An act which, regulates polychlorinated biphenyls, dioxins, asbestos, and chlorofluorocarbons including procedures for identification and response actions for spills or accidents.

5.0 RESPONSIBILITIES

5.1 Supervisors: Responsible for obtaining MSDS in accordance with procedure 3A-303, Hazard Communication.

5.1.1 When a Supervisor is notified of an unknown waste at a work site or construction activity, he or she will ensure, as required, work is stopped, workers are removed from area, and the ESH Manager is notified.

5.2 General Superintendent: Shall ensure compliance with this procedure, and coordinate response to discovered waste stream activities with the ESH Manager.

5.3 Environment, Safety, and Health Manager: Responsible for ensuring discovered waste streams are characterized by BNFL Inc. or others before acceptance into the AMWTP SAA.

6.0 REQUIREMENTS

6.1 Satellite Accumulation Area (SAA)

6.1.1 MSDS or available waste information for each waste stream shall be submitted by the General Superintendent or other supervisor to the Environmental Engineer. The Environmental Engineer must review the MSDS before a waste is accepted into the SAA.

6.2 Actions for Unknown Wastes Identified at Work Site or Construction Activity

6.2.1 If an unknown waste or material is identified at a work site or construction activity, the workers shall cease work activities and immediately notify their Supervisor.

6.2.2 The General Superintendent shall perform the following actions:

6.2.2.1 Stop work site activities.

6.2.2.2 Ensure personnel vacate the work site area.

6.2.2.3 Contact the ESH Manager. The ESH Manager will make further notifications.

6.2.3 The INEEL M&O contractor shall perform the following actions:

6.2.3.1 Provide initial assessment.

6.2.3.2 Perform sampling and analysis.

6.2.3.3 Characterize the waste.

6.3 Labeling and Marking Wastes: Upon obtaining sufficient information to characterize a waste, the area attendant shall label and mark the containerized waste.

7.0 EXTERNAL INTERFACE

7.1 INEEL M&O Contractor:

7.1.1 Provide technical guidance for the handling, testing, and storage of wastes as requested by the ESH Manager.

7.1.2 Sample, analyze, and provide waste characterization reports.

7.1.3 Provide waste treatment, storage and/or disposal services in accordance with the Tri-party Memorandum of Agreement.

7.1.4 Provide support relative to a fire, explosion, or other incident requiring implementation of MK's Emergency Preparedness Plan.

7.2 The ESH Manager or Environmental Engineer shall coordinate discovered waste characterization, documentation, storage, and transfer with BNFL, Inc. and the INEEL M&O Contractor.

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-406	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 6

TITLE: REPORTING ENVIRONMENTAL INCIDENTS AND RELEASES

APPROVAL

ES&H MANAGER — DATE: 08 17 00

SITE QUALITY MANAGER — DATE: 08-17-00

CONSTRUCTION MANAGER — DATE: 8 17.00

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE....3
2.0 SCOPE....3
3.0 REFERENCES....3
4.0 DEFINITIONS....3
5.0 RESPONSIBILITIES....4
6.0 REQUIREMENTS....4
7.0 EXTERNAL INTERFACE....5
8.0 RECORDS....6
9.0 ATTACHMENTS....6
10.0 EXHIBITS....6

1.0 PURPOSE

1.1 This procedure provides guidelines to Morrison Knudsen (MK) personnel for classifying and reporting environmental incidents and releases, which occur at the Idaho National Engineering and Environmental Laboratory (INEEL).

2.0 SCOPE

2.1 This procedure applies to all MK employees when reporting environmental incidents and releases at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 110, Discharge of Oil

40 CFR 302, Designation, Reportable Quantities, and Notification

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Morrison Knudsen Records Management Program, January 1996

BNFL Inc. Occurrence Categorization, Notification and Processing

DOE Order 5400.1, General Environmental Protection Program

DOE Order 232.1A, Occurrence Reporting and Processing of Operations Information

DOE Order 231.1, Environment, Safety, and Health Reporting

4.0 DEFINITIONS

4.1 Environmental Incident: Any release or spill of oil or hazardous material to the environment.

4.2 Hazardous Substance: Hazardous substance is defined by section 101(4) of CERCLA. In general it includes any substance designated pursuant to section

311(b)(2)(A) of the CWA; section 102 of CERCLA; section 3001 of the Solid Waste Disposal Act; section 307(A) of the CWA; section 112 of the Clean Air Act; and section 7 of the Toxic Substances Control Act. The term does not include petroleum, including crude oil or any fraction thereof.

4.3 Hazardous Waste: A waste which exhibits a characteristic or is a listed waste as defined in 40 CFR 261.

4.4 Oil: Oil of any kind or in any form, including, but not limited to, petroleum fuel oil, oil refuse, and oil mixed with wastes other than dredged spoil.

4.5 Radioactive Waste: Any waste which contains radioactive material in concentrations which exceed those listed in 10 CFR 20.

4.6 Reportable Quantity (RQ): A released quantity defined in 40 CFR 302 of a hazardous substance which requires notification of releases to the National Response Center.

4.7 Release: Unauthorized spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, dumping, or disposing of a hazardous material.

5.0 RESPONSIBILITIES

5.1 ESH Manager: Responsible for:

5.1.1 Managing the reporting of environmental incidents and releases.

5.1.2 Ensuring appropriate notification and reporting of Environmental Incidents and Releases to BNFL Inc. Operations Manager and others as required by other AMWTP procedures.

5.1.3 Ensuring that appropriate training is provided to MK staff and workers.

5.2 Employees: Responsible for:

5.2.1 Notifying their Supervisor or the ESH Manager of all environmental incidents and releases.

6.0 REQUIREMENTS

6.1 The employee or Supervisor notifies the ESH Manager of an environmental incident or release, and provides the following information, if known:

- Name and telephone number

- Any injuries
- Exact location of the incident
- The name and amount of material released

6.2 The ESH Manager shall consult the following references to determine the need for further reporting:

6.2.1 Table 302.4, List of Hazardous Substances and Reportable Quantities, from 40 CFR 302.

6.2.2 The Spill Prevention Control and Countermeasures Plan (SPCC, if applicable).

6.3 The ESH Manager or designee shall document the incident in accordance with procedure 3A-104, Accident Investigations, Reports, and Recordkeeping. Additional reporting may be required by the BNFL, Inc. Occurrence Reporting and Processing System procedure.

6.4 The ESH Manager ensures that MK and BNFL, Inc. management and the INEEL M&O contractor are immediately notified, as required.

6.5 The ESH Manager, when warranted, will notify the National Response Center (NRC) and appropriate state/local agencies.

6.5.1 The NRC of the U.S. Coast Guard (800-424-8802)

6.5.2 Idaho State Emergency Planning Commission

6.5.3 U.S EPA Regional Center (Seattle, Washington)

6.5.4 The Idaho Department of Health and Welfare, Division of Environmental Quality.

6.6 The ESH Manager shall coordinate with the Lead Office Engineer to prepare a written occurrence report to DOE-ID, as required.

7.0 EXTERNAL INTERFACE

7.1 The INEEL Fire Department shall be contacted for emergency response personnel to respond as necessary.

8.0 RECORDS

8.1 If the National Response Center is notified for a spill of a hazardous waste in excess of the reportable quantity amount, a follow-up report is submitted within 15 days per 40 CFR 264.56.

8.2 Any notification to DOE-ID of a release per this procedure shall be kept for three years as a non-permanent QA record in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-407	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 5

TITLE: CLEAN AIR ACT COMPLIANCE

APPROVAL

ES&H MANAGER	081700 DATE
SITE QUALITY MANAGER	08-17-00 DATE
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3
2.0 SCOPE 3
3.0 REFERENCES 3
4.0 DEFINITIONS 3
5.0 RESPONSIBILITIES 4
6.0 REQUIREMENTS 4
7.0 EXTERNAL INTERFACE 5
8.0 RECORDS 5
9.0 ATTACHMENTS 5
10.0 EXHIBITS 5

1.0 PURPOSE

1.1 This procedure establishes identification, recordkeeping, and inspection requirements related to air contaminant sources.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 60, Standard of Performance for New Stationary Sources

40 CFR 61, National Emission Standards for Hazardous Air Pollutants

3.2 Reference Documents

Morrison Knudsen Safety Procedures and Guidelines Manual, October, 1995, Section 7

Morrison Knudsen Records Management Program, January 1996

3A-406, Reporting Environmental Incidents and Releases

4.0 DEFINITIONS

4.1 Emission: The release of material to the ambient air.

4.2 Fugitive Dust: Any visible emission, other than water droplets, issuing from any source other than through a stack.

4.3 Hazardous Air Contaminant: Any air contaminant which may cause, or contribute to, an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness.

4.4 Opacity: The degree to which emissions reduce the transmission of light and obscure the view of an object in the background.

4.5 Owner or Operator: Any person who owns, leases, operates, controls, or supervises an air contaminant source.

4.6 Particulate Matter: Any material, except uncombined water, that exists in a finely divided form as a liquid or a solid.

4.7 Process Emission: Any emission of an air contaminant to the ambient air other than that from fuel burning equipment, incinerator, wigwam burners, or open burning.

4.8 PSD: Prevention of significant deterioration of air quality.

4.9 Stack: Any chimney, flue, duct, conduit, exhaust, vent, or opening of any kind whatsoever, capable of, or used for, the emission of air contaminants.

4.10 Volatile Organic Compounds (VOC): Any compound of carbon that has a vapor pressure greater than 0.1 millimeter of mercury at standard conditions, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate.

5.0 RESPONSIBILITIES

5.1 Environment, Safety, and Health (ESH) Manager: Responsible for managing the Clean Air Compliance Program. The ESH Manager is also responsible for ensuring an assessment of the program is conducted annually, including:

5.1.1 Performing the Clean Air Compliance assessments and providing written results to the Construction Manager.

5.1.2 Coordinating Clean Air Compliance training for employees in accordance with Morrison Knudsen Safety Procedures and Guidelines Manual.

5.1.3 Evaluating construction activities for compliance with AMWTP requirements.

5.2 General Superintendent: Responsible for ensuring construction operations comply with AMWTP requirements.

6.0 REQUIREMENTS

6.1 Identification of Emission Sources. The ESH Manager shall identify sources that are subject to the new source performance standards, National Emission Standards for Hazardous Pollutants (NESHAPS), and Prevention of Significant

Deterioration (PSD) program, or the sources of volatile organic compounds (in non-attainment areas).

7.0 EXTERNAL INTERFACE

7.1 BNFL Inc. prepares, reviews, and submits appropriate Air Pollution Permit Applications for all new and modified air contaminant sources at the AMWTP.

8.0 RECORDS

8.1 A Compliance Documentation Inspection Checklist or similar documentation will be kept by the MK ESH Manager to chronicle compliance with regulatory and permit requirements. This documentation will be maintained as non-Quality Assurance (QA), non-permanent records in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-408	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 5

TITLE: CLEAN WATER ACT COMPLIANCE

APPROVAL

ES&H MANAGER	081700 DATE
SITE QUALITY MANAGER	08-17-00 DATE
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 5

8.0 RECORDS 5

9.0 ATTACHMENTS 5

10.0 EXHIBITS 5

1.0 PURPOSE

1.1 This procedure establishes a system to identify activities which may fall under the regulations promulgated under the Clean Water Act including stormwater permit requirements.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 122, Criteria and Standards for the National Pollutant Discharge Elimination System

3.2 Reference Documents

3A-409, Spill Avoidance and Response

DOE Order 5400.1, General Environmental Protection Program

4.0 DEFINITIONS

4.1 National Pollutant Discharge Elimination System (NPDES): The national program for issuing, modifying, revoking, and reissuing, terminating, monitoring, and enforcing permits, and imposing and enforcing pretreatment requirements.

4.2 Permit: An authorization, license, or equivalent control document issued by the Environmental Protection Agency (EPA) to implement the requirements of 40 CFR 122-124.

4.3 Point Source: Any discernible, confined, and discreet conveyance included, but not limited to any pipe, ditch, channel, tunnel, conduit, well, discreet fissure, container, rolling stock, concentrated animal feed operation, or vessel or floating craft from which pollutants are or may be intentionally discharged.

4.4 Pollutant: Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical waste, heat, wrecked or discarded

equipment, rocks, sand, cellar dirt, and industrial, municipal, and agriculture waste discharged into the water.

4.5 Discharge: Any addition of any "pollutant" or combination of pollutants to waters of the United States from any "point source."

4.6 Stormwater Pollution Prevention Plan: A plan required under the NPDES program for certain construction and industrial activities

4.7 Stormwater Coordinator: The AMWTP Environmental Engineer trained and designated on the NPDES requirements and the INEEL Storm Water Pollution Prevention Plan (SWPPP) requirements.

5.0 RESPONSIBILITIES

5.1 Environment, Safety, and Health (ESH) Manager: Responsible for managing the Clean Water Act compliance program. The ESH Manager is also responsible for ensuring that an assessment of the program is conducted annually. Also responsible for performing routine assessments and providing written results to the Construction Manager.

5.2 Environmental Engineer: Responsible for the day-to-day administration of the SWPPP for the Advanced Mixed Waste Treatment Facility, periodic oversight and documentation of erosion control devices. The Environmental Engineer must also coordinate repair and other required work with the General Superintendent.

5.3 General Superintendent: Responsible for ensuring erosion control device or system repairs are initiated within 24 hours after being notified that such work is necessary.

6.0 REQUIREMENTS

6.1 The ESH Manager will ensure an initial assessment is conducted of any new work or changes in activities that may adversely affect discharge controls or may require compliance with stormwater requirements.

6.2 The ESH Manager shall assess potential point discharges of water to determine whether or not the discharge contains pollutants, regardless of whether the discharge is to surface waters.

6.3 Periodically, but no less than annually, the ESH Manager shall review the project for compliance to the Clean Water Act. The ESH Manager shall ensure that nothing has changed from the initial evaluation or that the changes are in compliance with the regulations.

6.4 Spill Prevention Control and Countermeasure Plans are addressed in a separate procedure 3A-409, "Spill Avoidance and Response."

7.0 EXTERNAL INTERFACE

7.1 BNFL Inc. will review MK's SWPPP and perform inspections.

8.0 RECORDS

8.1 Records of all assessments will be kept on file by the ESH Department as non-permanent, non-QA records in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-409	EFFECTIVE DATE: September 1, 2000
	REVISION: 1	PAGE: 1 OF 11

TITLE: SPILL AVOIDANCE AND RESPONSE

APPROVAL

ES&H MANAGER	081700 DATE
SITE QUALITY MANAGER	08-17-00 DATE
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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 8

8.0 RECORDS 9

9.0 ATTACHMENTS 9

10.0 EXHIBITS 9

1.0 PURPOSE

1.1 This procedure establishes the general guidelines and responsibilities for providing spill control, and clean-up practices. It describes procedures to prevent discharges of petroleum and hazardous materials, control and contain discharges, protect personnel from injury, and protect the environment from damage in the event of a spill.

2.0 SCOPE

2.1 This procedure applies to Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

40 CFR 112, Oil Pollution Prevention

3.2 Reference Documents

3A-107, Emergency Action

3A-401, RCRA Hazardous Waste Management

DOE Order 5400.1, General Environmental Protection Program

4.0 DEFINITIONS

4.1 Discharge: Includes, but is not limited to, any spilling, leaking, pumping, pouring, emitting, or dumping of oil or hazardous substances.

4.2 Hazardous Substance: Any substance designated a hazardous substance by 40 CFR 300.5.

4.3 Oil: Oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse and oil mixed with waste other than dredged soil.

4.4 Potential Discharge: Any release incident that constitutes a substantial oil or hazardous/toxic substance threat.

4.5 Reportable Spill: Any petroleum product (oil) spill of 10 pounds or more, or any hazardous material release to the environment in quantities listed in 40 CFR 302.

5.0 RESPONSIBILITIES

5.1 Environment, Safety, & Health (ESH) Manager: Responsible for managing the Spill Avoidance and Response Program, and performing Emergency Coordinator duties as stated in procedure 3A-107, Emergency Action.

5.2 Environmental Engineer: Responsible for the day-to-day administration of the Spill Avoidance and Response Program, and providing technical support during release incidents.

5.3 Employees: Responsible for immediately reporting any spill or leak of a suspected hazardous substance and taking initial emergency response steps in accordance with training received.

6.0 REQUIREMENTS

6.1 Spill Prevention

6.1.1 Above-ground storage tanks shall be maintained and inspected in accordance with 40 CFR 112, 29 CFR 1926, and this procedure. In case of conflicting standards, the more stringent shall apply.

6.1.2 An estimated spill prediction for each tank shall be prepared by the responsible organization and submitted to the ESH Manager. The prediction shall indicate, in the event of a major release incident, the following:

6.1.2.1 Probable direction and rate of flow.

6.1.2.2 Total quantity and type of hazardous material which could be discharged.

6.1.3 The responsible organization will also prepare and submit a storage tank location map to the MK ESH Manager. The will show the location, volume, materials stored, and emergency shut-off for each above-ground tank.

6.1.4 The tank storage area shall be located above the 100-year flood plain as identified by the INEEL M&O contractor.

6.1.5 The tank location shall be curbed or bermed such that containment is 110 percent of the largest tanks or 125 percent of any lone tank.

6.1.6 All tanks 1000 gallons or more in volume shall have adequate venting.

6.1.7 Weekly visual inspections shall be made on all tanks and their connections. A record of these inspections shall be maintained.

6.1.8 No tank shall be used for storage of hazardous materials unless its material and construction are compatible with the material stored and conditions of storage.

6.1.9 All tanks shall be pressure and strength-tested before they are delivered to the site. All above-ground tanks shall be subject to integrity testing on an annual basis, taking into account tank design and using such techniques as hydrostatic testing, visual inspection, or a system of non-destructive shell thickness testing such as ultrasound testing. Comparison records shall be kept where appropriate. Tank supports and foundations shall be included in these inspections. Records of such inspections and tests shall be provided to MK upon request.

6.1.10 New and old tank installations shall be fail-safe engineered or updated into a fail-safe engineered installations to avoid spills. Consideration shall be given to provide one or more of the following devices:

6.1.10.1 High liquid level alarms with an audible or visual signal.

6.1.10.2 High liquid level pump cutoff devices set to stop flow at determined tank content level.

6.1.10.3 A fast response system for determining the liquid level of each bulk storage tank.

6.1.10.4 Liquid level sensing devices shall be regularly tested to ensure proper operation.

6.1.11 Visible oil leaks which result in a loss of oil from tank seams, gaskets, rivets and bolts sufficiently large to cause accumulation of oil in a diked area shall be promptly corrected.

6.1.12 The master flow and drain valves and any other valves that will permit direct outward flow of the tank's content to the surface shall be securely locked in the closed position when in a non-operating and non-standby status.

6.2 Notification

6.2.1 Subcontractor, MK, or other employee finding or having knowledge of a spill or leak of hazardous substance/material/chemical at the Advanced Mixed Waste Treatment Project (AMWTP) is required to notify their supervisor or the MK ESH Manager immediately.

6.2.2 During Phase II construction, the INEEL Fire Department (FD) functions as the INEEL HAZMAT Team. The HAZMAT Team will conduct containment action which, may include air monitoring for appropriate hazardous chemical substances. Cleanup of the spill and decontamination of equipment will be performed by MK.

6.2.3 The Shift Response Team (SRT) Leader, upon arrival at the scene, shall ensure initial notifications have been made in accordance with procedure 3A-107, Emergency Action.

6.2.3.1 All notifications will include type of hazardous substance/material/chemical, approximate quantity spilled or leaked (preferably expressed in pounds), location and name of Hazardous Response Coordinator on the scene.

6.3 The ESH Manager, as the Emergency Coordinator (EC), or alternate EC shall ensure that further notifications, as required in 3A-107 and this procedure are completed. The EC will ensure timely updates are provided to the appropriate staff managers and WCC.

6.4 Response

6.4.1 The SRT Leader take charge upon arrival at the scene, and.will ensure appropriate actions are taken to assure response personnel safety.

6.4.2 The SRT Leader shall call for necessary equipment from the MK Warehouse (see Attachment 2) to control the scene until the INEEL FD arrive.

6.4.2.1 If the spill or leak is large (more than a 55 gallon drum) and is not contained, dike the area by using absorbent material.

6.4.2.2 Only approved absorbent material shall be used to contain and/or absorb any spill.

6.4.3 The SRT Leader shall ensure imminent hazards are neutralized, e.g.; remove ignition sources, or deploy absorbent booms.

6.4.4 The SRT Leader shall ensure the injured receive assistance and medical treatment at the earliest possible safe opportunity.

6.4.5 The SRT Leader shall ensure that the scene is sufficiently secure to prevent non-responders from entering the scene.

6.5 The Shift Response Team Leader shall follow the instructions below (until the INEEL FD arrives) to prevent spilled or leaked substances from migrating or posing a greater hazard to responsders.

6.5.1 Ensure all responders entering the spill area don the required protective clothing.

6.5.2 Stop the source of the leak or spill if it can be done safely (i.e., close valve, turn off pump, replace or install cover).

6.5.3 Isolate the area and deny entry to unauthorized personnel by putting up safety rope with warning/chemical spill signs or other warning barrier around the perimeter of the spill or leak.

6.5.3.1 If safety ropes or other barrier systems cannot be used, then post personnel around the perimeter to direct personnel away from the area of the spill or leak.

6.5.4 Contact ESH personnel to identify unknown chemicals.

6.5.5 If the spilled or leaked material is known or suspected of being radioactively contaminated, the Hazardous Response Coordinator shall notify and take direction from Health Physics.

6.6 The Shift Response Team Leader shall take direction from the INEEL FD Incident Commander upon their arrival and standby to assist.

6.6.1 The INEEL M&O contractor shall determine the need to survey the area of the spill or leak for concentrations of hazardous gases or vapors.

6.6.2 Once the INEEL FD has completed containment activities the FD Incident Commander will authorize recovery operations to begin.

6.7 <u>Recovery and Disposal</u>

6.7.1 Only properly trained SRT members or subcontractor personnel will be authorized by the EC to handle, clean-up or dispose of asbestos, cadmium-containing materials, mercury-containing materials, or other specifically regulated materials.

6.7.2 The SRT Leader will plan and outline the recovery steps with the SRT members prior to actually beginning operations.

6.7.3 The SRT Leader will contact the Warehouse Manager to obtain DOT-specified containers, and additional equipment needed to complete recovery.

6.7.4 The SRT Leader shall ensure care is taken not to mix incompatible wastes, and not to increase the hazard potential by allowing the wastes to become airborne.

6.7.5 The SRT Leader shall ensure proper technique is used to place waste into DOT-specified containers.

6.8 Disposal of hazardous waste drums or containers shall be in accordance with 3A-401, "RCRA Hazardous Waste Management".

WARNING: *HAZARDOUS WASTES SHALL NOT BE POURED OR FLUSHED INTO DRAINS OR SINKS.*

6.9 Decontamination water, liquids, used supplies and PPE shall be disposed of as hazardous waste.

7.0 EXTERNAL INTERFACE

7.1 The Warning Communication Center at 9-6-1515, (by radio, call sign-KID-240) or the INEEL Fire Department 9-777, shall be contacted by the Emergency Coordinator or alternate.

7.2 The Emergency Coordinator will contact and coordinate all activities pertaining to spill response and documentation with the INEEL M&O contractor representatives.

7.3 The ESH Manager shall prepare a "Substance Release Report Form", (IDF 5480.11), for submittal through BNFL, Inc. to DOE-ID within 24 hours of the release.

8.0 RECORDS

The ESH Department shall maintain incident documentation as non-QA records in accordance with Morrison Knudsen Records Management Procedure.

9.0 ATTACHMENTS

9.1 Hazardous Response Checklist

9.2 Spill Control Equipment

10.0 EXHIBITS

NONE

ATTACHMENT 9.1
PAGE 1 OF 1

HAZARDOUS RESPONSE CHECKLIST
(MK-BASE)

1. UPON DISCOVERING A SPILL:

Notify the Hazardous Response Coordinator on MK-Unit. In addition, notify one of the following persons, depending on the area of the spill:

AREA	PERSON	RADIO UNIT
MK AMWTF Operations	ES&H Manager	MK-Unit 3
	General Superintendent	MK-Unit 5
	Lead Office Engineer	MK-Unit 7

Additional personnel on the Hazardous Response Team, if needed:

2. Convey the following information:

X Your name_____

X Location of incident_____

X Identification of hazardous material, if known_____

X Approximate Amount of spill or leak_____

3. In case of fire, notify the INEEL Fire Department at 777.

ATTACHMENT 9.2
PAGE 1 OF 1

SPILL CONTROL EQUIPMENT

Boots (Neoprene)	4
Disposable Acid Suits	4
Gloves (Neoprene)	12 Pair
Full Face Respirators w/Combination Cartridges	12 Each
Face Shields (Full Face)	4
Plastic Buckets (5 Gallon)	2
Spill Control Pillows	12 Each
HF Acid Spill Control Pillows	12 Each
Diatomite	450 lbs.
Hazardous Waste Bags	1 Case
Safety Rope	500 Yards
Signs (Caution Chemical Spill) (Caution Acid)	6 Each
pH Paper	2 Boxes
Solvent Cleanup Material	5 Gallon Container
Shovel (Flat Head)	2 Each

NOTE: The above equipment list is a recommended guideline and is not limited to the above listed items.

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: 3A-502	EFFECTIVE DATE: September 1, 2000
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TITLE: ALARA PROGRAM

APPROVAL

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 4

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 8

8.0 RECORDS 9

9.0 ATTACHMENTS 9

10.0 EXHIBITS 9

1.0 PURPOSE

1.1 The objective of this procedure is to establish an effective program to maintain occupational radiation exposures As Low As Reasonably Achievable (ALARA).

1.2 ALARA Commitment and Operating Policy

1.2.1 All Morrison Knudsen (MK) construction activities shall keep radiological exposures to the individual, as well as the collective exposures as low as reasonably achievable (ALARA).

1.2.2 All construction activities shall be conducted from the conservative viewpoint that all radiation exposures carry an associated risk; therefore, no exposure shall be incurred without net benefit or sound justification.

1.2.3 In order to minimize risk to the unborn child, radiological exposures to the developing embryo and fetus shall not exceed 500 mrem for the entire gestation period. Efforts should be made to avoid exceeding 50 mrem per month to the pregnant worker.

1.2.4 It is the policy of MK to take every precaution to control radiation in the performance of work, to be in full compliance with established requirements to prevent unnecessary radiation exposure to employees and the public, and to prevent harmful effects to the environment.

2.0 SCOPE

2.1 This procedure is applicable to MK construction activities within radiation areas associated with the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL).

3.0 REFERENCES

3.1 Source Documents

10 CFR 835, Occupational Radiation Protection

3.2 Reference Documents

BNFL Inc. Occurrence Characterization, Notification and Processing

3A-501, Radiation Protection Program

Morrison Knudsen Engineering Standards, Vol. I and II, Section 16.

DOE Order 5400.5, Radiation Protection of the Public and the Environment

DOE Manual, DOE/EH-0256T, Radiological Control Manual

DOE Manual, PNL-6577 DE89-000406, Health Physics Manual of Good Practices for Reducing Radiation Exposures To Levels That Are As Low As Reasonably Achievable (ALARA)

4.0 DEFINITIONS

4.1 As Low As Reasonably Achievable (ALARA): An approach to radiation protection to control or manage exposures as low as social, technical, economic, practical and public policy considerations permit. ALARA is a process, not a dose limit, which has the objective of maintaining dose levels as far below applicable limits as is reasonably achievable.

4.2 Collective Dose: The sum of all doses for all workers received while performing a defined job or task. Person-rem is the unit of collective dose.

4.3 Stochastic Effects: Effects, the probability of which, rather than their severity, is a function of radiation dose without threshold. Generally speaking, stochastic means random in nature. Cancer induction, as a result of radiation exposure, is an example of a stochastic effect.

5.0 RESPONSIBILITIES

5.1 Environment, Safety, and Health (ESH) Manager: Responsible for supporting the INEEL M&O contractor in formulating and implementing a program that maintains occupational radiation exposures ALARA, and for participating in establishing specific goals and objectives of the program.

5.2 MK and Subcontractor Managers and Supervisors: Responsible for supporting the subcontractors in the establishment and implementation of an effective ALARA Program. They are also responsible for ensuring ALARA requirements established for operations in radiologically controlled areas are implemented and satisfied.

5.3 MK Employees: Responsible for keeping their radiological exposures ALARA by following the general ALARA guidelines presented during Radiation Working Training, and to meet the requirements of ESH Construction Safe Work Permits and Radiation Work Permits.

6.0 REQUIREMENTS

6.1 MK ALARA Program

6.1.1 MK will implement the requisite functions of BNFL Inc. or the INEEL M&O contractor's ALARA Program, as required.

6.1.2 MK will provide a representative to the BNFL Inc. Construction ALARA Committee. This committee is assigned the responsibility of accountability for developing a comprehensive ALARA program specifically for the Advanced Mixed Waste Treatment Facility. This committee will address the radiation exposures of MK employees, MK Subcontractors, and Subtier employees.

6.1.3 The ALARA Program shall require integrated planning and performance of radiation work to established ALARA criteria. Training, support facilities, and equipment also are requirements of the ALARA Program.

6.1.4 Implementation of the ALARA Program shall be through the INEEL M&O contractor's Radiological Control Organization, MK Environmental, Safety, and Health (ESH) Department, Project Management, and/or the INEEL Construction ALARA Committee.

6.2 Planning Radiation Work ALARA

6.2.1 When warranted the INEEL M&O contractor's Radiological Control Organization, MK ESH Manager, Project Management and/or the INEEL Construction ALARA Committee will review projects, operations, work plans, procedures, and equipment. MK ESH Manager and Project Management should provide recommendations for the implementation of ALARA practices to reduce radiation exposure during the constructability review process.

6.2.2 The ESH Manager and/or Designated Representative shall participate in project constructability reviews in accordance with Morrison Knudsen Engineering Standards, Section 16. The ESH Manager shall coordinate ALARA requirements with BNFL Inc. Operations Manager during the project planning phase by:

6.2.2.1 Identifying locations, operations, and conditions that have a potential for causing significant exposures to radiation.

6.2.2.2 Reviewing, commenting, and recommending changes to project plans, procedures, and work methods to maintain radiation exposures ALARA.

6.2.2.3 Ensuring facilities, equipment, and planned operations are designed ALARA.

6.2.3 BNFL Inc. or the INEEL M&O contractor will provide Radiological Engineering and RCT support to characterize the job site, review and establish the projected radiation dose rates, and estimate total exposure for projects.

6.2.4 The BNFL Inc. and MK ESH will review site characterization and correlate projected radiation dose rates to an ALARA goal. ALARA goals will be established for total project exposure, and may be established for job categories.

6.2.5 MK and/or BNFL Inc. will document ALARA revisions and goals on the Radiation Exposure Forecast Report or other approved form.

6.2.6 MK, with the assistance of BNFL Inc., will periodically review and revise the ALARA goal, as required.

6.2.7 MK will evaluate instances where radiation exposure trigger levels are surpassed. Trigger levels are implemented to avoid exceeding administrative radiation exposure limits. Trigger levels are determined by the INEEL M&O contractor Radiological Control Organization as part of the ALARA review process.

6.2.8 MK with the assistance of BNFL Inc. will conduct critiques and document lessons learned.

6.3 Performing Radiation Work ALARA

6.3.1 Radiation Work Permits (RWPs) and Radiation Control Technician (RCT) support shall be provided by the INEEL M&O contractor with emphasis on maintaining exposure ALARA. Radiation Work Permits shall establish exposure controls and ALARA requirements by providing:

1. A mechanism to control entrance into, and work activities inside of posted radiation and contamination areas.

2. Prejob radiation and contamination surveys to identify locations, operations, and conditions that are not in keeping with the ALARA philosophy and practices.

3. Appropriate equipment and frequency of radiological surveys to keep exposures ALARA.

4. Special instructions and requirements to ensure exposures ALARA.

5. Protective clothing and equipment requirements to reduce incidents involving personnel contamination and intakes of radioactive material.

6. The frequency or level of Radiation Control Technician coverage.

7. The requirement for a pre-work briefing to provide workers with information to keep their exposures ALARA, and additional briefings as conditions or requirements change.

8. A mechanism for post-work exposure assessments and contamination release surveys to be performed upon exit from controlled areas.

6.3.2 Completion of Radiation Work Permits shall be performed only by the INEEL M&O contractor.

6.3.3 The INEEL M&O Contractor may issue dose cards to all construction workers. It is the responsibility of the individual to maintain his/her radiation exposure ALARA and to record any occupational exposure received. Positive readings on the individual's direct reading dosimeter (DRD) are to be recorded on the dose card. The individual and his/her supervisor are periodically to review the recorded exposure on the dose card. When TLD's are read during routine or special badge pulls, the dose card shall be corrected by recording the TLD results on the dose card. Non occupational exposures such as medical or dental x-rays shall not be recorded on the dose card.

6.4 ALARA Training

6.4.1 Basic training on the principles of ALARA shall be provided to workers during General Employee Radiological Training (GERT) or Radiation Worker Training.

6.4.2 INEEL M&O contractor Radiological Control personnel conducting ALARA reviews and establishing ALARA requirements shall be trained and qualified as determined by the INEEL M&O contractor's policies and procedures.

6.5 ALARA Program Support Staff, Facilities, Instrumentation, and Equipment

6.5.1 A sufficient number of qualified MK ESH personnel shall be maintained to provide support for the MK and INEEL M&O contractor's ALARA Programs.

6.5.2 Radiological survey and monitoring instrumentation (portable and non-portable) used to assess radiological hazards and to provide real-time monitoring capabilities shall be utilized by the INEEL M&O contractor.

6.5.3 Personnel monitoring devices to record and assess radiation exposures and to provide contamination monitoring capabilities shall be provided by the INEEL M&O contractor.

6.5.4 Protective clothing shall be provided by the INEEL M&O contractor and utilized by radiation workers to prevent personnel contamination incidents during work in radiologically contaminated areas.

6.5.5 Respiratory Protection shall be provided by the INEEL M&O contractor and used in areas where airborne radioactivity hazards exist.

6.5.6 Decontamination facilities areas for personnel and equipment shall be established and maintained by the INEEL M&O contractor.

6.5.7 Change rooms shall be provided by the INEEL M&O contractor to permit radiation workers to change from their personal clothing into Personnel Protective Equipment (PPE) prior to entry into radiologically controlled areas.

6.5.8 Step-off pads to be used as entrance/exit points into radiologically contaminated areas shall be established by the INEEL M&O contractor. Personnel contamination monitoring equipment should also be provided at each stepoff pad area.

6.5.9 A radiological counting room and analytical equipment shall be provided and maintained by the INEEL M&O contractor to perform analyses of environmental, air and loose surface contamination swipe samples.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor is responsible for designing, maintaining, upgrading, and controlling its facilities to keep radiological exposures to employees, visitors and the public ALARA.

7.2 The INEEL M&O contractor is responsible for providing input and radiological data concerning the potential for exposure to MK and its subcontractors. This input will be used to determine project ALARA goals.

7.3 MK and subcontracted employees of MK are responsible for supporting the INEEL M&O contractor and MK ALARA programs by satisfying requirements described in

radiological work procedures, RWPs, Job Safety Analysis, and by following verbal instructions presented by ESH or Radiological Control personnel.

8.0 RECORDS

NONE

9.0 ATTACHMENTS

NONE

10.0 EXHIBITS

NONE

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FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PURPOSE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 4

6.0 REQUIREMENTS 5

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBIT 7

1.0 PURPOSE

1.1 The objective of this procedure is to protect the employee and her developing embryo/fetus from exposure to hazardous/radioactive materials or other risks that may adversely affect either the employee or her developing embryo/fetus.

2.0 SCOPE

2.1 This procedure is applicable to all Morrison Knudsen (MK) construction activities at the Advanced Mixed Waste Treatment Project (AMWTP), Idaho National Engineering and Environmental Laboratory (INEEL), when work assignment/location could place employees in contact with any condition, material, or substance that might present a risk to either the female employee or her developing embryo/fetus.

3.0 REFERENCES

3.1 Source Documents

10 CFR 835, Occupational Radiation Protection

3.2 Reference Documents

Morrison Knudsen Records Management Program, January 1996

DOE Order 5480.6 U.S. DOE Radiological Control Manual

4.0 DEFINITIONS

4.1 Embryo: A developing human from the time of conception through the eighth week of pregnancy.

4.2 Embryotoxin: A substance or agent that may cause harmful effects during the embryonic stage of development.

4.3 Fertile Female: A female capable of conceiving, carrying, and bearing offspring.

4.4 Fetus: A developing human from the ninth week of conception until birth.

4.5 Hazardous Materials: Agents either chemical, biological, or physical including radiation that, upon exposure to the developing embryo/fetus, may have an adverse effect on its normal development. These results may range from functional disorder to physical malformation, or stillbirth.

4.6 Radiological Area: Any area within a controlled area which must be posted as a "radiation area", " high radiation area", "very high radiation area", "contamination area", or "airborne radioactivity area".

4.7 Reproductive Hazard: A substance or factor that causes a detrimental effect on the human reproductive cycle.

4.8 Teratogen: An agent or factor that may cause structural and/or functional abnormalities in a developing embryo/fetus. This agent or factor can be administered to either parent prior to conception or to the embryo/fetus after conception through exposure of the mother.

4.9 Transplacental Carcinogen: A substance that may cause cancer in an offspring either while in utero or at maturity.

5.0 RESPONSIBILITIES

5.1 Environment, Safety & Health (ESH) Manager is responsible for managing the AMWTP fetal protection program, including implementing this procedure.

5.2 Supervisors are responsible for ensuring compliance with this procedure, including the following:

5.2.1 Knowing the employee's work area and those materials or factors that may be potentially harmful to the developing embryo/fetus.

5.2.2 Informing the employee and the Site Nurse or ESH Manager if there is a possibility of exposure to a potential teratogenic agent, or of any change in the employee's work area and possibilities of exposure.

5.2.3 Ensuring that pregnant employees do not enter posted Radiation, Contamination, Airborne Radioactivity, or Radiological Buffer Areas until approved by the INEEL M&O contractor's Radiological Control Organization and the MK ESH Manager or designee.

5.2.4 Implementing protective measures recommended by the INEEL M&O contractor and ensuring that pregnant or nursing employees comply with the recommendations.

5.3 Female Worker is responsible for complying with this procedure.

5.4 Site Nurse is responsible for providing consultation to pregnant workers regarding the Fetal Protection Program and potential exposure to hazardous materials. The nurse will coordinate further consultations with selected physicians, as needed.

6.0 REQUIREMENTS

6.1 Female Workers shall report any suspected pregnancy or intent to become pregnant promptly to her immediate supervisor and complete a "Declaration of Pregnancy Status" form (available from the Site Nurse).

6.1.1 Declared workers shall report any changes in work duties or workplace assignment during pregnancy to the Site Nurse.

6.2 The ESH Manager shall ensure an evaluation of the pregnant employee's current work assignment to determine the potential for exposure to hazardous materials.

6.2.1 The evaluation shall include a request for survey and sampling by the INEEL M&O contractor, if necessary, of the employee's work area to detect any risk of exposure to hazardous/radioactive materials with special emphasis on suspected reproductive hazards.

6.2.2 The evaluation report should document the locations of listed teratogenic agents as reported by the INEEL M&O contractor; contain recommended precautions from the INEEL M&O contractor that are necessary to protect both the employee and the developing embryo/fetus; and identify necessary, periodic monitoring by the INEEL M&O contractor to ensure that the pregnant employee and the developing embryo/fetus are not being exposed to reproductive hazards.

6.2.3 Additionally, the evaluation will discuss and propose appropriate engineering and administrative controls and/or personal protective equipment (PPE) based on INEEL M&O contractor recommendations

6.2.4 Requesting. Reporting these results to the employee and employee supervision Obtaining and providing copies of these recommendations to the employee and Supervision..

6.2.5 A copy of the completed "Workplace Evaluation of Hazards to Pregnant Females" will be provided to the employee and her direct supervisor.

6.2.6 Re-evaluation of the work area and work assignments by the INEEL M&O contractor will be requested if the processes or conditions in the work area change or if the employee should change to another radioactive work area; or the employee returns to work and is nursing.

6.3 Protection

6.3.1 After a female radiological worker voluntarily notifies her employer in writing that she is pregnant, for the purposes of fetal/embryo dose protection, she is considered a declared pregnant worker.

6.3.1.1 MK shall provide the option of a mutually agreeable assignment of work tasks, without loss of pay or promotional opportunity, such that further occupational radiation exposure is unlikely.

6.3.1.2 For a declared pregnant worker who chooses to continue working as a radiological worker:

6.3.1.2.1 The dose limit for the embryo/fetus from conception to birth (entire gestation period) is 500 mrem.

6.3.1.2.2 Efforts should be made to avoid exceeding 50 mrem per month to the pregnant worker.

6.3.1.3 If the dose to the embryo/fetus is determined to have already exceeded 500 mrem when a worker notifies her employer of her pregnancy, the worker shall not be assigned to tasks where additional occupational radiation exposure is likely during the remainder of the gestation period.

6.3.2 Options - The following options for protection of the embryo/fetus based on final recommendations provided on "Workplace Evaluation for Hazards to Pregnant Females", shall be used at ESH Manager's discretion based on the INEEL M&O contractor's recommendation:

1. Reduce exposure of all employees to comply with government and/or company-mandated levels.

2. Require the pregnant or nursing employee to wear appropriate PPE to further reduce the exposure risk below these mandated levels.

3. Remove the pregnant employee from the work area or assignment that presents the hazard, thereby conforming to applicable personnel policies.

6.4 Training

6.4.1 New Employee Training - All employees will be provided information and instructions regarding the Fetal Protection Program.

6.4.2 Workplace Training Program - Female employees assigned to areas where identified risks may be present will be advised of the risks, the protective measures required, and this Fetal Protection Program as part of their workplace training program.

7.0 EXTERNAL INTERFACE

7.1 The INEEL M&O contractor provides evaluation of work areas when requested by the ESH Manager or Site Nurse.

7.1.1 The evaluations should provide recommendations for minimizing risks to both the mother and the embryo/fetus.

7.2 The Site Nurse may arrange medical consultations with selected physicians for employees who require further evaluation.

8.0 RECORDS

8.1 The "Workplace Evaluation for Hazards to Pregnant Females" record is a non-Quality Assurance (QA) permanent record and shall be maintained in accordance with Morrison Knudsen Records Management Program.

9.0 ATTACHMENTS

NONE

10.0 EXHIBIT

NONE

ADVANCED MIXED WASTE TREATMENT PROJECT Morrison Knudsen Corporation	DOCUMENT NUMBER: CSM 3A-601	EFFECTIVE DATE: March 1, 2000
	REVISION: 1	PAGE: 1 OF 10

TITLE: SITE ACCESS CONTROL

APPROVAL

ES&H MANAGER — DATE: 022400

QUALITY MANAGER — DATE: 02-24-00

KP CONSTRUCTION MANAGER — DATE: 2.29.00

REV.	DATE	REVISION DESCRIPTION
0	5/11/99	ORIGINAL ISSUE
1	02/23/00	Revision required due to technical edit and badging issues.

ORIGINATOR: Claude Pettengill (Initial/Date) 022400

IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PERFORMANCE OBJECTIVE 3

2.0 SCOPE 3

3.0 REFERENCES 3

4.0 DEFINITIONS 3

5.0 RESPONSIBILITIES 3

6.0 REQUIREMENTS 4

7.0 EXTERNAL INTERFACE 7

8.0 RECORDS 7

9.0 ATTACHMENTS 7

10.0 EXHIBITS 8

1.0 PERFORMANCE OBJECTIVE

1.1 The objective of this procedure is to implement/adhere to prescribed INEEL M&O contractor policies for controlling access to facilities by issuing badges to MK employees, subcontractors, and visitors; and providing a program of initial, comprehensive, and refresher briefings during the employees' various phases of employment where required.

2.0 SCOPE

2.1 This procedure applies to all employees, subcontractors, escorts, visitors, vendors, and suppliers who require access to RWMC and/or AMWTP sites, in accordance with DOE Orders 470.1 and 1240.2B, to ensure that access to these areas is scheduled and authorized.

3.0 REFERENCES

3.1 DOE Order 1240.2B – *Unclassified Visits and Assignments by Foreign Nationals*

3.2 DOE Order 470.1 – *Controls of Classified Visits Program*

3.3 BNFL Inc., *AMWTP Environment, Safety, and Health Operating Plan*

3.4 DOE/ID-10520 – *AMWTP Tri-Party Memorandum of Agreement*

4.0 DEFINITIONS

4.1 Foreign National. Any person who is not a United States citizen or a United States national.

5.0 RESPONSIBILITIES

5.1 Safety Manager: Has overall authority and responsibility for control of personnel site access.

5.1.1 Responsible for maintaining, reporting, and coordinating personnel accountability at the AMWTP.

6.0 REQUIREMENTS

Security:

6.1 The MK Safety Manager, in accordance with DOE Orders will implement the following program requirements:

6.1.1 Ensure that only authorized persons receive access to BNFL facilities.

6.1.2 Maintain a system to control access and accountability for all personnel at the AMWTP site at all times, including appropriate records of visits to BNFL, Inc. facilities (see 6.3.6 below).

6.1.3 Provide security briefings to persons accessing the AMWTP fenced area. The following briefings must be provided and auditable records maintained:

1. Initial INEEL Construction Employees ES&H Orientation Training provided by the M&O Contractor (as part of the AMWTP new-hire orientation), or AMWTP General Employee Training (GET).

2. General AMWTP overview for DOE-ID, M&O contractor personnel who have current employee training, and/or visitors.

6.1.4 Visits by Foreign Nationals will be arranged in accordance with DOE Order 1240.2B, *Unclassified Visits and Assignments by Foreign Nationals*. Visits will be coordinated through the INEEL M&O contractor's security office.

6.1.5 When the construction site is not occupied, the AMWTP boundary will be monitored by the INEEL Protective Services organization in accordance with their post orders.

6.2 <u>Types of Badges and Passes</u>

General:

6.2.1 All Badges will be provided by the M&O Contractor Visitor Control (Badging Office). A Limited number of non-photo, Visitor badges (bar-coded for accountability) will be issued to the AMWTP Accountability Office.

6.2.2 MK employees and subcontractors who require entry into INEEL M&O contractor controlled facilities shall be issued DOE BAO (Building Access

Only) laminated picture badges. BAO badges permit access to Property Protection Areas and Administratively Controlled Areas.

6.2.3 All AMWTP staff and craft personnel entering the AMWTP will have an AMWTP laminated employee picture badge.

6.2.4 Short-term (<1 week) visitors will be issued an AMWTP Non-Escort or Escort Required visitor badge by the AMWTP Accountability Office.

6.3 Access General Requirements

Security:

6.3.1 Access will be arranged by designated MK Authorizers through INEEL M&O Contractor Visitor Control. AMWTP visitors working on site for more than one (1) week, but not more than thirty (30) days will be issued non-photo visitor badges.

6.3.2 AMWTP personnel entering the INEEL through the North Entrance will be issued a temporary pass by the M&O Contractor Security to drive across the site. Temporary passes do not grant access into any INEEL facilities.

6.3.3 The AMWTP laminated picture badge and/or visitor badge will be controlled upon entry and exit from the AMWTP site access entry point. These badges will be used to maintain accountability, and will not leave the AMWTP site.

Clerk:

6.3.4 Maintain a badge rack of all valid AMWTP (MK, BNFL, BEL, SAIC, RMRS, GTS Duratek, and subcontractors) and visitor badges.

6.3.5 The clerk will issue the correct AMWTP badge to employees arriving for work at the security access gate, and/or issue an appropriate visitor badge to visitors.

6.3.6 Visitors, follow the same process as above with the addition of completing a log (Form 473.01 or equivalent) that reflects the name, signature, organization, citizenship of the visitor, and purposr of the visit.

6.3.7 Log in and return badges to badge rack for all personnel exiting the site.

Construction Personnel/Visitors:

6.3.8 Valid badges will be worn by all employees, subcontractors, escorts, visitors, vendors, and suppliers in all administratively controlled and/or security areas.

6.3.9 Badges will be worn conspicuously above the waist, and below the shoulders on the front portion of the body and on the outer clothing, unless prohibited by health or safety regulations.

6.3.10 When exiting the security access gate, personnel shall return badges to the clerk.

6.4 Reissuance of Badges

General:

MK employees shall be issued new badges in the event:

1. the employee legally changes their name.
2. a significant change in facial appearance takes place.
3. the photo badge is significantly damaged.
4. the employee looses their badge and completes a Lost Badge Affidavit.

6.5 Vehicle Access

User:

6.5.1 Company-owned vehicle access to the RWMC and/or AMWTP sites may be authorized access for a period not to exceed one year. Access of non-government vehicles to the site shall be limited to vehicles on official company business. Subcontractors must submit to the MK Safety Office the make, model, insurance carrier, and license number and State of issue for each vehicle to be admitted to the site.

6.5.2 Each vehicle shall be operated by properly licensed personnel and must prominently display the vehicle pass and two Company identification signs; one for each front door. The signs must be weatherproof and may be permanently or magnetically mounted. The lettering must be at least two inches in height and colored to contrast well with the background. These signs must be displayed on the vehicle at all times while on the site.

6.5.3 All vehicles entering the site will be subject to search prior to gaining access to, or departing from, the site. Lost vehicle passes will be reported to MK Safety. Failure to follow INEEL M&O Contractor rules/procedures or state laws may result in drive-in privileges being revoked.

6.5.4 Privately owned or personal vehicles are not permitted inside the plant perimeter fence.

7.0 EXTERNAL INTERFACE

7.1 INEEL M&O contractor shall provide picture badging services for AMWTP personnel.

7.2 INEEL M&O contractor shall, upon request, provide INEEL construction employees ES&H orientation training.

7.3 INEEL M&O contractor shall, upon request, process visits by foreign nationals.

7.4 INEEL Protective Service Organization will monitor the construction boundary, in accordance with their post orders, when the site is unoccupied.

8.0 RECORDS

8.1 Records will be maintained and dispositioned per Procedure QAP 4.2, "Site Records Management."

9.0 ATTACHMENTS

9.1 None.

10.0 EXHIBITS

10.1 Form 1 – Lost Badge Affidavit

10.2 Form 2 – Vehicle Access Pass

Form 1
Lost Badge Affidavit

LOST BADGE AFFIDAVIT

I, _____, hereby certify that I have lost the MK photo badge assigned to me. I have made a diligent search and have been unable to locate my badge.

Explain how badge was lost:

_____

_____

_____

_____

_____

_____

_____ AMWTP BADGE NUMBER

_____ SSN NUMBER

_____ SIGNATURE

_____ DATE

Form 2
Vehicle Access Pass

VEHICLE ACCESS PASS

Subcontractor: _____

Make: _____

Model: _____

License Number/State: _____

Insurance Carrier _____

_____ _____
Subcontractor Signature Date

_____ _____
MK Safety Manager Signature Date

ADVANCED MIXED WASTE TREATMENT PROJECT A Morrison Knudsen Company	DOCUMENT NUMBER: CSM 3A-602	EFFECTIVE DATE: June 1, 1999
	REVISION: 0	PAGE: 1 OF 7

TITLE: LOCK AND KEY CONTROL

APPROVAL

William Pürpanen — 5/12/99
ES&H MANAGER — DATE

[illegible] — 3/18/99
QUALITY MANAGER — DATE

Bob Wisdom — 5.18.99
CONSTRUCTION MANAGER — DATE

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`INATOR: KELLY POST (Initial/Date) CKP 5/11/99	IDCN NUMBERS:

FORM 4 (2/1/99)

TABLE OF CONTENTS

1.0 PERFORMANCE OBJECTIVE 3
2.0 SCOPE 3
3.0 SOURCE REFERENCES 3
4.0 DEFINITIONS 3
5.0 RESPONSIBILITIES 3
6.0 REQUIREMENTS 4
7.0 EXTERNAL INTERFACE 6
8.0 RECORDS 6
9.0 ATTACHMENTS 6
10.0 EXHIBITS 7

1.0 PERFORMANCE OBJECTIVE

1.1 This procedure outlines the administration of key control for BNFL Inc. facilities.

2.0 SCOPE

2.1 This procedure applies to all AMWTP facilities under the control of MK.

3.0 SOURCE REFERENCES

3.1 BNFL-5232-ESH-01, AMWTP Environment, Safety, and Health Program Operating Plan

3.2 DOE/ID-10520- Tri-Party Memorandum of Agreement

4.0 DEFINITIONS

4.1 Grand Master Keys – allows access to all exterior doors and interior doors keyed locks. Also allows access to all keyed locked fenced gates and personnel entry gates.

4.2 Individual Key – issued to an employee for his or her office only.

4.3 Exterior Door Key – used for building entry only and does not open any internal locks.

4.4 Key Control Officer – The Physical Security Supervisor, who reports to the Safety Manager, serves as the Key Control Officer and is responsible for the overall administration of the key control program.

4.5 Authorized Personnel – Those employees whose key request has been approved by the key control officer.

5.0 RESPONSIBILITIES

5.1 Safety Manager: Has overall authority and responsibility for lock and key control.

5.2 Key Control Officer (Safety Specialist): Responsible for maintaining key control documentation; issuance of keys; and initiating appropriate actions in the event keys are lost and/or cores need replacement.

6.0 REQUIREMENTS

Security:

6.1 Key issuance will be by the MK key control officer (or designated custodian). Upon completion of the initial issue, all remaining keys shall be maintained by Safety and all documentation shall be maintained in the key control officer's (or designated custodian) office. This will ensure limited access to keys. Keys will be controlled and accounted for in accordance with this procedure.

6.2 All keys and cores will be procured through Best Lock Corporation or equal.

6.3 Keys shall be marked DO NOT DUPLICATE and numbered sequentially.

User:

6.4 The individual assigned a key will not loan out that key to any other individual or seek to have that key duplicated.

Security:

6.5 All requests for new or additional keys will be approved by the key control officer (or designated custodian).

6.5.1 The key control officer (or designated custodian) shall:

6.5.1.1 Ensure that the key request is authorized by a department manager.

6.5.1.2 Update the key control log for that employee.

6.5.1.3 Review the company's key control procedure with the employee.

6.5.1.4 Have the employee sign/date the key control log and issue the employee a key.

6.5.1.5 Enter all key numbers issued on inventory control log.

6.5.2 When keys are returned, the key control officer (or designated custodian) shall:

1. Update the key control log, initial and date when key is returned.

User:

6.6 Loss of any key will be reported immediately to the key control officer.

Security:

6.6.1 The key control officer (or designated custodian) shall take appropriate action as necessary to re-core locks if either an exterior door key, gate key or grand key is reported lost.

6.6.2 The key control officer (or designated custodian) shall take the following action for lost keys as required.

1. Replace the core in accordance with Paragraph 6.7.

2. Issue new keys to authorized employees in accordance with Paragraph 6.5.1.

6.7 When changing the core is required (i.e., recombination) due to lost keys, the key control officer (or designated custodian) shall:

1. Enter date of removal on the key control log for the OLD core number.

2. Enter the location and/or the door number and the date installed on the key control log for the NEW core number.

3. Replace employees' old keys with new keys, and issue key per Paragraph 6.5.1.

6.8 Inventory Control Procedures

6.8.1 The keys, locks, cores, and supporting documentation will be inventoried on an as-needed basis. Any physical inventories will be directed by the Safety Manager and will be performed by two individuals. The individuals selected by the Safety Manager will perform the inventory in accordance with the following steps:

1. Step 1 – Each individual will separately count and prepare a physical inventory log of all unissued keys, locks, and cores maintained by Security.

2. Step 2 – Each individual will then separately review key control log located in the key control officer's (or designated custodian) office. This information will then be posted to the physical inventory log.

3. Step 3 – A reconciliation of the physical and key control logs will be prepared, signed by the individuals and forwarded to the Safety Manager.

4. Step 4 – The Safety Manager will review each reconciliation, investigate any discrepancies, and report findings to the Construction Manager.

5. Step 5 – Any unresolved discrepancies will be corrected by replacing the appropriate core(s) and reissuing new keys.

6.9 Concurrent Locking of Access Gates

6.9.1 The construction site and laydown area will be enclosed by a 7-foot security fence. Gates in the construction fence will be double-locked with locks from the AMWTP Safety Manager (or his designee) and the INEEL Protective Services Department.

6.9.1.1 In the event of an emergency, either party can open any construction gate by opening their appropriate lock.

7.0 EXTERNAL INTERFACE

7.1 In the event of an emergency, the INEEL Protective Services Department can open any construction gate.

8.0 RECORDS

8.1 The key control log is used to control keys for BNFL facilities. These records are maintained by the Key Control Officer and dispositioned in accordance with the requirements of QAP-4.2, "Site Records Management."

9.0 ATTACHMENTS

None

10.0 EXHIBITS

None