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Revision 2

Waste Sampling and Characterization Facility (WSCF) Maintenance Implementation Plan

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Revision 2

Waste Sampling & Characterization Facility (WSCF)

MAINTENANCE IMPLEMENTATION PLAN

07-28-97

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FOREWORD

This Maintenance Implementation Plan is written to satisfy the requirements of DOE Order 4330.4B, "MAINTENANCE MANAGEMENT PROGRAM", that specifies the general policy and objectives for the establishment of DOE controlled maintenance programs. These programs provide for the management and performance of cost-effective maintenance and repair of Department of Energy (DOE) property, which includes facilities.

A review of DOE Order 4330.4B against existing PHMC site programs and policies has provided assurance that most requirements of this order have already been implemented by existing programs. Most requirements and applicable guidelines of 4330.4B that are deficient or not implemented are presently being developed and implemented through site policies and programs. Where no program is presently identified or being developed for 4330.4B requirements, responsibility for implementation has been assigned within this plan.

In order to implement the requirements specified, this order requires a Maintenance Management Plan be developed for each DOE controlled facility where maintenance is contractually the responsibility of DOE and where Federal funds are used totally or in part. In developing a maintenance plan for the Waste Sampling & Characterization Facility (WSCF) a number of evaluations have been performed and the results considered for implementation. A maintainability study is performed for ergonomic and ALARA considerations of maintenance activities to maximize the accessibility of equipment and components for maintenance and minimize radiation exposure. Through a concerted maintainability design review of WSCF, an efficient and cost effective maintenance program has been implemented.

TABLE OF CONTENTS

LIST OF TERMS

ACES	Area Control Entry
ALARA	As Low As Reasonably Achievable
ASMWC	Analytical Services Maintenance and Work Control
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DOE	Department of Energy
DOT	U. S. Department of Transportation
EASF	Environmental Archive Storage Facility
EDRTS	Environmental Data Remedial Tracking System
EPA	Environmental Protection Agency
FDH	Fluor Daniel Hanford
FY	Fiscal Year
HAS	Hanford Analytical Services
JCS	Job Control System
LAN	Local Area Network
M&TE	Measuring and Test Equipment
MEL	Master Equipment List
MIP	Maintenance Implementation Plan
MLSF	Mobile Laboratory Storage Facility
NPR	No Planning Required
OJT	On-the-Job Training
PIC	Person in Charge
PM	Preventive Maintenance
PHMC	Post Hanford Management Contractor
RCRA	Resource Conservation and Recovery Act
RSME	Recall Systems Maintenance Engineering Environmental Archive Facility
SAR	Safety Analysis Report
SEL	Safety Equipment List
WMH	Waste Management Hanford, Inc.
WSCF	Waste Sampling and Characterization Facility

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1.0 EXECUTIVE SUMMARY

This Maintenance Implementation Plan (MIP) is written to satisfy the requirements of the U.S. Department of Energy (DOE) Order 4330.4B, "Maintenance Management Program:, that specifies the general policy and objectives for the establishment of the DOE controlled maintenance programs. These programs provide for the management and performance of cost-effective maintenance and repair of the DOE property, which includes facilities.

This document outlines maintenance activities associated with the facilities operated by Waste Management Hanford, Inc. (WMH).

The objective of this MIP is to provide baseline information for the control and execution of WMH Facility Maintenance activities relative to the requirements of Order 4330.4B, assessment of the WMH maintenance programs, and actions necessary to maintain compliance with the Order.

Section 2.0 summarizes the history, mission and description of the WMH facilities. Section 3.0 describes maintenance scope and requirements, and outlines the overall strategy for implementing the maintenance program. Specific elements of DOE Order 4330.4B are addressed in Section 4.0, listing the objective of each element, a discussion of the WMH compliance methodology, and current implementation requirements with references to WMH and HNF policies and procedures. Section 5.0 addresses deviations from policy requirements, and Section 6.0 is a schedule for specific improvements in support of this MIP.

A review of DOE Order 4330.4B particularly Chapter II, against the WMH policies and procedures, assures that the applicable requirements of the Order are implemented. This includes documentation of the maintenance training program, the scope of inspections addressing the As Low As Reasonably Achievable (ALARA) concept, development of a Master Equipment List (MEL), and the facilities for storage and control of tools and equipment.

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2.0 INTRODUCTION

2.1 Facility Complex Description

The Waste Sampling and Characterization Facility (WSCF) complex consists of the main structure (WSCF) and four support structures located in the 600 Area of the Hanford site east of the 200 West area and south of the Hanford Meteorology Station. WSCF is to be used for low level sample analysis. The Laboratory features state-of-the-art analytical and low level radiological counting equipment for gaseous, soil, and liquid sample analysis. In particular, this facility is to be used to perform Resource Conservation and Recovery Act (RCRA) of 1976 and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 sample analysis in accordance with U.S. Environmental Protection Agency Protocols, room air and stack monitoring sample analysis, waste water treatment process support, and contractor laboratory quality assurance checks. The samples to be analyzed contain very low concentrations of radioisotopes. WSCF is divided as follows:

The Main facility consists of:

1. An Administrative support area, consisting of offices, conference room, computer area, lunchroom and change rooms are located on the main floor.

2. A nuclear Spectroscopy Laboratory is located below the Administrative Support Area and is connected to the laboratory area by means of stairs and elevators.

3. Laboratory rooms for sample preparation, organic, inorganic, radiochemistry, waste handling.

The structures supporting WSCF are:

1. The Environmental Data Remedial Tracking System Facility (EDRTS) provides a support facility for computer data center and a system training classroom.

2. The Environmental Archive Storage Facility (EASF) provides modular temperature controlled chambers for storage of samples along with storage of samples in ambient conditions.

3. The Mobile Laboratory Storage Facility (MLSF) is designed to house mobile laboratory vehicles and provide office space, a calibration and laboratory equipment room, storage areas, lunch room, and rest rooms.

4. WSCF Support Facilities:

    a. A covered slab for the storage of full and empty compressed gas bottles and general storage.

    b. Solid Waste Storage building to provide temporary (<90 days) storage of containerized laboratory wastes.

c. Underground Waste Storage Tanks. All sinks and hood drains from the laboratories are routed to two 1000 liter storage tanks and pumped out at less-than-90-day intervals.

The laboratory has low level analytical equipment for gaseous, soil, and liquid sample analysis. Portal monitors are utilized for egress control of radioactive controlled areas and building egress, along with survey stations where required. HVAC and filtration of sample areas is provided through HEPA filter systems and exhaust system control. A stack monitor is installed to monitor all stack emissions. There are two separate drain systems, one for normal drainage and the other is a closed system providing the drain system for the sample areas. The sample and materials receiving area screens all incoming samples to assure they are within the guidelines of the WSCF mission and also to segregate and control contamination within WSCF.

2.2 Mission

The WSCF Complex is to be used to perform Resource Conservation and Recovery Act (RCRA) of 1976 and Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 sample analysis in accordance with U.S. Environmental Protection Agency Protocols, room air and stack monitoring sample analysis, waste water treatment process support, and contractor laboratory quality assurance checks.

2.3 History/Scheduled Life

WSCF was put into service in November 1994. This complex is used to support low level sample analysis in conjunction with tri-party agreement requirements. The scheduled life of the facility is projected to be for 30 years and is built and designed for easy decommissioning.

3.0 DOE ORDER 4330.4B REQUIREMENTS

3.1 Maintenance Management Program Scope

The Maintenance Management Program for the WSCF encompasses all facilities and auxiliary buildings associated with the WSCF Complex. Maintenance activities associated with the WSCF are provided for, by the WSCF maintenance organization. These activities, whether for building upkeep or for repair, calibration and/or rework of analytical instrumentation or laboratory equipment, are performed by the WSCF maintenance organization. A Master Equipment List (MEL), reference section 4.0, has been developed for WSCF, as part of the design effort, per the requirements of DOE Order 4330.4B.

3.2 Maintenance Program Requirements

System and component maintenance requirements are established based on analyses that consider safety classifications, programmatic concerns; risk assessments of the facility, system, and component; requirements derived from technical specifications or Operations Safety Requirements; and operating experiences and maintenance history. They address the following DOE Order 4330.4B requirements:

Requirement: (1) The structures, systems, and components included, using a graded approach and the requirements derived from Technical Safety Requirements.

Discussion: A Technical Specification, Chapter 11, defines Technical Safety Requirements. The WSCF Master Equipment List (MEL) and Safety Equipment List (SEL) define the included structures, systems, and components.

Requirement: (2) The management systems used to control maintenance activities, including the means for monitoring and measuring the effectiveness of the program and the management of maintenance backlog.

Discussion: WSCF maintenance activities are managed and controlled in accordance with WHC-CM-1-8 (HNF-PRO-069), "Work Management." WHC-CM-1-8 includes means for monitoring and measuring program effectiveness and backlog management through the Job Control System (JCS).

Requirement: (3) The assignment of responsibilities and authority for all levels of the maintenance organization.

Discussion: Analytical Services Maintenance and Work Control Manager (ASMWC) is responsible for maintaining a trained, qualified staff to support the maintenance needs of WSCF. The Maintenance Team Leader is responsible for directing field work activities.

Requirement: (4) Mechanisms for feedback of relevant information, such as trend analysis and instrumentation performance/reliability data, to identify necessary program modifications.

Discussion: Addressed in WHC-CM-1-8 (HNF-PRO-069) and monthly performance indicators are published.

Requirement: (5) Provisions for identification, evaluation, and correction of possible component, system design, quality assurance, or other relevant problems.

Discussion: Addressed in WHC-CM-1-8 (HNF-PRO-069).

Requirement: (6) Performance indicators and criteria to be utilized to measure equipment, systems, and personnel effectiveness in maintenance activities.

Discussion: Addressed in WHC-CM-1-8 (HNF-PRO-069).

Requirement: (7) Interfaces between maintenance and other organizations (i.e., operations, engineering, quality, training, environment, safety, and health).

Discussion: Defined in WHC-CM-5-4, section 2, "Organization".

Requirement: (8) A self-assessment program to monitor the effectiveness and efficiency of the maintenance program.

Discussion: A quarterly self-assessment program has been developed for WSCF Work Control and Maintenance. In addition, assessments of maintenance activities are performed when deemed appropriate or when major changes to maintenance policy and practice so warrants or as required by the Order (every two years).

Requirement: (9) Provisions for planning, scheduling, and coordination of maintenance activities.

Discussion: Addressed in WHC-CM-1-8 (HNF-PRO-069), WHC-IP-1217 and the JCS User Manual.

3.3 Graded Approach Strategy

"Graded Approach" is defined as the depth of detail required for implementation and the magnitude of resources expended for a particular maintenance management element.

3.3.1 Overall Strategy and Basis

A graded approach is used to identify the depth of detail and the level of commitment required to ensure safe and reliable operations, environmental compliance, programmatic mission, and facility preservation. Personnel and public safety, availability of funding, operational safety/reliability, environmental safety/compliance, safeguards and security, programmatic mission, and other facility specific requirements are to be considered when work is prioritized and performed.

At WSCF a Master Equipment List (MEL) and a Safety Equipment List (SEL) have been developed to provide designation and categorization of equipment and components as they apply to safe operation and shutdown of the facility. The MEL and SEL ensure all appropriate equipment has been identified. Maintenance activities initiated and procedures developed as a result of the safety classification ensure appropriate levels of maintenance are applied.

3.3.2 Strategy for Safety Related Items

WSCF has no safety class equipment. Various levels of review and approval, work control, procedural detail and requirements, documentation, historical records, oversight are used to address industrial safety requirements and safety significant systems and equipments. The philosophy for assignment of work priorities and allocation of resources to facility maintenance activities is for correction of discrepancies having a direct impact on facility and personnel safety; other maintenance on items not required for safe operation, or on items considered enhancements or plant betterment.

WHC-CM-3-5 (HNF-PRO-234), "Document Control and Records Management Manual", Section 12.7, "Approval of Environmental, Safety, and Quality Affecting Documents" provides control for appropriate application of maintenance activities.

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4.0 DOE ORDER 4330.4B CHAPTER II REQUIREMENTS

4.1 Evaluation of Compliance Elements

The Hanford Site has existing programs and administrative guidelines providing for control and implementation of a maintenance program conforming to DOE Order 4330.4B. Maintenance activities at WSCF are performed in accordance with these existing documents and procedures. This Maintenance Management Plan correlates the DOE requirements to the existing program, and where appropriate defines any special maintenance program deviations and/or special program activities analogous to WSCF.

4.2 Maintenance Organization and Administration

The organization and administration of the maintenance function ensures a high level of performance is achieved through effective implementation and control of maintenance activities. Facility policies reflect striving for excellence in facility maintenance and operation.

4.2.1 Maintenance Organization Policies

Objective: To establish and communicate policies, procedures, and standards for the administration, implementation and control of maintenance activities.

Discussion: Project Hanford and facility-specific policies, procedures, and standards are clearly defined and communicated to WMH personnel through facility orientation, formal and informal training, staff and safety meetings, and required reading programs.

Improvement: WMH is in compliance with the intent of the Order.

4.2.2 Maintenance Strategy

Objective: To establish an integrated approach (including all affected organizations) in performance of maintenance activities which uses strategic planning to establish specific goals for the maintenance program.

Discussion: **Working Relationships**

The WSCF Maintenance Team Leader supervises maintenance activities and coordinates any interface activities between cross discipline organizations required while performing maintenance at WSCF.

Control of maintenance activities is performed by the WSCF Work Control Center and the JCS as directed by the operations and maintenance organization.

Working relationships, responsibilities and lines of authority among organizational groups supporting the maintenance functions are defined in WMH administrative and company manuals.

Discussion: **Long Range Planning**

WMH uses a multi-year program plan for long range scheduling, planning for personnel needs, and identifying material requirements. Long-range planning of maintenance activities is performed through continuous review and updating of Level 4 schedules, Plan of the Week, and Plan of the Day meetings. Long-range planning of corrective maintenance work packages is performed by the Operations, Work Control, Engineering, and Maintenance managers.

The WSCF Facility Manager is responsible for reviewing long-range planning of major maintenance activities and facility outages, as applicable.

The ASMWC Manager monitors staffing and resource requirements to assure all WSCF maintenance tasks can be supported. If any additional training is required to support a task, the ASMWC Manager allocates time for training.

The WSCF Maintenance Team Leader reviews scheduling requirements of facility activities to ensure adequate staffing is available during periods of anticipated facility needs. Also the team leader provides to higher management justification for additional personnel and training.

Present staffing for supervisory, maintenance and work control personnel is funded for 9.2 full time equivalent (FTE).

Improvement: WMH is in compliance with the intent of the Order.

4.2.3 Staffing Resources

Objective: To assemble and maintain a maintenance organization staff selected to prescribed qualification criteria commensurate with the facility mission(s), and maintaining the level of skill for maintenance personnel through training and incentive programs.

Discussion: The WSCF Maintenance Team Leader screens personnel to assure the skill level of the individual craftsman, is commensurate with the risk and complexity of the assigned activities.

A periodic review of maintenance personnel training and performance is performed by the WSCF Maintenance Team Leader and training needs are forwarded to the ASMWC Manager.

The qualifications for maintenance personnel are defined by existing site procedures and ensure personnel are trained and capable of performing work.

The WSCF Facility Manager reviews staff augmentation requirements to support outages and assigns individuals to review the qualifications of augmentation personnel to assure they adequately provide the necessary and timely support to the facility.

The ASMWC Manager and the WSCF Maintenance Team Leader review personnel performance and productivity, along with manager recommendations, to ensure qualified maintenance personnel are utilized. Training designed to assist deserving individuals in career progression assignments and activities is made available through existing WMH training programs.

Improvement: An evaluation of expected personnel resources has been made and staffing needs meet the intent of the Order.

4.2.4 Goals, and Objectives

Objective: Establish maintenance goals to monitor maintenance activity progress, detect development of trends (favorable and unfavorable), improve performance, create a safe working environment, and measure the overall maintenance program effectiveness.

Discussion: There are no maintenance organizational procedures defining the organizational goals and objectives for the maintenance organization.

Improvement: Develop goals for the maintenance department and established performance indicators for monitoring performance.

4.2.5 Accountability

Objective: To monitor personnel in the performance of their assigned responsibilities and administer recognition or disciplinary actions as appropriate to individual performance.

Discussion: Fluor Daniel Hanford and WMH policies and procedures require annual employee performance appraisals and other evaluations to ensure that personnel are recognized for accomplishments and personnel issues are identified and remedied. Specific job responsibilities and performance expectations are discussed with each individual. Standards of Conduct are defined and communicated to all employees.

Improvement: The existing WMH program satisfies the intent of the DOE order.

4.3 Training and Qualification

A maintenance training and qualification program consistent with DOE Orders 5480.5, 5480.6, 5480.20, and 5480.18A is established and controlled by WHC-CM-2-15. WSCF maintenance personnel are trained and qualified under the Maintenance Training Program requirements specified in WHC-CM-5-4 and the site TMX system.

4.3.1 Responsibilities

Objective: Establish a maintenance training program with a clear definition of requirements and responsibilities for development and implementation. Program development includes input from maintenance managers and supervisors and be closely coordinated with the training organizations.

Discussion: The responsibility for establishing, maintaining, and implementing the maintenance training programs is defined in WHC-CM-2-15, "TRAINING ADMINISTRATION MANUAL" (HNF-PRO-167 through 182). The ASMWC Manager is responsible for coordinating the training program between the WSCF maintenance organization and the PHMC training organization. This is accomplished in accordance with existing site procedures and WHC-CM-2-15 (HNF-PRO-167 through 182).

A formal training program for skills training specific to the job position has been developed. Specific WSCF skills are identified and the training program provides for these specialized skills. Periodic review is performed and any enhancements made.

Improvement: WMH is in compliance with the intent of the Order.

4.3.2 Maintenance Training Programs

Objective: Maintenance training programs include courses for all functional aspects of the maintenance activity (e.g., management, planning, engineering, support functions) goals for the maintenance program.

Discussion: Maintenance training programs pertaining to managerial, supervisory, planner/scheduler, engineering, warehousing, craft positions, contractor personnel, and other positions, as deemed necessary, are accomplished in accordance with WHC-CM-2-15 (HNF-PRO-167 through 182) and WHC-CM-5-4.

Training requirements for personnel who perform functional maintenance activities is accomplished according to existing WMH procedures and programs. The training records of these personnel are reviewed, and any additional training provided for.

Improvement: WMH is in compliance with the intent of the Order.

4.3.3 Training Schedules and Support

Objective: Training lessons are provided compatible with the individual's skills and abilities. Schedules are coordinated between maintenance managers and training organizations to ensure availability of instructors, facilities, and support requirements, as well as availability of trainees.

Discussion: The WSCF Maintenance Team Leader ensures training implementation is coordinated between the maintenance and the training organization. The 222S Training Coordinator prepares training schedules, coordinates availability, and ensures qualified instructors are available to teach the courses.

Qualification of instructors is controlled by PHMC site training Department in accordance with WHC-CM-2-15 (HNF-PRO-167 through 182).

Improvement: WMH is in compliance with the intent of the Order.

4.3.4 On-the-Job Training

Objective: On-the-job (OJT) training requirements are identified, completed, and documented prior to assignment to perform the task independently.

Discussion: A limited informal program of on-the-job training (OJT) is in existence. Limited funding has restricted the development of all encompassing OJT program.

Improvement: WMH is not fully in compliance with the intent of the Order. A comprehensive OJT maintenance training program is currently under development. Section 6.0 of this MIP defines the corrective actions and implementation schedule.

4.3.5 Qualifications

Objective: Training and retraining schedules are maintained to keep all personnel adequately qualified and/or certified.

Discussion: The WSCF Maintenance Team Leader and ASMWC Manager establishes adequate records to verify qualification standards and evaluation methods to guarantee trainee competence.

The WSCF Maintenance Team Leader is directly involved in approving and periodically reviewing the maintenance training program.

Improvement: The program for WSCF Maintenance organization complies with existing DOE Order requirements. WSCF management continues to periodically monitor this program for conformance. There is no improvement required at this time.

4.3.6 Training in Root Cause Analysis

Objective: An appropriate number of individuals are trained in principles and methods of root cause analysis and various approaches to cause and effect analysis. Individuals are able to support maintenance needs and schedules.

Discussion: Representative WMH managers, supervisors and others trained in the principles and the methods of root cause analysis are called upon to perform this service. When needed, this team assembles and provides an independent determination of cause and effect. Personnel from other WMH organizations with the requisite training are called upon when necessary. Results are documented and action plans are developed.

Improvement: The program for WSCF Maintenance organization complies with existing DOE Order requirements.

4.3.7 Training Program Approval, Effectiveness, and Feedback

Objective: The ASMWC Manager participates in the review and approval of the maintenance training program and training topic lesson plans. Performance of maintenance personnel is monitored for evaluation of training effectiveness, and personnel feedback is used in the effectiveness evaluation.

Discussion: The maintenance training program is evaluated in accordance with divisional and WMH-specific procedures. Mechanisms are in place to promote feedback and address concerns, which include comments from trainees at the end of each training session.

Improvement: WMH is in compliance with the intent of the Order.

4.3.8 Management and Supervisory Training

Objective: A formalized program is in place to develop and maintain management and supervisory skills. Training provided addresses topics (e.g., personnel interfacing, communications, assessments) necessary for effective management and team building. The training program considers support of career progression for entering the supervisory and management field.

Discussion: The training department provides management and supervisory training including generic areas such as managerial and supervisory skills, accountability, assessment and observation of routine activities, communication skills, teamwork, and company management philosophies. Specific supervisor/Person-in-charge (PIC) qualifications are required of maintenance supervisors.

Improvement: Present training is sufficient to meet the requirements of the DOE Order.

4.4 Maintenance Facilities, Equipment, and Tools

Maintenance facilities, equipment, and tools efficiently support facility maintenance and maintenance training.

4.4.1 Facilities

Objective: Shop facilities are designed with a high consideration of industrial safety and convenience to the activities they support. Appropriate environmental control systems are provided, adequate support equipment, storage and lay-down areas are available, and controls are in place for facility use.

Discussion: **Shops and Satellite Work Areas**

A small maintenance area is provided for personnel and maintenance activities at WSCF. This area is equipped with electrical power and pneumatic supplies for bench testing and troubleshooting. The shop is multi-disciplined and supports all maintenance personnel. Storage is provided in the work area for tools and test equipment. Specialized tools and test equipment is located in the shop unless size limitations require external facilities or areas. The WSCF Maintenance Team Leader assesses shop size and if needed, additional space will be provided by satellite buildings or in other areas.

The WSCF Maintenance Team Leader is responsible for assuring shop layout and design is conductive to a safe and efficient working environment.

The amount and type of work being performed in the shop area is normal day-to-day repair and servicing. Any specialized work requiring additional environmental controls (e.g., welding, machining, high voltage, radiation control, etc.) is performed at specific designated areas. The WSCF Maintenance Team Leader assesses work and determines where and under what controls the work is performed. Additional satellite work areas and

stations will be provided for once a need is determined and funding becomes available.

Discussion: **Lay-down and Staging Area**

Lay-down and staging areas are provided for by the facility manager once a need for these areas becomes apparent. These areas are segregated according to radiological controls, hazardous materials, application, security requirements, and any other consideration. All areas are clearly marked and administratively controlled.

Discussion: **Storage Facilities**

Storage facilities for supplies and parts are provided for within the facility and on the facility grounds.

Specialized storage for radiological control is identified and controlled through HSRCM-1, "Hanford Site Radiological Control Manual", and other existing site requirements and procedures.

Storage of flammable and hazardous materials is performed in accordance with WHC-CM-4-3, "Industrial Safety Manual" (HNF-PRO-096), and other existing site procedures.

Discussion: **Temporary Facilities**

No temporary facilities are in use at this time, but may be provided on an as-needed basis.

Discussion **Decontamination Facilities**

Decontamination of equipment, and tools, is performed on an as-needed basis. All contaminated equipment and tools is controlled by HSRCM-1.

Improvement: An assessment of need for additional storage areas and other maintenance areas has been made. The shop area is adequate, although a larger shop area to support larger tools, (drill press, etc.) would enhance the maintenance facility. But existing shop area meets the intent of the Order.

4.4.2 Tool and Equipment Storage

Objective: Storage facilities are in appropriate proximity to shops and work areas to support maintenance efficiency. Appropriate environmental controls are in place for personnel and equipment protection.

Discussion: Tool and equipment storage is provided for by the Maintenance organization. Special tool and equipment storage has been identified. The WSCF

Maintenance Team Leader addresses any need for additional storage space to the facility manager. The facility manager evaluates the need, and if appropriate, provides the maintenance department with additional storage facilities.

Improvement: Presently meets the intent of the DOE Orders.

4.4.3 Office Equipment

Objective: Office equipment necessary to support an efficient maintenance program is available (e.g., furniture, computers, communications, reproduction).

Discussion: Adequate communication, calculation, reproduction, and other office equipment is provided for by WSCF facility management.

The computer department, PHMC, ensures adequate terminal and interface hardware are provided at WSCF. LAN systems and file server requirements are provided for.

Computer hardware and software along with other appropriate office equipment has been procured and installed. Any additional office equipment required will be procured as needed.

Improvement: No improvement required.

4.5 Types of Maintenance

A proper balance of corrective and preventative maintenance should be employed to provide a high degree of confidence facility equipment degradation is identified and corrected, that equipment life is optimized, and the maintenance program is cost effective.

4.5.1 Master Equipment List (MEL)

Objective: Develop (and maintain) a MEL for use in identifying equipment safety classifications and maintenance program scope, and development of the equipment history file.

Discussion: A detailed MEL of both safety-related and non-safety-related equipment, components and structures has been developed from the SAR and other design documents, and is included in the WSCF maintenance program.

Work Control reviews any additions to the MEL and controls additions through the ECN program.

A review of the MEL has been conducted and determined to be complete and accurate.

Improvement: No improvement required at this time.

4.5.2 Types of Maintenance

Objective: Develop a maintenance program that establishes an appropriate, and cost effective, balance of preventive, predictive, and corrective maintenance to minimize equipment downtime and provide a high degree of confidence that facility equipment degradation is identified and corrected.

Discussion: **Corrective Maintenance**

WSCF maintenance personnel perform corrective maintenance activities in accordance with existing site procedures. Corrective maintenance is documented and controlled in accordance with WHC-CM-1-8 (HNF-PRO-069), "Work Management". Feedback to the cog engineer is through the JCS program and maintenance supervision. The Cog engineer evaluates the preventive maintenance program for effectiveness and changes it where necessary.

Discussion: **Preventive Maintenance**

The ASMWC Manager implements an effective preventive maintenance program including systems and equipment affecting safe and reliable facility operation. As part of the maintenance surveillance program, the ASMWC Manager ensures functional tests of installed equipment and/or systems (such as standby equipment or non-operating equipment scheduled for rotation) are conducted and documented. This is performed as part of post-maintenance testing activities and documented on the JCS.

Preventive maintenance is performed at predetermined and scheduled intervals, as prescribed by the Cog engineer, and seeks to maximize equipment availability. Preventive maintenance documentation provides a record of activities performed, data collected, and, where appropriate, the "as-found" and "as-left" condition of the equipment, and supplies this information to the JCS and the JCS/PMS module.

The maintenance department acquires trending data as part of the maintenance surveillance program for long-term performance evaluations, such as bearing temperatures, pump speed, and vibration data.

A program for calibration and servicing of specialized laboratory equipment is integrated into the PM program. The Cog engineer is responsible for determining the type of PM and the frequency for performance.

Discussion: **Predictive Maintenance**

The need for a predictive maintenance program has been evaluated and it has been determined that it is not cost effective. WSCF Cog Engineers will keep

abreast of predictive maintenance techniques and analyze the need to predictive maintenance programs.

Improvement: At this time predictive maintenance techniques are not used at WSCF. Cog Cog Engineers continue to evaluate the need for a predictive program and will implement if needed.

4.5.3 Maintenance Action and Frequency Selection

Objective: Maintenance frequencies are established to satisfy code and specification requirements, and to ensure optimum equipment operating life and performance.

Discussion: The Cog engineer reviews WSCF equipment history periodically to ensure PM's and their frequencies are used to improve equipment performance.

The ASMWC Manager evaluates maintenance actions and their frequencies to ensure code and regulatory requirements are being met.

The preventive maintenance program is modified as necessary from review and analysis of historical data by the Cog Engineer. This ensures the maintenance program is cost effective and required maintenance intervals are adequate. Any change to the maintenance program is documented.

Improvement: No improvement required.

4.5.4 Scheduling

Objective: Preventive maintenance activities are scheduled according to assigned frequencies and in conjunction with corrective maintenance of the same equipment or with other activities related to equipment.

Discussion: The ASMWC Manager reviews the JCS periodically to determine if a proper balance of preventive to corrective maintenance activities are being performed. This review determines when it may be advantageous to perform maintenance activities on related equipment, loop components, or on equipment in close proximity. This ensures equipment maintenance is optimized, productivity is increased, and facility down time is minimized.

Improvement: Scheduling techniques used at WSCF meet the intent of the Order.

4.6 Maintenance Procedures

Maintenance procedures and other work-related documents (e.g., drawings and instructions) are prepared and used to provide appropriate work direction and to ensure that maintenance is performed safely and efficiently. A balance of written guidance, craftsman's skills, and work-site supervision (graded approach) is required to achieve the quality workmanship essential to safe and reliable facility operation.

4.6.1 Procedure Development and Writing

Objective: Maintenance procedures are prepared by well qualified personnel, knowledgeable about maintenance standards and administrative procedures, and familiar with the system and equipment involved.

Discussion: Procedures are developed by facility engineering or by other WMH procedure development resources, for, and used, in all work that could result in a significant process transient, degraded facility reliability, personnel or equipment hazard, or when the complexity of the work deems a procedure appropriate. Procedures also define preventive maintenance activities.

The WSCF Maintenance Team Leader ensures all procedures are developed and formatted in accordance with site standards, and departmental desk instructions.

Improvement: The existing program meets the intent of the DOE Orders.

4.6.2 Procedure Verification

Objective: Procedures are reviewed for format and technical accuracy. Format used incorporates human factors principles and other administrative policies. Reviews are conducted by other than the procedure writer.

Discussion: The WSCF Maintenance Team Leader ensures all procedures are verified in accordance with WHC-CM-3-5 (HNF-PRO-233), "Document Control and Records Management Manual", Section 12.7, "Approval of Environmental, Safety, and Quality Affecting Documents".

Improvement: At present the existing procedure verification program is adequate to meet the requirements of the DOE Order.

4.6.3 Procedure Validation

Objective: Procedures are reviewed for usability and correctness to ensure sufficient and understandable instructions are provided and are compatible to the equipment and task specified.

Discussion: The WSCF Maintenance Team Leader ensures all maintenance procedures are validated by the maintenance organization in accordance with WHC-CM-1-8 (HNF-PRO-069).

Improvement: The maintenance validation program meets the intent of the Order.

4.6.4 Procedure Approval

Objective: Procedures are reviewed to applicable specifications and administrative procedures and approved by appropriate levels of management.

Discussion: The WSCF Maintenance Team Leader and Facility Engineering ensure all procedures are approved in accordance with WHC-CM-3-5, Section 12.7 (HNF-PRO-233).

Improvement: Procedures are reviewed and approved in accordance to the intent of the Order.

4.6.5 Procedure Use

Objective: Procedure control is established ensuring availability and currency of the procedures to be used. Procedure compliance requirements are clearly stated, communicated, and understood by users.

Discussion: The WSCF Maintenance Team Leader and the ASMWC Manager ensure procedure compliance is fully understood by all employees. The JCS ensure procedures used in the field are the most current and correct revision for use. Document control issues and controls maintenance procedures per existing plant procedures.

The WSCF Maintenance Team Leader ensures a graded approach is used to provide the need for work procedures used by the maintenance organization and in accordance with the requirements of WHC-CM-5-4.

The WSCF Maintenance Team Leader ensures all maintenance procedures are changed and revised in accordance with WHC-CM-1-8 (HNF-PRO-069).

Improvement: Compliance with the DOE Order is met.

4.7 Planning, Scheduling, and Coordination of Maintenance

An effective system for planning, scheduling, and coordinating maintenance activities are implemented in order to ensure that maintenance is accomplished in a timely manner, improve maintenance efficiency, reduce radiation exposure, and increase equipment availability.

4.7.1 Planning for Maintenance Activities

Objective: Establish a planning program that provides work instructions, identifies resource requirements, and coordinates support functions.

Discussion: **Planning Group Organization**

The planning activities for WSCF is performed by the WSCF Work Control Group utilizing the JCS in accordance with WHC-CM-1-8 (HNF-PRO-069), "Work Management."

Discussion: **Planning Group Responsibilities**

The WSCF Work Control Group is responsible for all planning activities at WSCF. The planning organization performs work activities in accordance with existing site procedures.

Improvement: Compliance with the DOE Order is met.

4.7.2 Scheduling Maintenance Activities

Objective: All maintenance activities are performed using a clearly defined schedule, supported by all affected organizations, tracked to maintain status, and performed according to priorities established by operations.

Discussion: **Control of Work Backlog**

The WSCF Operations Managers reviews plans to assure work is performed on schedule. Work backlog is tracked and controlled within the JCS in accordance with the requirements of WHC-CM-1-8 (HNF-PRO-069), "Work Management". The WSCF Operations Manager and ASMWC Manager are responsible for reviewing the Backlog for work status and problem areas. The Scheduling of work packages and work activities is performed through the JCS, the Work Control Group, and the WSCF Operations Manager.

Discussion: **Work Priority**

The WSCF Work Control Group assigns work priorities on the basis of safety and operational requirements, using the graded approach. This is controlled by the requirements of WHC-CM-1-8 (HNF-PRO-069).

The facility manager may increase specific task work priority if deemed necessary and appropriate.

The Weekly Planning Meeting, Plan-of-the-week, and Plan-of-the-Day are used for integrating work priorities with the long range schedule.

Improvement: The present program meets the intent of the DOE Orders.

4.7.3 Coordination of Maintenance Activities

Objective: Coordinate maintenance activities to ensure that work can be effectively accomplished.

Discussion: Routine planning meetings are held to ensure coordination of activities. The WSCF Maintenance Team Leader provides the necessary supervision to assure all maintenance activities are performed in cooperation and coordination with other departments.

Improvement: Compliance with the DOE Order is met at the present time.

4.7.4 Outage Planning, Scheduling, and Coordination

Objective: Establish program for identifying all maintenance activities to be performed during a defined facility or equipment outage and develop schedule for planning and performance of those activities.

Discussion: As major outages are identified, a detailed maintenance plan is established to ensure required maintenance activities are coordinated, statused and performed. The maintenance plan provides a schedule for major outages and maintenance evolutions. This plan is periodically reviewed and updated to show any scheduling changes.

Improvement: There is no improvement required at this time.

4.8 Control of Maintenance Activities

Management directed and delegated involvement in control of maintenance activities ensure maintenance practices are effective in maintaining safe, efficient, and reliable facility operation.

4.8.1 Work Control Procedure

Objective: Work control is accomplished in accordance with a formal program which defines the requirements and controls for performing work. The program is used to identify all facility deficiencies, modifications, preventive maintenance and surveillance testing, avoid redundant identification of deficiencies, and post-maintenance activities.

Discussion: WHC-CM-1-8 (HFN-PRO-069 and HNF-IP-1217) are the administrative procedures describing work control requirements.

Improvement: The WMH administrative policies and procedures applying to work control are adequate and comply with the DOE Order.

4.8.2 Work Request

Objective: All maintenance activities performed are controlled by the facility work control program. Work request documents clearly define work to be performed, equipment on which work is to be performed, pre (and post) requisites, and documentation requirements. Work requests are reviewed by affected organizations before release for work and upon completion of work.

Discussion: The work request process is controlled through the application of the JCS program in accordance with WHC-CM-1-8 (HNF-PRO-069 and HNF-IP-1217).

Work requests are reviewed in accordance with the requirements of WHC-CM-1-8 (HNF-PRO-069) and WHC-CM-3-5, Section 12.7 (HNF-PRO-233).

Improvement: The existing work request system complies with the DOE Order.

4.8.3 Supervision of Maintenance Activities

Objective: Maintenance managers routinely monitor work in progress to ensure maintenance activities are conducted in accordance with facility procedures and work package instructions. Problems observed are analyzed and feedback is provided to prevent recurrence.

Discussion: WSCF Maintenance Team Leader and the ASMWC Manager routinely monitors work in progress to help ensure maintenance activities are conducted in accordance with DOE and Site policies and procedures, per WMH job descriptions, and standard industry practice.

Improvement: The present supervisory and management overview of work activities complies with the DOE Order.

4.8.4 Review of Completed Work Requests

Objective: Completed work packages are reviewed to verify all work items, including post-maintenance testing and inspections, have been completed in an acceptable manner before returning system or equipment to service.

Discussion: Post-work review of completed maintenance activities is performed prior to work package closure and archiving in accordance with WHC-CM-1-8 (HNF-PRO-069).

The Cog Engineer, Facility Operations, and/or WSCF Maintenance Team Leader may request post-maintenance testing in addition to post-maintenance tests already specified on the work package, if the scope of the work performed deems additional retesting.

The Cog Engineer recommends closure of the work package after review.

Improvement: The present program and policies affecting completed work packages complies with the intent of the DOE Order.

4.8.5 Temporary Repairs

Objective: Temporary repairs are accomplished and controlled to the same level as permanent repairs.

Discussion: Temporary changes and modifications are performed in accordance with the requirements of WHC-CM-6-1 (HNF-PRO-446), "Standard Engineering Practices", and JCS. Temporary repairs or changes are converted to permanent repairs or official design modifications in a timely manner, as required by applicable site procedures.

Improvement: The present program for changes complies with the DOE Order.

4.8.6 Control of Nonfacility Contractor and Subcontractor Personnel

Objective: Nonfacility contract and subcontract personnel who perform maintenance or modification work on WSCF facility systems are qualified for the work performed and trained in accordance with access requirements.

Discussion: Site procedures provide for access control and general employee training of contractor and subcontractor personnel. The WSCF operations organization assures any additional training required for contractor or subcontractor personnel is performed and documented in accordance with site procedure. Qualification of contractor personnel is certified by the contractor; and verified and documented by the cog engineer before commencement of work activities.

Improvement: This existing policy is adequate to meet the intent of the DOE Order.

4.9 Post-Maintenance Testing

Post-Maintenance testing is performed to verify components can fulfill their design function when returned to service after maintenance.

4.9.1 Post-Maintenance Test Requirements

Objective: The work completion and retest process at WMH addresses control and documentation of retest requirements. Work requests provide specific instructions for test and acceptance criteria when maintenance work is performed.

Discussion: Post-maintenance testing is conducted in accordance with WHC-CM-1-8 when maintenance work has been performed and when specified by the Cog Engineer or Operations. Most repair work performed at WSCF does not require any post-maintenance testing other than an operability test, as applicable.

Improvement: There is no need for improvement at this time.

4.9.2 Post-Maintenance Test Program Scope

Objective: All maintenance activities are reviewed for applicability of postmaintenance testing and appropriate testing instructions (and acceptance criteria) are provided.

Discussion: Post-Maintenance testing at WSCF is performed when the work instructions specify the requirement.

Improvement: The existing program meets the intent of the Order.

4.9.3 Post-Maintenance Test Control

Objective: The work control program addresses control of post-maintenance testing that covers all conditions of single or multiple organization involvement and testing that is deferred until a later date.

Discussion: Post-maintenance testing is an integral part of the work control process. It is strictly controlled and thoroughly documented in facility administrative procedures. Administrative procedures require that all retests be completed before a work package can be closed. The status of all open packages is tracked, reviewed, and reported on a frequent basis. The group or individual responsible for performance of post-maintenance testing is identified in the work package.

Improvement: The Post-Maintenance test control process meets the intent of the Order.

4.9.4 Post-Maintenance Test Performance Documentation, and Acceptance

Objective: Post-maintenance testing is performed in accordance with approved work package instructions (or preventive maintenance procedure) and completion is documented.

Discussion: Post-Maintenance testing is strictly controlled and documented in WMH administrative procedures. All retests are documented in the work package, and Facility Operations certifies when the retest is completed. Work package close-out progresses through a normal chain of events, which includes post reviews by work control, engineering, quality assurance, and safety as appropriate.

Improvement: The existing program meets the intent of the DOE Order.

4.10 Procurement of Parts, Materials, and Services

Controls and assessment of procurement activities are used to help ensure that proper parts, materials, and services are purchased to support maintenance activities and to meet the requirements for safe and reliable facility operation.

4.10.1 Procurement Policy and Procedures

Objective: Policies and procedures are in place governing the procurement of parts, materials, equipment, and services. Personnel responsible for procurement activities are conversant to, and comply with, defined requirements.

Discussion: Procedures are established for all procurement functions, including defined responsibilities of individuals and organizations..

The WSCF work control center or cog engineer is responsible for procurement of parts and materials associated with WSCF maintenance

activities. The WSCF Maintenance Team Leader is responsible for procuring parts associated with shop activities and equipment.

Equipment specified in the MEL is assessed for spare parts requirements, and any recommended spare parts procured in accordance with applicable site procedures.

Improvement: The existing program is adequate to meet the intent of the DOE Order.

4.10.2 Procurement Initiation

Objective: Procurement activities are conducted in a timely fashion. The procurement program addresses the pre-selection and qualification of procurement sources, spare parts inventory, and cross facility use of inventories.

Discussion: Lessons learned from experience, such as lead times, parts usage, and supplier reliability, are factored into materials management and included in existing site procedures.

Topics such as storage, in-storage preventive maintenance, and shelf-life requirements are addressed in WHC-CM-2-2 (HNF-PRO-135).

Warehouse and procurement activities such as inventory, rotation, and other warehouse functions are specifically addressed in existing site procedures.

Improvement: The existing program is adequate to meet the intent of the DOE Order.

4.10.3 Procurement Control

Objective: The procurement program provides for documentation and controls applicable to obtaining parts, materials, equipment, and services in accordance with the technical and quality requirements.

Discussion: The cog engineer approves any deviation from design specifications for parts or materials.

Warehouse personnel review material and parts activity to determine possible new additions to be included in spare parts or site stores catalog.

Procurement documents WHC-CM-2-1 (HNF-PRO-123) provide clear and adequate technical and quality assurance requirements consistent with design specifications.

Deficient or nonconforming items are resolved in an effective and timely manner as specified by site procedures.

Quality assurance records are controlled and maintained per WHC-CM-3-5 (HNF-PRO-222) and WHC-CM-4-2 (HNF-PRO-274) to provide

documentation for qualified parts and materials and to ensure traceability. The QA department performs audits, inspections or surveillances of suppliers according to QA requirements.

Improvement: The existing program is adequate to meet the intent of the DOE Order.

4.10.4 Services

Objective: A program for selection and procurement of service contracts is in place and a renewal process may be initiated to prevent periods of non-coverage. Service contracts include provisions for emergency or short notice support.

Discussion: Identification of the need for specialized services from vendors is made by the ASMWC and Engineering Managers to provide for timely submittal of bidding on, and awarding of contracts.

Improvement: This area is addressed in existing procedures and impact on WSCF is addressed as required. There is no need for improvement at this time.

4.11 Material Receipt, Inspection, Handling, Storage, Retrieval, and Issuance

All phases of receiving, inspecting, handling, storing, retrieving, and issuing equipment, parts, and materials for maintenance are covered by effectively implemented policies and procedures consistent with the Quality Assurance Requirements of the facility.

4.11.1 Receipt and Inspection

Objective: Receipt inspections of materials and equipment is performed before acceptance for use or storage verifying items delivered conform to all procurement document requirements and are in good condition.

Discussion: WHC-CM-2-1 (HNF-PRO-123) and WHC-CM-2-2 (HNF-PRO-135) are prepared to specifically describe the responsibilities and techniques for receiving, inspecting, handling, storing, retrieving, and issuing equipment, parts, and materials.

Material is inspected per the requirements of WHC-CM-2-2 (HNF-PRO-135) to ensure conformance to purchasing requirements prior to release for use and storage.

Site procedures control documentation for received material and assures that these documents are accounted for and retrievable.

WHC-CM-4-2 (HNF-PRO-299/300) specifies nonconforming items are identified with tags or labels and controlled to prevent unauthorized use.

Improvement: Site procurement and receipt inspection is presently governed by existing procedures and programs and requires no improvement at this time.

4.11.2 Handling

Objective: Procedures are provided for items requiring special handling. Procedures include all information necessary to prevent damage.

Discussion: WMH site procedures/instructions are available for items requiring special handling.

Effective material procurement status is provided, including accurate stock records and tracking of purchase orders.

Improvement: The existing process for special handling meets the intent if the Order.

4.11.3 Storage Material and Equipment

Objective: Materials and equipment are stored in a manner to provide maximum protection, but remain readily available for issue. Safety-related equipment is segregated from non-safety items to prevent improper usage.

Discussion: Materials are stored, protected, and identified in accordance with WHC-CM-2-2 (HNF-PRO-129/134/135) in a manner that provides ready availability for its intended use.

A shelf-life control program WHC-CM-2-2 (HNF-PRO-129/134/135) is provided for store items that are important to safe and reliable facility operation.

Safety-related and nonsafety-related materials and equipment are segregated from each other to prevent inadvertent use of the wrong category of item.

Periodic inspections of staging areas, stores, and warehouses are performed by the WSCF Team Leader and the ASMWC Manager.

The quality of stored equipment, parts, and materials is maintained in accordance with vendor information by appropriate means, such as environmental and shelf-life controls and preventive maintenance activities, if necessary.

Improvement: Warehouse storage complies with the DOE Order.

4.11.4 Retrieval and Issuance

Objective: Parts, materials, and equipment removed from storage are handled to the same requirements applied at time of receipt. A stores inventory system is in place to identify available materials and equipment and is available to using organizations, such as planning and engineering.

Discussion: Parts and materials issued for installation are properly controlled per existing site procedures. Unused parts and materials are promptly returned to a controlled storage area. Completed work requests/orders document material traceability.

Improvement: The existing program complies with the DOE Order.

4.12 Control and Calibration of Measuring and Test Equipment

The program for control and calibration of measuring and test equipment (M&TE) are consistent with the Quality Assurance requirements of DOE 5700.6C and ensure the accurate performance of facility instrumentation and equipment for testing, calibration, and repairs.

4.12.1 Identification

Objective: Establish a program for the assignment of a unique identification number for each item of M&TE which is permanently marked or attached to the equipment and a master M&TE equipment list for use in control of the equipment.

Discussion: All M&TE devices used at WMH have unique identification numbers accurately identifying the specific devices and provide positive traceability. A master list identifying all M&TE is developed and kept current by the Standards Lab.

Improvement: The existing program complies with the intent of the Order.

4.12.2 Calibration

Objective: Calibration of M&TE is accomplished by qualified personnel using approved procedures and standards having full traceability to the National Institute of Standards and Technology or other nationally recognized standards. Standards utilized are maintained at designated controlled storage locations.

Discussion: **Calibration Standards**

The M&TE calibration program is based on standards traceable to a national standard or that are recognized standards unto themselves. All traceability, administrative controls and guidelines, are already in place as part of the PHMC site M&TE program. Records are maintained at the standards lab.

Discussion: **Calibration Procedures**

Procedures WHC-CM-4-2 (HNF-PRO-288-290) are used to calibrate M&TE, control the performance of calibrations, provide repeatable calibrations, and provide acceptance criteria.

M&TE documentation includes records for accountability and traceability of use. A recall system is developed for recalibrations of M&TE. This system is controlled by the M&TE Standards lab. All M&TE calibrations are performed through the administrative controls and requirements of the M&TE Standards lab.

Discussion: **Calibration Frequency**

A calibration frequency to maintain M&TE accuracy and availability is established through the PHMC M&TE administrative program and WHC-CM-4-2 (HNF-PRO-288/290), "Quality Assurance Manual", section 12, "Control of Measuring and Test Equipment", requirements.

Discussion: **Functional Checks**

PHMC site procedures recommend M&TE be functionally checked before use and this is performed on an as-needed basis by WSCF maintenance personnel.

Improvement: The present program is in compliance with the DOE Order.

4.12.3 Control

Objective: Control of M&TE is established to ensure equipment used to verify (calibrate) facility instrumentation operates properly.

Discussion: **Storage**

Control of M&TE is established by WHC-CM-4-2 (HNF-PRO-288/290) to ensure equipment used to verify (calibrate)facility instrumentation operates properly.

Facilities at WSCF are provided to control storage, issuance, and calibration of M&TE. The WSCF Maintenance Team Leader identifies storage areas.

Any M&TE with suspected or actual deficiencies is segregated and marked to prohibit its use as required by existing site procedure.

Discussion: **Uncalibrated M&TE**

Any new M&TE devices are calibrated prior to use. Uncalibrated M&TE for taking data at WHC facilities are clearly identified and their use is strictly controlled by facility and site procedures. WSCF follows this program.

Discussion: **M&TE with Limited Use**

M&TE devices not fully calibrated or usable are clearly marked to indicate their limitations and are not issued for quality work at WMH. This program is also adhered.

Discussion: **Issue and Recall**

Log IN/OUT sheets are kept for traceability by the M&TE custodian at WSCF M&TE issue. The Standards Lab has administrative procedures in place for notification of calibration due dates and M&TE recall. M&TE usage is tracked by the maintenance department using the work request or on the calibration data sheet, if applicable.

Discussion: **Contaminated M&TE**

Contaminated M&TE is controlled per existing safety and radiological guidelines at WMH and is adhered to at WSCF. Contaminated M&TE is strictly controlled to minimize the spread of contamination.

Improvement: There are no improvements identified or required at this time.

4.12.4 Evaluation

Objective: Usage of M&TE is controlled and evaluated to ensure proper utilization, impact/consequence of out-of-tolerance equipment use, and equipment reliability.

Discussion: **Out-of-Calibration and Defective M&TE**

M&TE devices found out of calibration or defective receives timely evaluations to determine the validity of all measurements/tests for which they were used. This is accomplished through the review of history files controlled through the JCS/PMS program.

Discussion: **Performance Trending**

Results of M&TE calibrations are trended by the standards lab and the Cog engineer, corrective actions are determined for any M&TE reliability problems.

Improvement: There are no improvements identified or required at this time.

4.13 Maintenance Tools and Equipment Control

Methods are established to provide for storage, issuance, and maintenance of an adequate and readily available supply of tools and equipment and also for the development of special tools and equipment needed in the maintenance program.

4.13.1 Storage and Issuance

Objective: To ensure that an adequate supply of hand tools, common power tools, and equipment is readily available, properly stored, and controlled.

Discussion: Overall responsibility for assuring WSCF has proper tools to perform maintenance activities and that they are stored properly, is with the WSCF Maintenance Team Leader. The team leader or designee reviews the WSCF MEL and determines the need for specialized tools and/or equipment. Any specialized requirements are identified and steps taken to procure the equipment if required. This specialized equipment is stored near the work site.

WHC-CM-4-3 (HNF-PRO-085) controls the disposition of worn and defective tools. The WSCF maintenance organization works to these controls and guidelines.

Improvement: Existing site policies provide for an effective program to procure and maintain specialized tools and equipment and there is no need for enhancements or improvements in the program at this time.

4.13.2 Tool and Equipment Maintenance

Objective: Tools and support equipment are included in the preventive maintenance program to maintain a safe use condition and to provide necessary care to maintain its service life.

Discussion: Maintenance tools and other support equipment used at WSCF, if cost effective, are included in the preventive maintenance program by the WSCF maintenance organization.

Existing WMH programs and policies provide for the care and servicing of tools and support equipment.

Improvement: There is no program improvement required at this time.

4.13.3 Use of Special Tools and Equipment

Objective: Special tools and equipment are available and are clearly marked for their intended use. Work packages include necessary instructions for the proper use of special tools and equipment.

Discussion: Special tools, test rigs, special equipment, lifting and rigging equipment, and mockups required for maintenance activities at WSCF, are identified for their intended use by the WSCF maintenance organization.

Specific Instructions are provided to control the use of lifting and rigging equipment in DOE-RL-92-36, "Hanford Site Hoisting and Rigging Manual". The WSCF maintenance organization abides by these guidelines.

Improvement: WMH Special Tools and Equipment program meets the requirement of the Order.

4.14 Facility Condition Inspection

Management conducts periodic inspections of equipment and facilities to assure excellent facility condition, housekeeping, and safe and reliable operation.

4.14.1 Standards

Objective: Management conducts periodic inspections of equipment and facilities to assure excellent facility condition and housekeeping. The condition of a facility is dependent on many factors, including design, fabrication, modifications, ongoing maintenance, the facility work control programs, and day-to-day operation. After initial facility construction, ongoing maintenance and the control of modifications are prime contributors to keeping systems and equipment in optimum condition to support safe and reliable operation.

Discussion: WMH management performs routine inspections of facilities to ensure that maintenance standards are defined and communicated to personnel through posting, safety and staff meetings, and during housekeeping inspections.

Improvement: The program needs to be formalized and proceduralized.

4.14.2 Training

Objective: Personnel involved in facility inspections receive instructions to establish knowledge of standards and related facility policies. Methods for determining condition status are provided for consistency of inspections and condition reporting.

Discussion: Personnel involved in facility condition inspections have received OSHA inspection training and understand the high expectations of senior management.

Improvement: At the present time the program meets the intent of the Order.

4.14.3 Procedures

Objective: Procedures are provided defining the facility inspection program, methods of implementation, standards of condition, and means for correction of deficiencies found. Deficiencies found are evaluated for changes to the facility maintenance program.

Discussion: Existing procedures do not provide enough detail on facility inspection requirements.

Improvement: Need to formalize and proceduralize an inspection program.

4.14.4 Scope of Inspections

Objective: Inspections include detailed walkdowns of assigned areas that include remote and limited-access areas as well as the more obvious and available areas. Key individuals are included in the inspection teams with free discussion of techniques and concerns encouraged. Sufficient time is allowed to search for deficiencies rather than a quick walk through. Obvious deficiencies are investigated to the degree necessary to positively identify the source of the problem.

Discussion: Inspections are performed but a formalized process of what to look for has not been established.

Improvement: The WSCF inspection program needs to be formalized and proceduralized.

4.14.5 Inspection Program Elements

Objective: Inspection assignments are scoped to ensure adequate time for thorough inspection and scheduled to minimize impact to ongoing operations of the facility.

Discussion: The WSCF Maintenance Team Leader establishes a scheduled walkdown inspection on a regular basis.

Improvement: The WSCF Inspection program requires a more formal scheduling process.

4.14.6 Reporting Deficiencies

Objective: Deficiencies noted during inspection are entered into the work control program for corrective action. Significant and/or safety related deficiencies are assigned the appropriate priority and reported to the responsible facility manager. Housekeeping deficiencies are reported to the occupying organization for attention.

Discussion: Equipment inspection results are documented and entered into the JCS. Tracking of routine housekeeping inspection require a more formal process.

Significant facility condition and safety deficiencies observed are immediately reported to the shift supervisor for appropriate near-term attention.

Improvement: The existing site program requires more formal documentation.

4.14.7 Deficiency Follow-up

Objective: Reported deficiencies are monitored for timely completion of corrective actions. Recurring, generic, or long term problems are analyzed for identification of root cause. Recommendations are provided for changes to

the preventive maintenance program. Periodic evaluation of inspection reports and facility conditions are made to determine program effectiveness.

Discussion: Identified deficiencies requiring immediate corrective action have a work order initiated, the deficient equipment is identified, and the JCS tracks the item for corrective action. Routine findings are not normally followed up.

Improvement: Inspection program requires formalization.

4.15 Management Involvement

To ensure the safety of DOE facility operations, DOE and contractor corporate and facility managers are sufficiently involved with facility operations to be technically informed and personally familiar with conditions at the operating facility.

4.15.1 Management Involvement

Objective: Management and Team Leaders perform periodic walk throughs and become sufficiently involved and technically informed of operating conditions within their facilities.

Discussion: Managers and Team Leaders perform periodic walk through inspections of facilities to promote face-to-face communications with personnel.

Improvement: The present program meets the requirements of the DOE Order.

4.15.2 Performance Indicators, Goals, and Objective Results

Objective: Performance indicators are established, maintained, and trended to provide visibility of organizational goals and objectives. Information is used to observe developing trends and formation of corrective action and recovery plans.

Discussion: The ASMWC Manager uses work control performance indicators to establish trends and provide feedback to the maintenance organization. These trends provide the maintenance organization with a means for assessing maintenance tasking and performance and allow for corrective action recommendations.

Improvement: At present, formal goals and objectives for the maintenance organization need developement. The maintenance performance indicators meet the intent of the Order.

4.15.3 Feedback

Objective: Feedback systems are in place to provide means for continuous communications between all groups, worker disciplines, and management levels. Methods are in place to apply lessons learned from experiences of

others, and in-house, to ensure long-term success. All levels of management are available to discuss problem areas and suggested improvements.

Discussion: A feedback system such as the open door policy has been established to promote communication and participation for improvement at all levels of the maintenance program. Lessons Learned, daily team meetings, and required reading provide a method to improve performance and promote safety.

Improvement: At present, the existing programs meet the requirements of the Order.

4.15.4 Program Reviews

Objective: Managers periodically review and assess all elements of the maintenance program to identify areas requiring improvement or corrective action. Input of managers and supervisors, and other supporting organizations, is utilized in program review. Areas requiring improvement are assigned for corrective action and followup.

Discussion: At WSCF the ASMWC Manager follows a program of reviews and quarterly self assessments. Findings from the assessments are used as opportunities to improve the maintenance program.

Discussion: **Assessment of Facility Condition and Worker Practices During Maintenance**

Periodic assessments of specific programs such as the PM program are performed per site procedure. WSCF specific program evaluation is provided for by the ASMWC Manager as the need for such an evaluation becomes apparent through audits and assessments.

The WSCF Maintenance Team Leader periodically reviews personnel performance and work practices. This review is directed at improving worker performance. Appraisals are performed in accordance with Site procedures.

Equipment and component maintenance history is trended through the application of the JCS program. The Cog engineer reviews this history for maintenance trends or problems.

Discussion: **Assessment of Maintenance Training**

The maintenance organization periodically reviews the maintenance training program as specified in WHC-CM-5-4 and the TMX system. Results of this review determine training program changes.

Discussion: **Assessment of Procurement Activities**

Periodic assessment of the procurement process are performed by the ASMWC Manager for timeliness and responsiveness.

Discussion: **Assessment of Measuring and Test Equipment**

ASMWC Management assesses the M&TE organization for availability of M&TE, and safe and reliable operational support to WSCF.

Improvement: At present, the assessment program is adequate to meet the requirements of the Order.

4.16 Maintenance History

A maintenance history and trending program is maintained to document data, provide historical information for maintenance planning, and support maintenance and performance trending of facility systems and components.

4.16.1 Program Development

Objective: A program is in place identifying critical (from the SAR) systems and equipment requiring documentation and retention of historical data.

Discussion: **Equipment Identification**

The Master Equipment List provides the identification for major or critical pieces of equipment. Maintenance history, where required, is provided through the Maintenance History Module of the JCS.

Discussion: **Data Identification**

Completed work packages under the JCS program include all relevant maintenance data for a given critical piece of equipment. Specific data requirements for a given piece of WSCF equipment not previously identified, are provided by the cog engineer.

Improvement: The program meets the intent of the Order.

4.16.2 Data Collection

Objective: Information for systems and equipment identified for record history retention is forwarded to a specified organization for control, reviewed for completeness and correctness, and entered into the equipment history program.

Discussion: Completed work packages under JCS include all relevant maintenance information for a given piece of equipment, specific data requirements relative to a maintenance history program have been defined, and equipment identification is ongoing.

Improvement: No improvements are identified or required at this time.

4.16.3 Program Use

Objective: Equipment history data is readily available to all organizations and is used in the development of work packages and schedules, and is periodically reviewed for developing trends.

Discussion: The JCS program establishes a maintenance history program. This program is reviewed by ASMWC Manager, cog engineers, or any personnel involved with WSCF maintenance to identify problems.

Improvement: No improvements are identified or required at this time.

4.17 Analysis of Maintenance Problems

Systematic analysis is used to determine and correct root causes of unplanned occurrences related to maintenance.

4.17.1 Information Collection

Objective: In preparation of event analysis, all applicable logs, records, recordings, and personnel interview statements are gathered.

Discussion: Operator and maintenance logs, computer records, JCS documents, personnel statements, and other pertinent data are collected as part of unplanned occurrence investigations.

Improvement: No improvement is required at this time.

4.17.2 Event Analysis

Objective: In performing an event analysis a detailed sequence of facts and activities is developed and apparent causal factors identified and categorized.

Discussion: Aspects of root-cause-analysis are presently addressed in site procedures. The activities required by event analysis are performed in accordance with root-cause-analysis procedures and guidelines at WSCF.

Improvement: The present program satisfies the intent of the DOE order.

4.17.3 Cause Determination

Objective: Actual or probable causes of a problem are evaluated by one or more techniques to establish a final root cause. Appropriate documentation is developed to aid in the analysis, to record analysis performed, and to document corrective action recommendations.

Discussion: WSCF personnel performing cause determination are trained in Root-Cause-Analysis and perform activities in accordance with existing site procedures.

Improvement: The present site Root-Cause-Analysis program satisfies the intent of the DOE order.

4.17.4 Corrective Action

Objective: Corrective action plans are developed, initiated, and tracked to completion. Plans address all applicable activities such as repairs, preventive maintenance procedures, and personnel training.

Discussion: Once cause determination has been performed, corrective action is initiated in accordance with PHMC site procedure and tracked by the HATS system.

Improvement: Existing site procedures and policies are adequate to meet the intent of the DOE Order.

4.17.5 Corrective Action Follow-up

Objective: Corrective action followup activities include specific post repair testing and continued monitoring of equipment as positive means to ensure corrective actions taken in fact resolve the problem experience.

Discussion: Equipment corrective action is followed by some type of post-maintenance testing and tracked by the JCS. Procedural or administrative changes are followed by the ASMWC Manager and the Facility Support organization.

Improvement: Existing site procedures and policies are adequate to meet the intent of the DOE Order.

4.17.6 Generic Follow-up

Objective: Analysis program includes considerations of generic corrective actions needed for equipment of the same make and model.

Discussion: The cog engineer is responsible for reviewing follow-up actions for impact to other similar equipment or same type equipment. Any additional action or rework required is identified by the cog engineer.

Additional follow-up of root-cause efforts enhancing future analysis is performed in accordance with existing WMH site procedures.

Improvement: Existing site procedures and policies are adequate to meet the intent of the DOE Order.

4.18 Modification Work

Facility modification work, including temporary modifications, is accomplished under the same basic administrative controls as those applied to facility maintenance activities so there are no increases in risk to facility equipment, environment, or personnel because of the modifications work.

4.18.1 Maintenance Program Interface with Modifications

Objective: Modifications are performed in accordance with requirements and limitations of applicable procedures, codes, standards, and specifications.

Discussion: Modifications work performed by WSCF maintenance is in conformance with the requirements of WHC-CM-6-1 (HNF-PRO-440), WHC-CM-1-8 (HNF-PRO-069), and applicable maintenance procedures.

Improvement: Existing site procedures and policies are adequate to meet the intent of the DOE Order.

4.18.2 Temporary Repairs or Temporary Modifications

Objective: Temporary repairs or modifications are reviewed in accordance with the facility modification program prior to implementation. Temporary repairs or modifications are tracked after completion for consideration of permanent corrective action.

Discussion: Temporary repairs and temporary modifications are controlled per the procedural requirements and tracked by the JCS to completion.

Improvement: Existing site procedures and policies are adequate to meet the intent of the DOE Order.

4.19 Additional Maintenance Management Requirements

A program is in place to prevent equipment and building damage due to cold weather at any nuclear facility that may be at risk.

4.19.1 Seasonal Facility Preservation Requirements

Objective: Cold weather protection program in place to ensure continued safe facility operations is defined and implemented using approved procedures. Program includes criteria for preparation (and suspension), periodic surveillances, and program effectiveness evaluations. Lessons learned are evaluated and appropriate program changes made to prevent recurrence.

Discussion: Seasonal freeze protection at WSCF is performed in accordance with a specific freeze protection plan for the facility. A winterization and a summarization program exist for WSCF. Design changes to accommodate these programs may be required.

Improvement: WSCF performs continuing assessments for immediate seasonal preservation requirements. A program for extreme weather conditions is developed specifically to meet the protection requirements of WSCF. Program meets requirements of the Order.

5.0 DEVIATIONS REQUESTED WITH SUPPORTING RATIONALE

No deviations from the policy requirements identified by DOE Order 4330.4B (DOE 1994) are requested at this time.

6.0 IMPLEMENTATION SCHEDULE

The following is the schedule of activities that are to be accomplished before re-assessment of WSCF maintenance is performed at the specified two (2) year interval after startup. The activities identified are based upon assessment at the time of the writing of this document. Any changes to this schedule may be made as further activity assessment is performed.

ACTIVITY	97				98				99			
	1	2	3	4	1	2	3	4	1	2	3	4
4.2.4 Goals and Objectives		x	x									
Update goals												
4.3.4 On-The-Job Training												
Review equipment requiring OJT			x		x	x	x					
4.14.1 Inspection Program												
Develop inspection procedure					x							
4.14.3 Inspection Program												
Develop inspection procedure					x							
4.14.4 Inspection Program												
Develop inspection procedure					x							
4.14.5 Inspection Program												
Develop inspection procedure					x							
4.14.6 Inspection Program												
Develop inspection procedure					x							
4.14.7 Inspection Program												
Develop inspection procedure					x							
4.15.2 Performance Indicators, Goals and Objectives Results												
Identify and formalize goals and objectives, track goals		x										
4.15.3 Management Involvement												
Develop maintenance goals and objectives		x										

7.0 BIBLIOGRAPHY

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