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June 12, 2014

CCN 316534

Mr. James R. Cooper
Deputy Manager
U.S. Department of Energy
Idaho Operations Office (DOE-ID)
1955 Fremont Avenue
Idaho Falls, ID 83415-1222

SUBJECT: Contract No. DE-AC07-05ID14516 - Assessment of Facility and Infrastructure Maintenance

REFERENCE: James R. Cooper letter to Thomas J. Dieter, Contract No. DE-AC07-05ID14516 - Assessment of Facility and Infrastructure Maintenance (EM-NSP-14-019), April 24, 2014, CCN 316373; **Closes Action**

Dear Mr. Cooper:

CH2M-WG Idaho, LLC (CWI) has completed an assessment of facility and infrastructure maintenance as directed by the reference. The results of this assessment are provided in accordance with the direction. If you have any questions on this assessment, please contact Jay Schnelle at 533-0849 or Matthew Steffa at 533-0170.

Sincerely,

Thomas J. Dieter, President and CEO
Idaho Cleanup Project

JAS:drk

Enclosure

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Extent of Condition Review on Deferred Maintenance at the Idaho Cleanup Project

Performed by
CH2M◆WG Idaho, LLC

RPT-1296

June 2014

Extent of Condition Review on Deferred Maintenance at the Idaho Cleanup Project

RPT-1296

Completed by:

Wynn Harding per telecon

Wynn Harding
Assessment Team Lead

6/11/14
Date

Approved by:

Kevin Daniels per telecon

Kevin Daniels, Vice President
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6/11/14
Date

RPT-1296

Extent of Condition Review on Deferred Maintenance at the Idaho Cleanup Project

Performed by
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June 2014

Prepared for the
U.S. Department of Energy
Assistant Secretary for Environmental Management
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14516

ABSTRACT/EXECUTIVE SUMMARY

The purpose of this Extent of Condition Review is to evaluate if CH2M-WG Idaho, LLC (CWI) has allotted adequate resources to system and equipment maintenance, maintained effective configuration control to maintain systems up to date, and made the necessary upgrades to support system infrastructure to ensure the safe performance of work is the overriding priority that is expected to guide decision making to protect workers, the public and the environment.

This report is the result of a Department of Energy-Idaho Operations Office (DOE-ID) directed assessment of facility and infrastructure maintenance as a result of the Waste Isolation Pilot Plant (WIPP) Salt Haul Truck Fire event. In the tasking letter, DOE-ID tasks CWI to evaluate specific aspects of inquiry contained in the letter. This report broke down the specific aspects of the letter into criteria statements and completed the initial review at the Idaho Cleanup Project (ICP).

Findings

4-3 The preventive maintenance of the batteries for the CPP-1687 Dial Room at Idaho Nuclear Technology and Engineering Center (INTEC) is overdue. A Preventive Maintenance Justification (PMJ) has been prepared to implement manufacturer maintenance recommendations, but the system configuration needs to be changed in order to safely perform the maintenance. In the event of loss of primary and backup power, this could result in a fire alarm and notification issue.

6-1 Contrary to Best Management practice and MCP-6401, the Maintenance program metrics, i.e. corrective and preventive maintenance on-time completion rates, have not been developed for consistency and retrievability across the ICP. Individual project areas have informal mechanisms in place to track performance, but these have not been institutionalized within company processes.

Opportunities for Improvement

4-2 At INTEC the backlog of corrective maintenance is significant but manageable considering the age of INTEC structures and management knowledge of the issues. For example there are several work requests and work orders for the CPP-666 Heating, Ventilating, and Air Conditioning (HVAC) system that have been in work control for many days. The current condition results in difficulties in operation of the HVAC system dampers. CWI should evaluate instances like this to ensure continued operations are supported through the unknown life of the facilities.

6-2 DOE-STD-1073-93-Pt.1, Guide for Operational Configuration Management Program, provides guidance to DOE personnel and contractors on the development and implementation of an operational Configuration Management (CM) program, including an Aging Management Program. The standard is a guide only and does not impose new requirements. Due to the aging facilities under CWI control and an unclear end of life, it may be prudent for DOE-ID and CWI to evaluate whether or not value can be gained by reviewing the applicability of an Aging Management program for ICP facilities. An example of applicability would be CPP-666. Having not yet exceeded its 40 year design life, MCP-3358, Evaluating the Structural Integrity of Structures, System and Components, and an Aging Management Program could be considered to evaluate the continued integrity of the aged structures at INTEC that have an enduring mission.

Noteworthy Practices

2-2 The assessment process and practices conducted by CWI are effective in monitoring activities at the Site and resolving issues in a prompt manner.

2-3 Though not required by DOE orders based on classification of LTHC 3 facilities, CWI created LST-774, ICP D&D Conduct of Operations Best Management Practices Implementation Matrix. This action establishes a rigorous process of Configuration Management of decontamination and decommissioning (D&D) activities.

3-5 Emergency and service diesels at INTEC and Radioactive Waste Management Complex (RWMC) were evaluated and tested during this review. There were no deficiencies noted. It is clear that maintenance and care of the diesels at INTEC and RWMC is highly effective and is given an appropriate high priority at both facilities.

4-4 At the time of the assessment, there were no continuous air monitors (CAMs) or radiation area monitors (RAMs) that were out of service at INTEC or RWMC. The maintenance and repair process for these items was observed to be highly effective and managed aggressively by the radiological controls organization.

7-1 INTEC has done an effective job of conducting Engineering System Health Reports per MCP-1450, and used the reports to improve their focus on emerging issues throughout the plant.

Additional Executive Summary Comments

2-1 Exhaust Blower Operation: At INTEC there are three main exhaust blowers which provide exhaust ventilation for the highly contaminated areas in CPP-659, including decon cells 308/309. The facility requires two of the three blowers to be operating in order to support the current mission. Should a loss of the highest flow blower occur ventilation would not support all continued work in the facility. INTEC is pursuing inspection and planning for repair of the two lower capacity blowers. Additionally, Engineering is working on a path forward that could allow mission work to continue with lower airflows.

3-1 The INTEC electrical power system is operable and reliable. A Phased approach has been used by CWI and DOE-ID to identify funding and improve the system. The phased approach to improve the system has additional work to be completed and should be continued.

3-2 Additional funding is needed for Capital Equipment Projects at INTEC. One of the highest priorities in the INTEC Program Refurbishment Project, INTEC Emergency Communications System (ECS), has been and continues to remain unfunded. During this evaluation INTEC experienced a loss of the ECS and averages four losses per year. Although this system is code compliant, the age of the components and difficulty in finding replacement parts makes the system potentially vulnerable to extended shutdowns.

3-3 CWI and DOE-ID have worked to identify needs from the Capital Equipment Projects list for additional funding throughout the contract and had success. One of the highest priority INTEC projects, Spent Nuclear Fuel Refurbishment Project, CPP-666 Resin Bed Replacement, was originally unfunded with acceptable justification. Recent funding has been provided to replace the resin filter bed by the end of 2015. Both DOE-ID and CWI have recognized the high priority of this action and have applied the necessary resources to complete the action.

3-4 Currently there are many repair/refurbishment items on the Capital Equipment Projects list for which DOE has not authorized funding. CWI should continue to pursue additional funding for these projects. This recommendation includes: CPP-666 HVAC System refurbishment, end of service life/obsolete equipment; CPP-666 Fuel Storage Area Distribution Control System (DCS), end of service life/obsolete equipment; and CPP-666 PA System replacement, a safety improvement item. The blower issue discussed in Opportunity for Improvement Item 2-1 should be included in this evaluation and consideration.

4-1 At INTEC a formal process is used to take equipment out of service following the Field Design Change process (MCP-1308). Some failed equipment, for example the Liquid Effluent Treatment and Disposal Facility (CPP-1618) reboilers, have been determined to have a potential need for use, but repairs have not been initiated. An engineering evaluation was conducted to determine mission risk and determined that reduced redundancy was acceptable at this time. Failure would result in continued operations with appropriate compensatory controls. CWI should evaluate instances like this to ensure continued operations are supported through the unknown life of the facilities and that proper engineering evaluations are conducted for similar issues.

5-1 Compensatory actions have been implemented at INTEC to cover some controllers that operate dampers in the ventilation system in CPP-666. These controllers operate properly in the manual mode. A number of these controllers have been replaced and upgraded which allows the system to be operated and function. Engineering and maintenance are continuing to correct deficiencies within the system.

5-2 Compensatory actions have been implemented at INTEC due to valve position indicator issues. Form INTEC-5446, “Evaluation of Inoperable Valve Position Indicator,” is used to evaluate possible consequences and compensatory actions for valves with position indicators that have failed. Deficiencies noted are continuously identified and processed for prompt resolution per facility directives.

5-3 Currently, there are three Fire Protection Impairments at INTEC requiring compensatory actions. All impairments have been properly managed and are scheduled for removal within the next month.

5-4 Underground fire main and Life Safety Systems associated with combatting fires at RWMC were evaluated during this review. The system is currently operating under an Authority Having Jurisdiction Record due to an inoperable valve, FW-CV-SA11. Maintenance is planned to make needed repairs to the valve. Adequate actions are being taken.

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ACRONYMS

AHJ	Authority Having Jurisdiction
ARP	Accelerated Retrieval Project
CAMs	continuous air monitors
CARB	Corrective Action Review Board
CAS	Contractor Assurance System
CM	Configuration Management
CMMS	Computer Maintenance Management System
COG	cell off-gas
COT	corrected on the spot
CPI	Cost Performance Index
CPP	Chemical Processing Plant
CSCF	computer system change form
CTR	charter
CWI	CH2M-WG Idaho, LLC
D&D	decontamination and decommissioning
DCS	Distribution Control System
DOE	U. S. Department of Energy
DOE-ID	U.S. Department of Energy Idaho Operations Office
DOP	dioctyl phthalate
DPS	Drum Processing Station
DR	deficiency report
EAR	Emergency Alarm Response
ECS	Emergency Communications System
ES&H	Environmental, Safety & Health
ESRB	Executive Safety Review Board
FAC	Fire Alarm Center
FAST	Fluorinel Dissolution Process and Fuel Storage
FCF	Facility Change Form
FDC	Field Design Change
FDP	Fluorinel Dissolution Process
FDPA	Fluorinel Dissolution Process Area
FSA	Fuel Storage Area
GDE	guide

gpm	gallons per minute
HEPA	high-efficiency particulate air
HFEF	Hot Fuel Examination Facility
HVAC	heating, ventilating, and air conditioning
I&C	Instrumentation and Control
IAG	interface agreement
IAP	Integrated Assessment Program
IAS	Integrated Assessment System
ICP	Idaho Cleanup Project
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IPO	INTEC Power Operations
ISMS	Integrated Safety Management System
IT&M	Inspection, Testing and Maintenance
IWTU	Integrated Waste Treatment Unit
IX	ion exchange
KV	kilovolts
LCO	Limiting Condition for Operation
LET&D	liquid effluent treatment and disposal
LO/TO	lock out/tag out
LOI	lines of inquiry
LSS	Life Safety System
LTHC3	less than Hazard Category 3
MCP	Management Control Procedure
MEL	Master Equipment List
MWO	Model Work Order
MWVs	management work place visits
NFM	nuclear facility manager
NFPA	National Fire Protection Association
NMMP	Nuclear Maintenance Management Program
NRC	Nuclear Regulatory Commission
NWCF	New Waste Calcining Facility
OOS	out of service
OSI	out-of-service impairment
PA	performance assurance

PDD	program description document
PDM	predictive maintenance
PEB	Project Evaluation Board
PLC	programmable logic controller
PLN	plan
PM	preventive maintenance
PMJ	Preventive Maintenance Justification
POD	plan of the day
POW	plan of the week
PRD	program requirements document
PREPP	Process Experiment Pilot Plant
PTS	Pneumatic Sample Transfer System
PVC	polyvinyl chloride
QA	quality assurance
QAP	Quality Assurance Program
RA	Retrieval Area
RADA	random access digital audio
RadCon	Radiological Control
RAMs	radiation area monitors
RCT	radiological control technician
RH	remote handled
RHTRU	remote handled transuranic
RTR	real-time radiography
RWMC	Radioactive Waste Management Complex
SAC	Safety Assessment Center
SAR	Safety Analysis Report
SDA	Subsurface Disposal Area
SE	System Engineer
SHR	System Health Reports
SME	subject matter expert
SMP	safety management procedure
SPI	Schedule Performance Index
SR	Surveillance Requirement
SSCs	structures, systems, and components
SSW	Senior Supervisor Watch

TBL	Technical Baseline
TPRs	technical procedures
TRU	transuranic
TSR	Technical Safety Requirements
USQ	unreviewed safety question
WGT	work group tasks
WIPP	Waste Isolation Pilot Plant
WMF	Waste Management Facility
WO	work order
WOT	work observation team
WR	work request

Extent of Condition Review on Deferred Maintenance at the Idaho Cleanup Project

1. PURPOSE AND SCOPE

The purpose of this Extent of Condition Review is to evaluate if CH2M-WG Idaho, LLC (CWI) has allotted adequate resources to system and equipment maintenance, maintained effective configuration control to maintain systems up to date, and made the necessary upgrades to support system infrastructure, in order to ensure the safe performance of work is the overriding priority that is expected to guide decision making to protect workers, the public and the environment. The evaluation includes a collection of quantitative and qualitative data gathered from existing CWI assessments and work management processes, interviews and facility data gathering and analysis.

In meetings with U.S. Department of Energy Idaho Operations Office (DOE-ID) it was agreed that this assessment does not include Nuclear Regulatory Commission (NRC) related facilities or Integrated Waste Treatment Unit (IWTU) activities recently reviewed by readiness assessments and operational readiness reviews.

2. TECHNIQUE

The DOE-ID letter stipulated specific "Criteria" to focus the evaluation and report. The DOE-ID letter included a list of factors to consider in the Extent of Condition review for safety related systems covering a period of at least two years, and to identify and analyze trends. The list of factors and analysis is included in this review as one of the "Criteria." The seven "Criteria" included:

Criteria 1. Sufficient resources are provided by CWI to properly maintain systems and equipment under contractual control of CWI.

Criteria 2. Sufficient resources are provided by CWI to properly maintain configuration control up to date under contractual control of CWI.

Criteria 3. Sufficient resources are provided by CWI to properly make necessary upgrades to support systems infrastructure.

Criteria 4. Evaluate the corrective and preventative maintenance backlogs in Idaho Nuclear Technology and Engineering Center (INTEC) and Radioactive Waste Management Complex (RWMC) facilities.

Criteria 5. Evaluate the nature and age of operator/operational workarounds and compensatory actions taken or assigned in INTEC and RWMC facilities.

Criteria 6. Appendix A presents a matrix of factors to consider in an extent of condition review for safety-related systems. In responding to the items contained in Appendix A, evaluate the impact of observations made concerning the review items enumerated for safety-related systems.

Criteria 7. Evaluate if maintenance and engineering programs are effective in keeping critical structures, systems and components in a high state of operational readiness.

3. DESCRIPTION OF THE REVIEW

Specific lines of inquiry (LOI) were used during the review to focus the evaluation. The LOI included:

- Review the background and circumstances that led to identification of the issue or condition triggering the evaluation.
- Use the appropriate level of effort so that all relevant factors will be identified.
- Evaluate the issue or condition for uniqueness, recurrence, and potential or actual consequences.
- Determine what issues require follow-up action.
- Determine the breadth of facilities and activities at the Site that might be similarly situated.
- Consider previous assessments, investigations, critique results and cause determinations.
- Identify and/or investigate the extent of applicability to other activities, processes, equipment, programs, facilities, operations, and organizations.
- Involve both the appropriate subject matter expert (SME) and manager in the development of issues.
- Document issues and incorporate in development of recommendations or corrective actions.

Definitions were used during the review to structure the evaluation process. These definitions included:

Safety-related systems:

- Life Safety System (LSS) – Fire detection, alarm and indicating equipment, Fire Suppression Systems (including firewater distribution/pumps), Emergency Communication System, Fire Barriers, Dampers and Doors, Emergency exit lights.
- Safety Class and Safety Significant structures, systems, and components (SSCs), and key support systems (those systems necessary for the safety system to perform its function, i.e. sub-stations and INTEC diesels for power, air compressors for damper operations). Ventilation systems required for personnel protection from spread of contamination.
- Nuclear Facility heating, ventilating, and air conditioning (HVAC)
- Permanently installed Continuous Air Monitors (CAMs)

Inoperable: Unable to perform an intended function in an operating facility. This does not include those systems with compensatory measures implemented through a formal impairment system (e.g. Management Control Procedure [MCP]-585) for planned maintenance. Unplanned impairments would be included in the definition of “inoperable”.

Unplanned: Not scheduled or anticipated.

Abnormal: An event that results in entry into an Emergency Alarm Response (EAR).

Emergency: An event that results in entry into the site-wide emergency plan and declaration of an Operational Emergency.

The review used the "Criteria" listed in paragraph 2 to focus the facilities and assessors on completion of the evaluation. Each "Criteria" is itemized separately in this report. "Criteria" 6 which lists the factors to consider in the report is composed in a matrix contained in Appendix A. The identification and analysis of trends related to Appendix A are discussed within the report.

4. RESULTS OF THE REVIEW

Criteria 1. Sufficient resources are provided by CWI to properly maintain systems and equipment under contractual control of CWI.

Criteria 1 was evaluated and met during the review. All opportunities for improvement identified during the evaluation of Criteria 1 are presented under Criteria 3.

INTEC:

An Essential Equipment List has been established to aid management and operators in monitoring and scheduling to ensure that systems and equipment are properly maintained. The Essential Equipment List is a software program that lists equipment deemed essential to the support of operations in INTEC. If a piece of equipment changes status during a shift, the shift manager updates the status window for the equipment in question. Any equipment that is taken out of service or placed in reduced status (either online reduced status or standby reduced status) then appears in the out of service (OOS) report. The OOS report is reviewed daily in the plan of the day (POD) and populated with resulting work request/order and is scheduled to work as quickly as possible. The use of this tracking process minimizes equipment down time and helps ensure prompt resolution of issues. However, the software and process is locally generated and not documented under any CWI controlled document and has not been evaluated with respect to software configuration control. CAMs and radiation area monitors (RAMs) are not managed using the Essential Equipment List, but are tracked and maintained through a preventive maintenance routine and corrective maintenance process.

The Fluorinel Dissolution Process and Fuel Storage (FAST) facility is separated into two sides, the fuel storage side and the Fluorinel Dissolution Process (FDP) cell. The FDP cell was originally designed for dissolving zirconium clad fuel in a hydrofluoric acid dissolution process. In the early 1990's, the U.S. government discontinued reprocessing fuel and the FDP cell was unused for approximately 15 years. Currently the FDP cell is being used by the Waste Management organization, under a tenant use agreement, to process the Hot Fuel Examination Facility (HFEF) Remote Handled Transuranic (RHTRU) waste for the TRU Waste Program. Additionally, a sodium distillation process was recently installed in the FDP cell for processing sodium bearing waste. The responsibilities of the tenant agreement are defined in Interface Agreement – 508 (interface agreement [IAG]-508). In accordance with IAG-508, INTEC Operations is responsible for CPP-666 building systems: HVAC, steam, plant air, water, electrical, instrumentation (with the exception of the FDP cell sump and slab tank), and fire protection. Maintenance work is authorized and released by the Spent Fuel Nuclear Facility Manager (NFM) and work is performed by INTEC maintenance. Maintenance activities associated with life safety systems (fire extinguishers, fire risers, Emergency Communications System [ECS] operations) are the responsibility of INTEC maintenance and they have been effectively maintained.

Radiological CAMs and RAMs are used to provide prompt warning when airborne radioactivity or ambient radiation levels have exceeded action levels that would warrant a response. CAMs and RAMs are used to provide local warning to workers to take immediate action to reduce exposure, with some providing remote indication. INTEC also uses RAMs to monitor the radiation exposure

adjacent to exhaust plenum high-efficiency particulate air (HEPA) filters or process filters that require operator action to shift ventilation to an alternate exhaust plenum (EAR-186) or to terminate the process causing the elevated radiation (EAR-284, EAR-295). Radiological Controls maintains the equipment using annual or semi-annual calibration (TPR-103, TPR-181, TPR-6245), monthly alarm checks, daily or weekly operational checks and weekly source checks (TPR-102, TPR-194, TPR-198, TPR-5192, TPR-6407, TPR-6749, TPR-6750, TPR-6770). Several CAMs are considered permanently installed due to reliance on plant air and being connected to the distributed control system (DCS), such as those located at CPP-659 and CPP-666; while other CAMs provide local warning and are self-reliant and are able to be exchanged with like instruments. Compensatory measures are described in technical baseline (TBL)-180 for INTEC CAMs and RAMs when the instrument is removed from service due to malfunction. When an instrument fails due to performance testing or due to necessary corrective maintenance, the instrument is tagged out of service, notifications are made to supervision, the condition is documented and recorded in the radiological control technician (RCT) logs and the appropriate instrument maintenance organization is notified. Spare CAMs and RAMs are available for use as replacements when an instrument is taken out of service for corrective maintenance. A periodic review is completed by Radiological Control (RadCon) management to ensure adequate CAMs and RAMs are immediately available to keep the facility operational. Common CAM replacement parts adequate CAMs are immediately available to keep the facility operational. Common CAM replacement parts are in stock for quick repairs. The timeliness of preventive maintenance and corrective maintenance supports the requirements of the RadCon program.

RWMC:

Minimum operating requirements are built into each facility process and captured in the procedural requirements contained in the various technical procedures (TPRs). The TPRs call out various pre- and post- operational checklists verifying compliance and proper operation of equipment. The operational requirements for items such as ventilation and drum packaging stations (DPSs) are covered in the pre-operational inspection forms prior to going into operations mode and conducting waste handling operations. Pre-operational checks are also completed on heavy equipment used within the facility. As a result, deficiencies are self-regulating in the sense that compliant production cannot occur until the required systems are operable. Any equipment or system deficiencies are tracked daily at the morning POD and the end of shift foremen meeting, as well as the pre-job briefs as part of feedback from the workers through the Integrated Safety Management System (ISMS) process.

Preventive maintenance (PM) is developed in accordance with the manufacturers' recommendations through a detailed evaluation by engineering in the form of Preventive Maintenance Justification (PMJ) process. Any deviations from the manufacturers' recommendations are evaluated and justified through the PMJ process. The performance of maintenance is completed through strict adherence to the work control process contained in MCP-101, which has applicability to all equipment regardless of location or use. Operation of equipment is similarly managed based on manufacturers' operating instructions and extensive heavy equipment operator qualification and training. General operating guidance and roles and responsibilities for equipment operators are covered by company management control procedures. PM periodicity is evaluated, tracked and monitored by system engineers.

Critical RWMC equipment is inspected daily via various pre-operational forms/checklists. Additionally, in the case of the heavy equipment used for exhumation, routine PMs are performed at 200 hour intervals per manufacturers' recommendations, as well as weekly PMs on the ventilation system fans. Based upon inspections and continuous monitoring of Retrieval Area (RA)

equipment, deficiencies are documented and immediate repairs are made. The use of ISMS in the daily operation of the facilities also facilitates this at the pre-job briefs in which feedback on all aspects of the previous shifts operations is received from personnel.

To meet the rigorous demands of maintaining equipment and facilities at RWMC (specifically those systems supporting safe operations, systems and equipment needed to meet contractual requirements, and safety of personnel, the public, and the environment), RWMC does have sufficient resources to properly maintain systems and equipment under contractual control of CWI.

Radiological Controls maintains CAMs and RAMs by requiring annual or semi-annual calibration (TPR-6245), monthly alarm checks, daily or weekly operational checks and weekly source checks (TPR-194, TPR-198, TPR-6770). All of the CAMs and RAMs are interchangeable and are replaced when found out of service. When an instrument fails due to performance testing or due to necessary corrective maintenance, the instrument is tagged out of service, notifications are made to supervision, the condition is documented and recorded in the RCT logs and the appropriate instrument maintenance organization is notified. Compensatory measures are specified for CAMs and RAMs in TBL-153 for RWMC. Spare CAMs and RAMs are available for use as replacements when an instrument is taken out of service for corrective maintenance. A periodic review is completed by RadCon management to ensure adequate CAMs are immediately available to keep the facility operational. Common CAM and RAM replacement parts are in stock for quick repairs. The timeliness of preventive maintenance and corrective maintenance supports the requirements of the RadCon program.

Criteria 2. Sufficient resources are provided by CWI to properly maintain configuration control up to date under contractual control of CWI.

Criteria 2 was evaluated and met during the review. Two noteworthy practices and one executive summary comment were identified during the evaluation of Criteria 2.

CWI:

ISMS has been implemented by the ICP for the protection and safety of the workers, the public, and the environment. ISMS is a systematic, phased approach for performing work safely. The ISM's seven guiding principles and five core functions form the foundation of ICP ISMS implementation. 48 CFR 970.5223-1, "Integration of Environment, Safety and Health into Work Planning and Execution," requires DOE and contractor actions to continuously maintain the integrity of ISMS. CWI and DOE-ID are responsible for ensuring that the approved ISMS program description document (PDD)-1004, "Integrated Safety Management System" is accurate. PDD-1004 is controlled by an effective feedback and improvement system so that it remains current.

In accordance with DOE O 226.1B, "Implementation of Department of Energy Oversight Policy," CWI has established a comprehensive and integrated Contractor Assurance System (CAS) for identifying and addressing deficiencies, providing the means and requirement for reporting them, implementing corrective and preventive actions, and sharing lessons learned across ICP. The CAS at CWI includes programs and processes addressed by Functional Support Areas (FSAs), feedback and improvement, and independent assessments. PDD-159, "ICP Contractor Assurance System," describes the processes and programs for achieving continuous improvement in operations.

Functional Support Areas

The CWI ISMS infrastructure includes a management structure with company-level FSAs. There are 36 FSAs identified in LST-1, "Responsible Managers, Functional Support Managers and Subject Matter Experts." FSAs are the foundation of the CWI ISMS. The associated management structure and responsibilities of the FSAs include both matrixed and deployed personnel who work closely together to ensure implementation of standards and requirements is consistent throughout the company. At the facility, project, and subproject levels, project teams establish the project set of requirements that flow down from the FSA requirements to their facility, project, and subproject. Project teams also establish requirements for individual activities providing necessary and sufficient controls for performing work safely. Responsible managers for FSAs provide leadership, direction, and integration for their FSA with projects and subprojects.

Feedback and Improvement

ISMS core function five provides for feedback and continuous improvement in safety performance (including protection of employees, the public, and the environment). The CWI feedback and improvement program consists of numerous processes, both formal and informal, for communicating information to and from each work level (company, project, and activity). It is this acquisition, handling, tracking, analysis, and communication of data that becomes the CWI feedback and improvement program. Feedback ensures safe performance of work by taking advantage of experience. All involved personnel, employees and subcontract employees, are encouraged to participate.

PDD-155, "Feedback and Improvement Program," describes the feedback and improvement programs CWI has implemented for the ICP. It prescribes that all aspects of an ISMS are subject to continuous improvement through an assessment and feedback process, which functions at each level of work and at every stage in the work process.

Four principal mechanisms work together to provide effective feedback and improvement: employee feedback; integrated assessments; issues management, and performance measurement analysis and reporting. Additionally, the Safety Assessment Center (SAC) meets daily to identify, review, and analyze safety events and conditions. Management uses the SAC to quickly see trends that allow corrections during the year.

Self-Assessments/Management Assessments

PDD-155, "Feedback and Improvement Program," describes a comprehensive, integrated, risk-based approach for managing assessments. The Integrated Assessment Program (IAP) implements contractual requirements for ISMS and DOE rule and order requirements for quality assurance (QA). It also implements specific assessment requirements from other regulations and DOE orders. The details of the program are based on applicable guides and standards.

Senior CWI management sponsors the IAP. Clear roles and responsibilities for execution of the program are identified in implementing documents. Directors and managers are responsible for ensuring that assessments are effectively planned, scheduled, and performed. The Executive Safety Review Board (ESRB) reviews the results of selected assessments on an approximately quarterly basis.

During the performance of assessments, issues are identified, documented, and dispositioned in accordance with MCP-598, "Corrective Action System." The effectiveness of the integrated

assessment process is measured by analyzing the performance of assessments, assessment results, and the execution of the overall process. Inspections, Surveillances, Management Reviews, and Management Assessments are performed to support specific assessment requirements and commitments.

Independent Assessments

The ICP Project Evaluation Board (PEB) conducts comprehensive, multidiscipline, internal independent assessments of CWI projects and programs. The PEB also performs assessments, as requested by CWI senior management (e.g., Readiness Reviews), to review specific areas of emphasis, or to validate project or program performance. The PEB is comprised of a core team along with ad-hoc functional support managers and SMEs. The PEB is used to achieve operational excellence and maintain full implementation of ISMS. The results of PEB assessments are used to promote safety and continuous improvement, and identify areas of excellence in CWI projects consistent with DOE requirements. Assessment results and project risk determine the frequency of PEB assessments for CWI projects and programs. The PEB process is described in MCP-1539, "Project Evaluation Board."

Quality Assurance Assessment Program

The QA assessment program provides for a comprehensive schedule of QA audits and surveillances to verify compliance to requirements, determine the effectiveness and adequacy of processes, and identify opportunities for improvement. The QA assessment program provides feedback into the IAP and the Corrective Action System (i.e., MCP-598).

- PRD-5091, "Assessments," identifies requirements and responsibilities for establishing and performing management assessments of the integrated Quality Assurance Program (QAP).
- PRD-5081, "Inspection," identifies requirements and responsibilities for specifying, planning, performing, and reporting inspections used to verify the acceptance of items or activities.
- MCP-589, "Quality Assurance Surveillance," defines the process for conducting and documenting QA surveillances.
- MCP-9278, "Quality Assurance Audits," defines the process for conducting and documenting internal and external QA audits.

Lessons Learned

Lessons learned are developed from operating experience information that come from noteworthy practices, improvements and correction of inadequacies in design or operations methodologies, new innovative techniques, information to protect public safety and health, etc. Lessons learned information is collected and displayed using a standard template for internal consistency and to aid in sharing of the information with other DOE sites.

External lessons learned information is received from DOE and other external sources. This information is reviewed to determine if the scope is applicable for ICP operations. This information is disseminated to the affected projects, programs and/or organizations. The Lessons Learned Program is implemented by MCP-192, "Processing Lessons Learned and Operating Experience Information."

In addition to the FSA processes, TSR-100, Surveillance Requirement SR 3.100.6.1, requires that company procedures have safety management procedure (SMP) owners to report program status periodically to an ESRB as one means of monitoring program effectiveness while affirming the accountability of the SMP owners. This surveillance requires that such a report serve as a surveillance supporting limiting condition for operation (LCO) 3.100.6 on an annual basis. The report is expected to focus on program performance measures selected by the owner and/or the ESRB and adjusted with experience. The report submitted as the annual surveillance should also summarize any changes made in the provisions that implement the NUCLEAR SAFETY ATTRIBUTES (there may be none) and provide evidence that the required generic program provisions are working (that is, the provisions to detect and correct non-compliances with program requirements and to monitor program performance to provide feedback for program improvement consistent with ISMS principles).

The ESRB is a committee established to oversee the identification, analysis, reporting, and corrective actions of safety-significant events or issues with programmatic implications, and other issues as determined by the CWI President.

Finally, engineering performs a yearly Configuration Management (CM) program assessment to ensure effectiveness in complying with engineering program procedures that implement the seven CM SMP(s) nuclear facility safety attributes delineated in SAR-100, ICP Standardized Safety Analysis Report, Chapter 17, Management, Organization, and Institutional Safety Provisions, Section 17.5, and Configuration and Document Control. The assessment results are then presented to the ESRB to determine if the CM program is effectively implemented using a specified set of attributes.

Using these attributes, five facilities and projects (including INTEC and RWMC) were evaluated during 2013 for the ability to fully implement ICP Engineering Program procedures and processes contained in companywide Manual 10A – Engineering (Integrated Assessment System [IAS] 13334).

No significant issues were identified. Two items related to unreviewed safety question (USQ) review requirements were tracked to closure in accordance with company directives.

In summary, facilities and projects evaluated under this annual management assessment were adequately monitoring, evaluating, and improving in CM.

DOE-STD-1073-93-Pt.1, Guide for Operational Configuration Management Program, provides guidance to DOE personnel and contractors on the development and implementation of an operational CM program, including an Aging Management program. The standard is a guide only and does not impose new requirements. Due to the aging facilities under CWI control and an unclear end of life, it would be prudent that DOE-ID and CWI evaluate whether or not value can be gained by reviewing the applicability of an Aging Management program for ICP facilities.

INTEC:

Configuration control process is maintained by MCP-2811, Nuclear Facility Change, MCP-3630, Digital Instrumentation and Control System Management, MCP-1308, Field Design Change, MCP-2042, Temporary Modification Control and MCP-3574, Management of Data in the Configuration Management Database. The INTEC Design Authority observes the configuration management process on a daily basis. Engineering follows the process per the MCPs and it works well. CWI has provided sufficient resources to maintain configuration control within INTEC facilities.

An Essential Equipment List has been established to aid management and operators in monitoring and scheduling to ensure that systems and equipment are properly maintained. The Essential Equipment List is a software program that lists equipment deemed essential to the support of operations in INTEC. If a piece of equipment changes status during a shift, the shift manager updates the status window for the equipment in question. Any equipment that is taken out of service or placed in reduced status (either online reduced status or standby reduced status) then appears in the OOS report. The OOS report is reviewed daily in the POD and populated with resulting work request/order and is scheduled to work as quickly as possible. The use of this monitoring process minimizes equipment down time and promptly resolves issues. However, the software and process is locally generated and not documented under any CWI controlled document and has not been evaluated with respect to software configuration control. CAMs and RAMs are managed by a separate, but equally effective system using a preventive maintenance routine.

Items being tracked on a continuous basis by INTEC include:

a. Ventilation: The ventilation system for CPP-666 is configured with two sets of HEPA filters in series. The first being the FDP Cell Off-Gas (COG) HEPAs followed by the Final Exhaust HEPAs. The facility houses two areas, FDP dry cell in which TRU waste is repackaged and FSA which stores and handles spent nuclear fuels underwater. The ventilation system is shared by both of these areas. Only the FDP Cell off-gas goes through the COG HEPAs and all the facility off-gas goes through the Final Exhaust HEPAs. For this reason only, the COG HEPAs are measurably increasing in radiological levels. The radiological fields have not reached the point where the HEPA filter media tensile strength is further reduced by the radiological levels. Currently the majority of all the HEPA filters have been in-service for 30 years. The HEPA filter media tensile strength has been reduced only by aging. The pressure drops across theses filters and the filter flow rates are monitored and recorded daily by Operation personnel. Annual dioctyl phthalate (DOP) testing and filter housing inspections are also performed and have been satisfactory.

b. Exhaust Blower Operation: There are three main exhaust blowers BLO-NCM-285 -1, -2 & -3 which provide exhaust ventilation for the highly contaminated areas in CPP-659 including decon cells 308/309. The facility is designed to naturally vent in the event that all three blowers are lost (such as power loss). It has been assessed that two of the three blowers (blowers #1 & #3) provide less exhaust ventilation flow than the #2 blower. Recently a camera inspection was performed on the # 3 blower inlet vanes. The inspection revealed that approximately half of the inlet vanes were stuck in the closed position which inhibits using the full capacity of the blower. Accessing those inlet vanes for repair is difficult. A work request has been submitted and a work package is being planned. It is assumed a similar problem exists for the # 1 blower and a similar fix will be required. Currently, the facility requires two of the three blowers to be operating in order to support the current mission of the facility which includes opening cell entry doors or cell entry access ports. A concern exists regarding whether the facility could support port pulls or cell entries in the event the “Strong” blower (#2) fails. Engineering is working on a path forward that could allow work to continue with lower airflows. Mission risk exists until repairs are made to one or both of the “weaker” blowers or the Engineering evaluation is complete. Weaker blowers may be able to provide the required flows during cell entries or port access activities but the operating margin is significantly reduced. This can be a safety issue.

Waste Management has a tenant relationship within INTEC. Within WM, configuration management and configuration control are accomplished in accordance with MCP-1450 Conduct of Engineering Appendix A, which implements the Safety Analysis Report (SAR)-100 Configuration Management Safety Management Program. MCP-1450 manages configuration in six general

categories: Design, Nuclear Facility Changes, Technical Baseline, Document Control, Testing and Assessments. These six areas are managed and implemented through 24 documents (MCPs). Regular assessments ensure compliance and continuing improvement. There have been no significant configuration management, corrective maintenance, or preventive maintenance issues in Waste Management over the last two years.

RWMC:

RWMC has an assigned system engineer for each system. One of the primary objectives of the system engineer is configuration management of their system. Each system engineer maintains control of the Master Equipment List (MEL) and the CM database for their assigned systems. These two databases are populated prior to turning the system over to operations and updated as components change.

Conduct-of-Engineering, MCP-1450 requires that changes to nuclear facilities be made in accordance with MCP-2811 or, for Instrumentation and Control (I&C) related software changes, MCP-3630. Any change to a programmable logic controller (PLC) is required to be completed in accordance with MCP-3630, requiring that a computer system change form (CSCF) be populated which document changes to the program and supporting documentation. This form, accompanying software/drawing changes, and successful testing are required to be completed prior to operational use.

The engineering, nuclear safety, radiological controls, criticality controls, and other support organizations work closely, using established processes and procedures, to ensure configuration control is maintained. This is accomplished through the work control processes of MCP-101, various engineering MCPs, the USQ process, and use of specialized system engineers. Engineering procedures require updates to the configuration management system within specified timeframes to ensure the configuration status is captured in a timely manner. CWI routinely evaluates the manning of the various organizations to ensure adequate staffing to ensure safe, compliant production. Numerous assessments have been conducted over the last two years that verify the program is in place and functioning satisfactorily.

D&D:

CWI determined that they needed to establish a formal and disciplined process to ensure that changes to the decontamination and decommissioning (D&D) systems are introduced in a controlled and coordinated manner during sodium treatment evolutions. Though not required by DOE orders, based on classification of less than Hazard Category 3 (LTHC3) facilities, CWI created LST-774, ICP D&D Conduct of Operations Best Management Practices Implementation Matrix. It was considered necessary for D&D to establish a rigorous process of CM. D&D CM emphasizes the functional relation between parts, subsystems, and systems for effectively controlling system change. It helps to verify that proposed changes are systematically reviewed and approved to minimize adverse effects.

Changes to the system are proposed, evaluated, and implemented using a standardized, systematic approach that ensures consistency. Proposed changes are evaluated in terms of their anticipated impact on the entire system. CM verifies that changes are carried out as prescribed and that documentation of items and systems reflects true configuration. D&D CM includes provisions for storing, tracking, and updating of all system information on a component, subsystem, and system basis.

D&D CM verifies that a system performs as intended, and is identified and documented in sufficient detail to support its projected life cycle. The CM process facilitates orderly management of system information and system changes for such beneficial purposes as to revise capability; improve performance, reliability, or maintainability; extend life; reduce cost; reduce risk and liability; or resolve issues.

Criteria 3. Sufficient resources are provided by CWI to properly make necessary upgrades to support systems infrastructure.

Criteria 3 was evaluated and met during the review. One noteworthy practice was identified during the evaluation of Criteria 3 and four executive summary comments are presented under Criteria 3. One noteworthy practice was identified.

INTEC:

System Health Reports (SHR) and Technical Safety Requirements (TSR) mandated programs are used to identify system deficiencies. CPP-666 has two TSR mandated programs: the corrosion monitoring program (PLN-1280) and the water quality program (PLN-1304). Both of these programs require annual reports which include assessments of equipment and trends. These processes work well and identify system deficiencies to both CWI Management and DOE-ID.

CWI properly maintains INTEC systems in a functional and compliant manner. An example of the focus required to maintain aged equipment is provided by the ongoing maintenance effort concerning Electric Plant Operability. A phased approach was taken using CWI and DOE-ID identified funding as follows:

Phase 1 – Funded to $1.8 M. Status complete. Issued and performed approx. 125 PMs that were previously not performed on INTEC Power Operations (IPO) distribution equipment, performed SKM arc flash and coordination studies on all 13.8 KV equipment, repaired FAST 13.8 KV leaking transformer, replaced Substation 10 - 13.8 KV breakers and sent 6 electricians to first time medium voltage breaker maintenance and repair training and misc. equipment replacement/repair.

Phase 2 – Funded to $611K. Requested $5.3M. Portions completed: Purchased 94 ACPRO breaker relay units for Load Centers 1, 3, 4, 13 and 14. All units installed with the exception of Load Center 4, to be installed in the summer of 2014. Portions incomplete due to non-funded scope: SKM Analysis from 13.8 KV equipment to building service entrances, 13.8 KV switch modifications, PSS-FPG-120 switch replacement and double end feed of CPP-663.

Phase 3 – Not funded. Original request $3.5M. Estimate included: Completion of SKM Systems Analysis on equipment inside INTEC facilities to HAZ CAT 1, replacement of failing/obsolete/non-supported Substation Breaker relay control, development of PM procedures for electrical distribution inside INTEC facilities and misc. repairs/ replacements of electrical equipment. Utility Control Center Replacement – not funded. Revised request $2M

The INTEC power system is operable and reliable. Breaker control units in INTEC substations and load centers have been replaced with the exception of a few substation breakers and Load Center 04 which is scheduled for 2015. Preventative maintenance has been performed on all INTEC exterior distribution equipment within the grace period. The INTEC Standby Power System is operable and reliable and was successfully retested during this evaluation. The first test, which was conducted on

May 9, 2014 failed to supply the third priority loads due to loose wiring in the Woodward (synchronizing) cabinet. This wiring deficiency has been corrected and tested.

A capital equipment list (table in the CWI Contract, Exhibit C.8-2 – INTEC Systems/Facilities Refurbishment), itemizes equipment for which replacement components may no longer exist or are increasingly difficult to obtain. Two high priority items are listed in the Exhibit which were not funded as a part of the CWI contract, and additional comments are warranted:

a. One of the highest priorities for Spent Nuclear Fuel Refurbishment Project, CPP-666 Resin Bed Replacement, was originally unfunded with acceptable justification. Since the start of the contract, CWI and DOE-ID have determined that the basin water system has degraded to the point that water clarity has significant impact on continuing operations. CWI and DOE-ID have identified this issue and recent funding has been provided to replace the resin filter bed by 2015.

b. One of the highest priorities for INTEC Program Refurbishment Project, INTEC ECS, has been and continues to remain unfunded. The ECS system at INTEC has significant deficiencies in areas other than office facilities. Voice transmissions and announcements are unclear. An approved compensatory action has been established in facilities that are not covered by the ECS (hand held radios), or when the ECS is deemed inoperable. However, the difficulty in maintaining the system operable and the continued operator difficulty in understanding verbal ECS announcements continues to be a concern. CWI and DOE-ID have attempted to obtain additional funding for this project, but it remains to be funded. During this evaluation INTEC experienced a loss of the ECS and entered EAR-288 for Loop 4 (affecting the following buildings: CPP-603, CPP-1604, CPP-1631, CPP-1650, CPP-1651, CPP-1662, CPP-1663, CPP-1673, and CPP-1686). The loss was managed correctly and work began immediately to restore the system. Progress updates were reported to INTEC employees and full restoration of the system occurred in less than 4 hrs.

Exhibit C.8-2 has several other repair/refurbishment entries that should be evaluated and considered for specific funding. This recommendation includes: CPP-666 HVAC System refurbishment, listed as end of service life/obsolete equipment; CPP-666 Fuel Storage Area DCS, listed as end of service life/obsolete equipment; and CPP-666 PA System replacement, listed as a safety improvement item.

The underground fire main and Life Safety Systems associated with combatting fires at INTEC were evaluated during this review. Compensatory Actions associated with Fire Protection Impairments are determined by the Facility Fire Protection Engineer and identified on the Impairment Form (442.19). Currently, there are three active Fire Protection Impairments. These are discussed further in Criteria 5.

The INTEC fire water distribution system is inspected and tested per the requirements of NFPA 25. Inspection, Testing and Maintenance (IT&M) activities are completed on scheduled routines. The most recently completed fire water loop PM completed in 2012 indicated that the fire water supply at INTEC was consistent with the original baseline test completed in 2002. Corrective maintenance activities associated with the fire water distribution system are completed as deficiencies occur. The most recent corrective maintenance activity was completed in 2013 which involved replacement of approximately 70 feet of original underground piping that was installed in the 1950's.

At INTEC LSS equipment is tracked through the work control Computer Maintenance Management System (CMMS) and where necessary, deficiencies are followed in the impairment system. Currently there are 16 work requests in the backlog for LSS Equipment. None of the deficiencies require impairments and will be worked as soon as possible. None require additional DOE funding or authorization to repair. These deficiencies are worked as resources are available consistent with other plant priorities and the LSS workload.

Emergency and service diesels at INTEC were evaluated during this review. All maintenance on the standby diesel generators has been performed within the required time frame or grace period. Maintenance includes weekly equipment checks, monthly load testing, annual mechanical preventative maintenance, annual calibration of level and pressure instruments and annual total plant outage standby generator load test. The diesel operations were found to be satisfactory.

The operation of INTEC air compressors and their role in damper operations was evaluated during this review. There are three air compressors at INTEC: COM-UTI-614, 617 and 624. The two main compressors are COM-UTI-614 and 617. Either COM-UTI-614 or 617 is in operation and the other is in standby. Operation of the two compressors is rotated monthly. COM-UTI-624 is a smaller compressor that automatically loads /unloads as demand on the system requires. It is always in standby operation. Maintenance consists of shift routines to check temperatures, pressures, oil level and vibration, monthly rotation of COM-UTI-614 and 617, a semi-annual PM, and an annual PM.

The essential equipment list shows the following availability for each of the compressors:

- COM-UTI-614 = 89% for the year (a temperature sensor was replaced in COM-614 which required several weeks)
- COM-UTI-617 = 100%
- COM-UTI-624 =100%

The air compressors are relatively new and are under a preventative maintenance routine that has verified their operation. Redundant capacity and maintenance provides a reliable supply for damper operation.

RWMC:

Prior to design of a nuclear facility or upgrade of a nuclear facility support system, input is requested from effected parties (e.g., radiological control, industrial hygiene, safety, safety analysis, and etc.). These “technical and functional requirements” are controlled through the design process per the requirements of MCP-1450, Conduct of Engineering.

Operations develop TPRs which define how to operate the system. These TPRs call out various pre- and post- operational checklists verifying compliance and proper operation of equipment. The operational requirements for systems are covered in the pre-operational inspection forms prior to going into operations mode and conducting waste handling operations. As a result, deficiencies are identified and reported to system engineering. System engineering follows the requirements of MCP-1450 to make the necessary repairs to the systems. Progress of the repair is tracked daily at the morning POD and the end of shift foremen’s meeting.

Additionally, maintenance performs required PMs on the systems. The performance of maintenance is completed through strict adherence to the work control procedures contained in MCP-101, which has applicability to all equipment regardless of location or use. Deficiencies noted during the performance of a PM are reported to system engineering. These deficiencies are handled as described above.

The underground fire main and Life Safety Systems associated with combatting fires at RWMC were evaluated during this review. The fire water system for RWMC was constructed in 1992 and modified in 1995 to meet the system demands in RWMC facilities. The modifications included a 250,000 gal storage tank and a deep well. The system was further modified in 2007 to provide a fire main in the Subsurface Disposal Area (SDA) and a redundant pump house (Waste Management Facility [WMF]-743) with a 500,000 gal water supply. The new pump house and water tank are

located north of Pit 9, outside of the SDA with the tank being supplied by an existing electric deep well pump. The most demanding firewater storage requirement of the project is a 2,000-gpm flow at the hydrants for 2-hour duration.

The system is currently operating under an Authority Having Jurisdiction Record (AHJ-15-11) due to an inoperable valve FW-CV-SA11 which isolates Hydrant FW-HYD-SA11. Maintenance Work Order 650569 is currently being planned to make needed repairs to valve FW-CV-SA11. In the event isolation is needed before repair, adjacent isolation valves can be closed to isolate the fire hydrant being fed until repairs are made.

The most limiting portions of the system are in the TRU Storage Area where CWI owns the main distribution system and hydrants. Several valves have been replaced in that portion of the system over the last 5 years due to the combination of ductile iron and polyvinyl chloride (PVC) pipe used in the system, system age and settlement of the system. Corrective maintenance has been made to correct emerging problems.

The fire water system at RWMC is fully functional and adequate.

Emergency and service diesels at RWMC were evaluated during this review. There are six standby generators in the SDA and one balance of plant generator at RWMC. Each generator in the SDA is associated with a particular retrieval enclosure and provides power to the exhaust ventilation system and controls in the event of a loss of normal power. The balance of plant generator provides power to essential systems throughout the administration area at RWMC. These systems include the emergency notification system, emergency control center, computer networking equipment and the domestic water system.

Each generator has an annual and monthly PM on both the generator and the associated transfer switch. Work orders incorporate the requirements of National Fire Protection Association (NFPA) 110 and the manufactures recommendation.

Currently, there are no deficiencies on these systems. The system is functional and adequate.

Criteria 4. Evaluate the corrective and preventative maintenance backlogs at INTEC and RWMC facilities.

Criteria 4 was evaluated and met during the review. One finding and one opportunity for improvement were identified during the evaluation of Criteria 4, and one executive summary comment is presented under Criteria 4. One noteworthy practice was identified.

INTEC:

When equipment breaks, the need for repair is evaluated considering several factors, including a cost-benefit analysis with consideration of the current and known future missions. One example concerns the Pneumatic Sample Transfer System (PTS) that runs between the Remote Analytical Laboratory (CPP-684) and the New Waste Calcining Facility (CPP-659). The PTS control system needs repair, but it has been determined that the system is not needed for the known INTEC mission samples, so it is in the process of formally being taken out of service following the Field Design Change process (MCP-1308). Other failed equipment, such as one of the Liquid Effluent Treatment and Disposal Facility (CPP-1618) reboilers, has been determined to have a potential need for use, but repairs have not been initiated. An engineering evaluation was prepared to determine mission risk, which concluded that there is a redundant operable reboiler that has sufficient operating life for the currently expected mission of the facility, and that a small leak on a reboiler would not pose a personnel safety issue, release contaminants to the environment and

would not require immediate cessation of use. INTEC operations could be continued with appropriate compensatory controls, therefore repair isn't necessary at this time.

INTEC tracks PM performance by scheduling on the POD and by a maintenance report completed weekly. Critical and routine PM performance is tracked and reported to the INTEC Performance Assurance group and is followed by the INTEC Corrective Action Review Board (CARB). Routine PM performance exceeds 90%, with a few items being deferred due to corrective maintenance actions on a monthly basis. Critical PM performance is routinely 100%. The list of corrective maintenance items on equipment in the safety related categories that has not been completed on schedule is included in the attached report.

The backlog of preventative maintenance for CPP-666 is small and not an issue. The backlog of corrective maintenance is substantial. The number of open corrective maintenance items is small relative to the size and age of facilities and equipment being managed by the project. The backlog consists of work request that do not require planning and planned work orders. The work requests that do not require planning are not tracked or scheduled. For example there are several work request and work orders for the CPP-666 HVAC system that have been in work control for several days. This results in difficulties for Operations to operate the HVAC system. For example, dampers do not operate properly and stick which cause upsets in the HVAC system and unnecessary alarms. Mission capability has been assessed and has not been compromised by deficient equipment. Capability has been demonstrated by contract milestone completion and analysis of Cost Performance Index (CPI) and Schedule Performance Index (SPI) for the reporting areas. Safety systems are promptly corrected.

Preventive maintenance of the CPP-1687 Dial Room batteries has yet to be performed. The dial room is a switch room for all communications into and out of INTEC that use land-lines. Other than telephones, the primary communication system that is affected by the dial room is the Random Access Digital Audio (RADA) system. When a fire alarm is received the RADA is activated by a coded signal sent over telephone lines from the Fire Alarm Center. The RADA interprets this signal and selects the corresponding fire alarm message from its database. The selected fire alarm message is then broadcast over the ECS to all areas of INTEC that are covered by the ECS. Back-up power to the dial room is provided by standby generators as well as the battery bank. The development of the preventive maintenance work order has been delayed because of the configuration of the system.

At the time of the assessment, there were no CAMs or RAMs that were out of service. INTEC uses the FIXIT system for requesting corrective maintenance. A search of RCT logs for the last 2 years for INTEC identified 3 CAMs that were taken out of service for corrective maintenance with 2 of these being replaced with a standby CAM, and 1 area that required air sampling prior to allowing access until corrective maintenance had been completed. INTEC supervision has been satisfied with the maintenance support for addressing CAMs and RAMs issues.

RWMC:

There are no open work requests for the identified safety systems (HVAC/CAMS/Fire Detection) at RWMC. There are no open CM work orders for the identified safety systems (HVAC/CAMS/Fire Detection).

From May 2012 to current, 11 preventive maintenance work orders were filed as not being completed by the required due date (delinquent). Further review shows that all work scope specified had been completed as required, however multiple situations existed where work orders were duplicated and one situation where a work order was physically lost.

The duplicate and redundant PMs have since been cancelled. A review of the lost Monthly PMs shows that from December 2010 to present, the situation that occurred in September 2012 (lost work order) had not occurred prior to the event and has not occurred since. Because this was an isolated incident no further action is being taken. The current system of tracking work order completion is working as intended.

From May 2012 to current, 14 preventive maintenance work orders were listed as **deferred**. Of the 14 PMs:

- 9 were finished prior to the required date but did not get entered as complete in the passport computer system until after the required finish date.
- 3 PMs underwent periodicity and initial inspection format changes. The work was finished prior to the required completion dates in the revised format.
- 1 PM was performed within the grace period due to the piece of equipment being out of service. When that piece of equipment was placed back in service, the PM was completed prior to use.
- 1 was generated prior to the required maintenance date due to a passport entry error. That PM was completed prior to the actual required due date.

At RWMC, every quarter a Work Order is produced from Model #622595 "Perform Checks and Repair on RadCon Instruments." The facility instrument technicians document those radiological instruments worked on and ensure there are no outstanding work requests or open work orders at the end of the quarter. At the time of the assessment, there were no CAMs or RAMs that were out of service. A search of RCT logs at RWMC over the past 2 years identified 14 CAMs that were taken out of service and replaced with a standby CAM until corrective maintenance had been performed. The corrective maintenance was promptly completed and the system restored to service. RWMC supervision has been satisfied with the maintenance support for addressing CAMs and RAMs issues.

Criteria 5. Evaluate the nature and age of operator/operational workarounds and compensatory actions taken or assigned in INTEC and RWMC facilities.

Criteria 5 was evaluated and met during the review. Four executive summary comments are presented under Criteria 5.

INTEC:

There are no operator/operational workarounds and some compensatory actions at INTEC. INTEC works in strict compliance to approved Type 1 and 2 TPRs, and formal forms and checklists. All personnel are trained on conduct of operations, procedural compliance, and the company Stop Work/Step Back policies. If work cannot be performed as written or a concern is raised, work is stopped pending resolution. Work is performed under a requirements based system rather than expert based, which eliminates workarounds or compensatory actions that are not formally and specifically proceduralized after proper review and authorization in accordance with company procedures. Workarounds are specifically prohibited by company policies.

There have been instances in the past and that continue which have presented significant challenges to INTEC in maintaining plant operation. Compensatory or planning actions have been conducted to combat these issues:

a. <u>RESIN MATERIAL</u>:

During a discovery phase (evaluating resin conditions based on service life due to basin water quality trends) in Bldg 666, compensatory measures in regard to the "Potential for

Resin in the Ion Exchange (IX) Columns at CPP-666 to degrade into fines and enter the fuel storage pools" were instituted, including monitoring for the presence of visible resin on the water surface every 12 hours, immediate notification of supervision and bypass of basin water deionizer trains if visible resin or resin fines were observed anywhere in the pools, and direction to not backwash IX vessels. Sufficient resources were applied to ensure the above actions could be carried out effectively in the facility and communicated to appropriate personnel. The actions taken to combat this issue involved a formally approved compensatory measure which was documented through a Shift Order. This issue is further discussed in Criteria 3, and is funded for resolution in 2015.

b. HVAC FILTERS (FINAL/COG):

Due to elevated radiation readings on the CPP-666 FDP COG filters, they are being monitored at an increased periodicity and are being scheduled for replacement. Although COG filters passed aerosol testing requirements, change out is being done in order to minimize radiological exposure to personnel. The final exhaust filters in CPP-666 have a few individual filters that did not meet aerosol testing requirements (individually) but collectively pass the requirements. These are the original filters in the facility which are approximately 30 years old. Based on the age of filters and two of the four final exhaust filter banks containing individual failed filters, change out is being scheduled.

c. DAMPER CONTROLLERS:

Several controllers that operate dampers in the ventilation system in CPP-666 only operate properly in the manual mode. A number of these controllers have been replaced and upgraded which allows the system to be operated and function as designed, but only in the manual mode. The system is fully functional and controllers that are operated manually are properly caution tagged to notify personnel operating the system. Engineering and maintenance are continuing to correct deficiencies within the system.

d. VALVE POSITION INDICATORS:

Procedurally, Form INTEC-5446, "Evaluation of Inoperable Valve Position Indicator," is used to evaluate possible consequences and compensatory actions for valves with position indicators that have failed. These deficiencies are continuously identified and processed for prompt resolution per facility directives.

e. FIRE IMPAIRMENT:

Currently, there are three Fire Protection Impairments at INTEC requiring compensatory actions. Identified Compensatory Actions.

1. Compensatory Actions are in place associated with CPP 659 FDOR-NCA-451 and the North Stairwell. A large radiological containment is in place for repair of a manipulator and the stairwell is blocked. Appropriate actions are in place and the status of the repair is reviewed daily. Restoration of full service is expected within the next two weeks.

2. A fire isolation damper in CPP-1618 was found to be inoperable in February 2014. A replacement damper is due to be installed within the next month. Appropriate actions are in place and the status of the repair is reviewed daily.

3. The air conditioning plant in CPP-663 is not working, requiring fire doors to be propped open. Appropriate controls are in place and the status of the repair is reviewed daily. Repair efforts are ongoing and restoration of full service is expected within the next two weeks.

Allowable compensatory measures are specified in TBL-180 for INTEC CAMs and RAMs. Examples of compensatory measures include replacing the instrument with an equivalent instrument, increasing radiological monitoring, issuing supplemental dosimetry, and controlling access or work. There are no operational workarounds or compensatory actions that are currently required for INTEC regarding CAM and RAM usage. There have been no observed trends because prompt corrective action has been taken to resolve issues with CAMs and RAMs.

RWMC:

There are no operator/operational workarounds. One active compensatory action exists at RWMC and is discussed below. RWMC works in strict compliance to approved Type 2 TPRs, and formal forms and checklists. All personnel are trained on conduct of operations, procedural compliance, and the company Stop Work/Step Back policies. If work cannot be performed as written or a concern is raised, work is stopped pending resolution. Work is performed under a requirements based system rather than expert based which eliminates workarounds or compensatory actions that are not specifically proceduralized after proper review and authorization in accordance with company procedures. Workarounds are specifically prohibited by company policies.

The fire main system was evaluated during the review. The system is presently operating under an Authority Having Jurisdiction Record (AHJ-15-11) due to an inoperable valve FW-CV-SA11 which isolates Hydrant FW-HYD-SA11. Maintenance Work Order 650569 is currently being planned to make needed repairs to valve FW-CV-SA11. In the event isolation is needed before repair, adjacent isolation valves can be closed to isolate the fire hydrant being fed until repairs are made.

The most limiting portions of the fire system are in the TRU Storage Area where CWI owns the main distribution system and hydrants. Several valves have been replaced in that portion of the system over the last 5 years due to the combination of ductile iron and PVC pipe used in the system, system age and settlement of the system. Corrective maintenance has been made to correct emerging problems.

Allowable compensatory measures are specified in TBL-153 for RWMC CAMs and RAMs. Examples of compensatory measures include replacing the instrument with an equivalent instrument, increasing radiological monitoring, issuing supplemental dosimetry, and controlling access or work. There are no operational workarounds or compensatory actions that are currently required for RWMC regarding CAM and RAM usage. There have been no observed trends because prompt corrective action has been used to resolve issues with CAMs and RAMs.

D&D:

There are no operator/operational workarounds and no active compensatory actions at D&D. D&D works in strict compliance to approved MCP-101 work orders, and formal forms and checklists. All personnel are trained on conduct of operations, procedural compliance, and the company Stop Work/Step Back policies. If work cannot be performed as written or a concern is raised, work is stopped pending resolution. Work is performed under a requirements based system rather than expert based which eliminates workarounds or compensatory actions that are not specifically proceduralized after proper review and authorization in accordance with company procedures. Workarounds are specifically prohibited by company policies.

Criteria 6. Appendix A presents a matrix of factors to consider in an extent of condition review for safety-related systems. In responding to the items contained in Appendix A, evaluate the impact of observations made concerning the review items enumerated for safety-related systems.

Criteria 6 was evaluated and met during the review. One finding and one opportunity for improvement was identified during the evaluation of Criteria 6.

INTEC:

INTEC has effective and mature operations and maintenance programs that ensure safe and compliant operations of its Category II and III Nuclear facilities, general operating, and administrations areas. INTEC operations equipment and facilities are inspected daily via inspection forms and round sheets. Deficiencies noted during inspections, rounds and daily operation of facilities and equipment are documented and immediate action is taken to initiate repairs. INTEC uses an essential equipment list to track equipment essential to the mission. Equipment that is deficient on the essential equipment list is discussed daily in the POD. Actions to return deficient equipment to service and resource prioritization occurs at this meeting and ensures a high state of operability of important plant equipment. LSS are also tracked via impairments which are reviewed daily in the POD. Periodic system health reports are presented to INTEC management by the system engineers. The system health reports identify deficiencies and provide recommendations for improvements or upgrades to ensure continued safe operation.

The presence of INTEC Management in the field is assured by the use of Management Work Place Visits (MWV), Work Observation Teams (WOT) led by senior management, Senior Supervisor Watch (SSW) assignments, and self-assessments (IAS). The performance assurance (PA) group at INTEC reviews MWV's, SSW reports, and self-assessments and reports results to INTEC management.

The following is a summary of specific reviews documented in Appendix A itemizing issues and resolution from the time period May 2012 to May 2014, except as otherwise noted. Operational readiness has not been compromised at INTEC.

Appendix A, Item number:

2. A review of the out of service logs and essential equipment list was completed in the control rooms for CPP-659, 1683 and 603. The review identified no inoperable control room indicators or controls for safety related equipment within INTEC operations in the past two years.

   Although the alarm panels associated with the CPP-666 FAST facility HVAC are not control room panels, there are currently 16 caution tags located on FAST HVAC local control panels LCP-41, 42, and 43. Most of the caution tags identify controllers that must be operated in manual mode because the automatic function of the controllers does not work. This is discussed in Criteria 2. The HVAC system is operable but must be operated manually vice using automatic control.

3. There are no traditional alarm panels in the CPP-659 (New Waste Calcining Facility [NWCF]) control room. The systems within CPP-659 are operated on a DCS. Following the last Calciner run, the process was shut down completely. However, there are about 80 alarm tags on the DCS system that are associated with the shutdown process. They remain in alarm status because the alarm set points are set with the assumption that the process is operating. As new alarms are received, the alarm appears in a separate window and flashes until it has been acknowledged. In the last two years the alarms received have all been advisory alarms or alarms on instrumentation that requires attention such as probe cleared and corrective actions for each event have been taken. No new alarms have remained lit. There are two traditional alarm panels for CAMs and RAMs in the CPP-659 control room; however, there are no alarm windows on these two panels that have remained lit longer than a shift. In accordance with TBL 180, "Instrument List for INTEC," radiation instruments (RAMS and CAMS) are repaired or replaced within one shift of being found inoperable or one of the following compensatory measures are put in place:

   - Require supplemental controls for ongoing work (such as EDs for an OOS RAM or an air sample with periodic filter probes for an OOS CAM)
   - Continuous RCT coverage for ongoing work
   - Increased periodic surveys of the area
   - Restrict work that could require the instrument.

   The CPP-1683 control room also has no traditional alarm panels. The processes for liquid effluent treatment and disposal (LET&D) and process equipment waste evaporators (PEWE) in CPP-1683 are both controlled by a DCS system. Other than alarms associated with outages such as steam outages, plugged probes on instruments and advisory alarms, there have been no alarms that remain lit longer than a shift.

   It has been two years since fuel was received in the IFSF at CPP-603 so other than shift rounds and periodic maintenance activities, the facility remains unmanned. In the past two years, no alarms have activated in the IFSF.

4. INTEC has reviewed the CM backlog tracked by CMMS (Asset Suite). Currently there are 69 items on the CM backlog against components in the Safety Related categories. The CM backlog is worked as resources are available, consistent with other plant priorities and as approved by management and engineering review. No CMs that are personnel safety-related are on the backlog, nor are they allowed since immediate action is taken to clear them.

5. INTEC tracks PM performance by scheduling on the POD and by a maintenance report completed weekly. Critical and routine PM performance is tracked and reported to the INTEC Performance Assurance group and is followed by the INTEC CARB. Routine PM performance exceeds 90%, with a few items deferred due to corrective maintenance actions on a monthly basis. Critical PM performance is routinely 100%.

6. Eight TSR surveillances have been completed in the grace period in the last two years within INTEC Operations. The eight separate occurrences involved five different surveillance requirements. Five of the occurrences were annual assessments that were completed between two and three weeks into the grace period. The remaining three occurrences involved operability tests of the automatic shutdown feature of the two PEWEs (WL-129 and WL-161). The PEWE systems operate infrequently and only when there is enough feed solution to warrant operation. The operability tests of the high-temperature automatic shutdown features require operation of the evaporator (WL-129 or WL-161). In October 2013, operation of WL-161 evaporator was delayed

due to low feed volumes and then a steam outage. Operation of WL-129 evaporator was delayed two weeks beyond the WL-161 operation to allow the shift rotations to pursue training of new operators during the operability test.

7. INTEC uses an "Essential Equipment List" to track operability of equipment required to support the mission. Typically the number of out of service items (out of about 200 tracked components) is a less than ten. Out of service items are discussed with the INTEC Management team daily at the POD meeting. Actions to return deficient equipment to service and resource prioritization occurs at this meeting and ensures a high state of operability for important plant equipment. Additionally, equipment in the life safety category is tracked via a formal impairment process and is also reviewed daily as described above.

14. There are seventy total EARs at INTEC associated with operations. Nineteen of the EARs affect safety related systems or conditions such as fire in a nuclear facility. In the last two years the only entries into EARs for safety related systems have been in response to ECS failures (4 incidents). Fifty one of the EARs address operational abnormalities such as responding to a sump high level alarm.

19. There were five active lock out/tag outs (LO/TO) at INTEC on the date of evaluation. One was seventeen days old, one was thirteen days old, one was eight days old and two were installed on day of the evaluation. All were properly managed and necessary.

20. There is one temporary modification in place at INTEC. FDC-8644 was initiated in September 2012. The temporary modification welded temporary pipe caps with a valved vent connection. The valved vent is being used as a method to perform a zero energy check on a potentially pressurized line. The work is associated with Tank Farm closure.

21. Currently there are no inoperable safety systems at INTEC. All incidents of inoperable safety systems over the last two years have been handled correctly and promptly corrected.

22 & 23. All of the safety systems at INTEC have performed satisfactorily during system testing and during actual demand. However, the Emergency Communications System is aging and finding parts for repairs is difficult. Some spares have been cannibalized from buildings as they went into a D&D status. The FAST HVAC system has 16 caution tags on controllers, most of which identify the need to operate the controllers in the manual mode because the automatic mode does not function properly. These controllers are also no longer available from any vendor.

24. Review of the "INTEC Operations Summaries" for the time period 01/01/12 through 12/31/13 indicated one spurious fire alarm activated from CPP-659 due to a failed circuit board in the fire alarm control panel. This was promptly repaired.

26. There were three temporary procedure changes within INTEC associated with safety systems. One temporary procedure change affected the ETS automatic shutdown system verification procedure at NWCF. This change was effective 11/20/13 and corrected 2/28/2014. The other two temporary changes affected the FAST HVAC procedure. The first was effective 9/13/12 and corrected 9/20/12. The second was effective 5/21/13 and corrected 8/15/2013. Resolution of any temporary procedure change takes place promptly.

28. INTEC Management's presence in the field is ensured by the use of MWV, WOT led by senior management, SSW assignments, and self-assessments (IAS). In the last two years INTEC management has identified 727 issues that were corrected on the spot (COTS), 605 issues that were tracked as Work Group Tasks (WGT), and 120 issues for which a work request (WR) was initiated. Items that were tracked at the Deficiency Report (DR) level or greater are reported separately.

RWMC:

In considering the matrix of Appendix A, the vulnerability of safety related items in question do not exist at RWMC. RWMC has an effective and mature operations and maintenance program to ensure safe and compliant operations of its Category II Nuclear facilities, general operating, and administrations areas with their supporting safety systems. RWMC/ARP equipment and facilities are inspected daily via inspection forms and round sheets. Based upon inspections and continuous monitoring of facilities and equipment, deficiencies are documented and immediate repairs are made. Daily Management presence and performance of MWV routinely focus on procedure compliance, housekeeping and equipment cleanliness. RWMC/ARP management perform regular and unscheduled MWVs and senior supervisory watch surveillances. The MWVs are reviewed routinely by senior management to identify areas for additional focus and to identify any issues that require further corrective actions. The following is a list of information pulled from Appendix A showing issues and resolution from the time period May 2012 to May 2014. Operational readiness has not been compromised at RWMC.

Appendix A, Item number:

5. From May 2012 to present, 11 PM work orders were recorded as not being completed by the required due date (delinquent). Further review shows that all work scope had been completed as required, however multiple situations occurred where work orders were duplicated and one situation where a work order was known to be completed but physically lost.

   The duplicate and redundant PMs have since been cancelled. A review of the lost Monthly PM shows from December 2010 to present, the situation occurred in September 2012 only and has not recurred. Corrective action was effective in resolving the issue. The current system of tracking work order completion is working as intended.

   From May 2012 to current, 14 preventive maintenance work orders were listed as deferred. Of the 14 PMs:

   - 9 were finished prior to the required date but did not get recorded as complete in the passport computer system until after the required finish date.
   - 3 underwent periodicity and initial inspection format changes. The work was finished prior to the required completion dates with the new format.
   - 1 was performed within the grace period due to the piece of equipment being out of service. When that piece of equipment was placed back in service, the PM was completed prior to use.
   - 1 was generated prior to the required maintenance date due to a passport entry error. That PM was completed prior to the actual required due date.

6. Two inspections were completed during the grace period, one due to building structural concerns and the other due to Christmas curtailment.

   The inspections were completed during the grace period.

7 & 21. A review of the RWMC out of Service Logbook was conducted and the following items are permanently OOS as a result of flow element failures: HV-FIT-RE501, HV-FIT-RE502, HV-FIT-RE503, HV-FIT-RE504, HV-FIT-RE401, HV-FIT-RE403, FP-MDRE2-07, FP-MDRE2-08, FP-MDRE2-09, FP-MDRE2-10, and FP-MDRE2-11. This was a reliability issue.

FDC-9818 and Work Order 650350 have been written to replace the failed flow elements with a different design for the ARP-5 HVAC system. There are no plans to replace the ARP-4 failed flow elements because ARP-4 is not operational now. Compensatory measures are in place.

14. A review of the RWMC shift supervisor logs dating back to May 2012 was conducted and 6 abnormal procedure entries did occur during that time period, 3 entries for EAR-282 and 3 entries for EAR-246.

EAR-282 "Emergency Medical Response" was entered three times. Two of the incidents were due to personal illness and one involved a worker that had symptoms of heat stress.

EAR-246 "Response to Fire" was entered due to a roaster oxide reaction inside the DPS of ARP VII, for a manual pull in response to alarms occurring in ARP VIII and for a battery fire in TR-23 due to an equipment manufacturing defect.

Personnel and the fire department responded appropriately. No corrective actions were warranted because systems and procedures functioned as planned and designed.

21. Curb valve FW-CW-SA11 is stuck in the open position and is unable to isolate a single fed fire hydrant. This valve has been placed out of service and is tracked as an Out-of-Service Impairment (OSI) WMF-11-180.

Corrective maintenance Work Order 650569 is currently being planned to make needed repairs. In the event isolation is needed, adjacent isolation valves can be closed to isolate the fire hydrant being fed until repairs are made.

22. RWMC Maintenance identified 10 failed components on batteries for emergency lighting and 4 deficient devices.

Repairs or battery replacement were made using the corrective maintenance program and managed in accordance with MCP-101.

23. The INL Fire Alarm Center (FAC) recorded seventeen incidents at RWMC, two of which were phone notifications from the RWMC Shift Supervisor and fifteen were Class A alarms from facility alarm panels.

One phone notification was for a propane smell at WMF-1619 (a leak at a tank fitting was found and the tank was placed out of service while repairs were made). The second phone notification was due to an illness.

Concerning the panel alarms, one alarm occurred from WMF-1614 and fourteen alarms occurred from WMF-1621, during the period June 2013 through April 2014. None of the alarms from WMF-1614 and 1621 were associated with an actual fire event. The alarm from WMF-1614 was associated with a failed manual pull station that was subsequently replaced. Alarms from WMF-1621 were all associated with known limitations of the video fire detection design (i.e., camera vibration during high wind conditions, or diagnosed faults in detection or support devices (e.g., foreign material in fire detection camera housings, changes in facility lighting, failure of relay modules). Causes were identified for all events. No events were identified as spurious, and corrective maintenance was managed in accordance with MCP-101. Video fire detection cameras in WMF-1621 now go through an impairment

process when local wind gusts exceed 50 mph and a compensatory fire watch is provided by the INL FAC in accordance with SOP-3.2.5.

26. Two temporary procedure changes have been made since April 2012. Both of these have since been cancelled and are no longer active.

Waste Management:

Waste Management uses the INTEC Maintenance department for the majority of maintenance activities. INTEC has a robust maintenance program as discussed in Criteria 7. Daily inspection forms and round sheet monitor the various nuclear facilities, including Hazard Category 2. Any deficiencies are documented, proper notifications are made, and work requests submitted to correct the deviations. Frequent management oversight, as well as the performance of Management Workplace Visits, ensures that company processes are being followed.

The following is a list of information pulled from Appendix A showing issues and resolutions from the time period May 2012 to May 2014.

Appendix A, Item Number:

3. From May 2012 to present, the following control room annunciators alarmed:

   - Error Code 37 (Absolute Under Voltage Monitoring)
     - 4/30/12
     - 5/29/12
     - 7/12/12
   - Error Code 63 (Door Contact 1&2 Open)
     - 9/18/12
     - 9/26/12
     - 2/11/13
   - Error Code 127 (Under Voltage Cathode Generator)
     - 11/14/13
   - Error Code 48 (Overcurrent Cathode Has Released)
     - 1/14/14

   All of the above conditions were repaired by performing general maintenance on the real-time radiography (RTR) equipment and there are currently no control panel error codes.

14. Waste Management experienced two abnormal procedure entries. Both were due to ventilation upsets at the CPP-666 Fluorine Dissolution Process Area (FDPA) cell.

    - On 3/10/14, ventilation was lost due to unaccountable system transient.
    - On 4/10/14, while switching blowers during the execution of a preventative maintenance procedure, ventilation was lost.

    In both cases, proper actions were taken per the Emergency Alarm Response procedure.

20. There are currently three temporary modifications in place for Waste Management:

- On June 9, 2006 it was discovered that CPP-1688 had a failure in the P-trap primary containment line. This resulted in decon water from CPP-1688 and rain water from the decon equipment pad to enter the secondary containment line. After review of the cost to repair and mission of the building, it was decided to discontinue use of CPP-1688 and the decon pad and place them in standby. However, to deal with removing rain water from the secondary containment in the lift station (MAH-YDJ-SW-498) a temporary pump was installed to pump water from the secondary into the primary containment where the water would then be pumped by the designed system pumps out to the evaporation ponds.
- On March 12, 2013, a non-functioning actuator for the hatch over room 306 in CPP-659 (COV-NCD-1) was replaced with a modified actuator to allow operations to open and close the hatch in an efficient and safe manner. It has been determined that the modified actuator will be used as a permanent change, and the configuration process is being pursued per CWI guidance.
- On September 30, 2013, a manipulator was removed from the CPP-666 FDPA cell. This was done to allow the manipulator to be used as a spare, and to use the penetration to accommodate a cable bundle going into the cell.

In all cases, the appropriate configuration management processes have been followed.

Criteria 7. Evaluate if maintenance and engineering programs are effective in keeping critical structures, systems and components in a high state of operational readiness.

Criteria 7 was evaluated and met during the review. One noteworthy practice was identified during the evaluation of Criteria 7.

CWI:

ENGINEERING:

In ensuring that critical structures, systems, and components are in a high state of operational readiness, a System Engineer (SE) is assigned by CWI to manage assigned SSCs for each facility. The System Engineer ensures design changes to design output documents are developed and approved per MCP-1308, “Field Design Change” and controls temporary modifications of hardware and software per MCP-2042, “Temporary Modification Control.” The System Engineer additionally:

- Controls and manages I&C system changes per MCP-3630, “Digital Instrumentation and Control System Management.”
- Monitors system-specific maintenance and operation history (MCP-6402, “Master Equipment List and History,” and MCP-2980, “Log keeping”).
- Remains appraised of operational status (MCP-2978, “Control of Equipment and System Status”).
- Supports implementation of environmental requirements that pertain to SSC operation and maintenance per applicable sections of MCP-3480, “Environmental Instructions for Facilities, Processes, Materials, and Equipment.”

- Provides technical support for instrument calibrations per MCP-6303, “Calibration of Installed Facility Process and Control Instrumentation.”
- Supports applicable performance of specialized ventilation system maintenance and periodic testing per MCP-2747, “Specialized Ventilation.”
- Collects, evaluates, and reviews key system parameters, system performance and trends, out-of-specification conditions and questionable data.
- Reviews and updates spare parts as needed.
- Supports safe operation and maintenance of assigned SSCs by providing technical input into operating and maintenance documents.

When maintenance activities require SSC disassembly, the System Engineer provides input to the work order for material identification and control requirements (including foreign material exclusion) per MCP-9436, “Identification, Control, Storage, and Transfer of Item Traceability.”

To ensure, that the system configuration is kept up to date, the System Engineer performs periodic assessments of essential and master facility drawings per MCP-2377, “Development, Assessment, and Maintenance of Drawings.”

When the assigned SSC is associated with a nuclear facility or activity, the System Engineer performs the following additional functions:

- Provides technical input to nuclear safety analysts in support of safety basis document maintenance or revision.
- Maintains SSC configuration and manages technical baseline changes per company guidance.

The SE periodically revalidates the technical baseline to ensure consistency among design requirements, documentation, and physical configuration per MCP-1492, “Technical Baseline,” and as required in Chapter 17 of SAR-100, “ICP Standardized Safety Analysis Report (SAR) Chapters.”

The SE routinely confirms the operability of assigned SSCs and possesses detailed knowledge of those systems. System engineers identify trends from operations and ensure that the material condition of the SSC will support safe operations. Interviews and observations of SEs highlighted an organization that is routinely confirming system status and possessing a high level of detailed knowledge regarding the systems design, history, and current configuration. SEs were very knowledgeable of work related hazards because they are participants in the development of work packages that modify, maintain or repair assigned SSCs. Interviews of SEs demonstrated recognition of Environmental, Safety & Health (ES&H) requirements and all engineers demonstrated a commitment to safety. All facilities and project organizations indicated there was adequate engineering staff to support the maintenance of critical equipment in a high state of readiness.

MAINTENANCE:

Engineers associated with maintenance follow the same process as discussed above. CWI conducts maintenance activities, approves modifications and subcontractor/services work in Idaho Cleanup Project (ICP) facilities in a manner that preserves and/or restores the reliable performance of SSCs. The ICP Nuclear Maintenance Management Program (NMMP) implements DOE O 433.1B, “Maintenance Management Program for DOE Nuclear Facilities” and complies with DOE O 430.1B, Change 2, “Real Property Asset Management.” The maintenance management

programs at all of the ICP projects are under the umbrella of the CWI NMMP as described in PDD-600, “ICP Nuclear Maintenance Management Program.” The requirements for the ICP NMMP are specified in PRD-600, “Maintenance Management Requirements.”

Within the NMMP, MCP-6201, “Preventive/Predictive Maintenance Program,” describes and specifies the steps for preventive/predictive maintenance. The engineering organization has the prime responsibility to identify SSCs, and critical equipment that are part of the safety basis. This equipment is placed on a MEL. For equipment that is on the MEL the needed maintenance tasks are documented on Form 433.35, “Preventive Maintenance Justification (PMJ).” This form documents the needed maintenance task, tasks description, the driver for the task, the needed frequency, grace periods, and its approval by engineering management. This information is then captured in the CMMS MEL using GDE-6211, “Passport User’s Guide.”

Maintenance coordinators have the responsibility to generate maintenance schedules from the information loaded into the CMMS. From the maintenance schedules, maintenance planners work with functional areas and develop work orders for maintenance in accordance with MCP-101, “ICP Integrated Work Control Process.” Once maintenance work orders are reviewed and approved by the appropriate line management, they are scheduled on the Plan of the Week/ Plan of the Day (POW/POD) and then worked by the appropriate staff. Completed work orders are reviewed, closed and appropriate information is disseminated for equipment history and work completion reporting and tracking.

MCP-101 was developed to replace STD-101 as part of the corrective actions for past weaknesses in work planning and control. Although MCP-101 has made significant improvements to the previous STD-101, there are still some administrative/editorial errors, some ambiguities, incomplete information and inconsistences. MCP-101 has the foundation for an excellent work planning and control procedure as changes are made. These deficient conditions are being addressed in the forthcoming change to the document. The document is in its second revision cycle within the last year.

Deferred maintenance or maintenance that was not performed when it was scheduled is put off or delayed for a future period and governed by procedure MCP-6201, “Preventive/Predictive Maintenance Program.” If a critical equipment preventive/predictive maintenance (PM/PDM) task will not be complete by the due date, it is documented on Form 433.33, “PM/PDM Deferral/Cancellation Form.” The form is then evaluated, concurred with, and approved with the involvement of the appropriate maintenance, operations and engineering organizations. If the PM due date expires, the equipment is placed in an OOS status until the PM can be completed. The process is similar for PM/PDM tasks that will not be completed by the due date for noncritical equipment.

INTEC:

The projects at INTEC all follow the ICP processes for maintenance as described in PDD-600 and the processes for engineering as described in PDD-1027, “Conduct of Engineering” for their associated facilities and equipment. Projects have adequate engineering and maintenance support staffs to ensure all of the requirements of the NMMS and CM are properly addressed. Additionally, the company level functional support staffs, support managers, and subject matter experts assist (when appropriate or requested) to ensure engineering and maintenance are integrated to ensure proper maintenance for all systems and equipment.

Nine system health assessments have been performed in the past two years to determine the overall health of a system regarding the reliable performance of design and safety functions. These assessments are conducted in accordance with MCP-1450, “Conduct of Engineering.” Operations personnel indicate that they have seen very quick response from maintenance and engineering to repair SSCs that operations have identified as safety deficiencies. There is a very high percentage rate of punctually completed preventive and corrective maintenance (95%) at INTEC.

A number of facilities/buildings at INTEC have been moved to a D&D status. A number of others are in the planning stages of D&D while others have been placed in an inactive status. This has significantly reduced the needed maintenance within these specific facilities/buildings. Changes in maintenance plans are fully evaluated and approved by facility management before any maintenance activity is cancelled using the ICP approved process. The IPO organization efficiently operates and maintains the INTEC electrical distribution system. Significant progress has been made in upgrading much of the equipment but there are some further upgrades to the Utility Control System that are needed as discussed in Criteria 3.

CPP-666 has not exceeded its 40 year design life and it is not certain how long the building will continue to be needed. A facility aging program is not in place within CPP-666. All the building Safety Significant Systems are passive and structural. MCP-3358, “Evaluating the Structural Integrity of Structures, System and Components” provides guidance for acceptable methods to ensure SSC safety functions are continually met. A facility aging program is further discussed in Criteria 2.

The System Engineer, Area/Project Chief Engineer, and Operations Manager are responsible for assessing system health to ensure SSCs are in a high state of operational readiness. As discussed, system health assessments are performed periodically to determine the overall health of a system regarding reliable performance of design and safety functions. The system health assessments are tracked under the IAS and results documented using Form 431.71, “Safety Structure, System, or Component Health Report.” The System Engineer identifies problems and provides recommendations for correction and ensures issues are addressed through MCP-598, “Corrective Action System,” or MCP-538, “Control of Non-Conforming Items”. The System Engineer also obtains review and approval of corrective actions and recommendations from the area/project chief engineer and operations manager, as applicable.

The results of the assessments are presented in a meeting with engineering and operations management; an effective method for communicating and obtaining approval for corrective actions.

In summary, the engineering and maintenance organizations and processes are well structured and integrated at INTEC to work together to support facility operations and ensure that equipment is maintained in a high state of readiness. All activities are conducted in accordance with company level procedures to ensure corrective and preventive maintenance are performed correctly and safely. There is a very small level of deferred maintenance at INTEC due to the maturity of the operations and facilities, and the elimination of many maintenance tasks associated with facilities that have been through D&D or have been placed in an inactive status.

RWMC:

All maintenance activities at RWMC are done in accordance with the ICP NMMS as described in PDD-600. All engineering activities at RWMC are done in accordance with company level processes described in PDD-1027, "Conduct of Engineering." The facility has adequate maintenance and engineering staff to perform required maintenance, both preventive and corrective, and to make facility modifications as needed. RWMC maintains a MEL. Maintenance tasks have been developed using the PMJ form and entered into the CMMS database. The maintenance tasks are scheduled in the POW/POD. Due to the maturity of the project and the similarity of the Accelerated Retrieval Project (ARP) buildings, most of the preventive tasks have been incorporated into model work orders (work orders done on a frequent or repetitive basis) in accordance with MCP-101 using the Passport System. Maintenance is then scheduled by a facility scheduler who pulls the needed maintenance from the CMMS database. When work orders are completed they are reviewed and closed out and data is entered into the CMMS for history and any needed tracking and trending. Configuration management is maintained during any modifications because RWMC complies with company level engineering and maintenance procedures. The system engineers ensure that the CM database is kept current for their assigned systems.

RWMC has a dedicated crew of operators, maintenance, and RadCon personnel who monitor and change out the ventilation exhaust filters on the operating ARP buildings. These filters require frequent change out and RWMC found it was prudent to have a dedicated crew in order to maintain a high level of operational readiness. The filter change out crew is fully occupied with the change out tasks each day.

A very small number of delinquent preventive maintenance tasks exist at RWMC. At the time of this review there had been 11 delinquent PMs (PMs that had not been administratively closed out by the due date) recorded since May 2012. All of these, with the exception of one, were due to administrative issues. The one PM that was missed was a monthly fire extinguisher check which was missed in September 2012. No trend was noted. There is one pending deferred maintenance task regarding a subsidence grouting pump which has been deferred while the associated work order is changed to remove one of two pumps from operational service because it is no longer needed.

In summary, the engineering and maintenance organizations and processes are well structured and integrated at RWMC to work together to support facility operations and ensure that equipment is maintained in a high state of readiness. All activities are conducted in accordance with company level procedures to ensure corrective and preventive maintenance are done correctly and safely. There is a negligible level of deferred maintenance at RWMC, primarily due to the maturity of the operations and similarity of the different ARP facilities.

IWTU:

The design authority and engineering organization are adequately staffed and use established company level processes to ensure configuration management of the facility. Permanent design changes are addressed by the Field Design Change (FDC) process and the Facility Change Form (FCF) is used to document any changes to the facility configuration. The combined processes identify all impacts to the design baseline (documents, drawings) as well as the procedures and other supporting documents. The design information is then used to generate a work order to allow for planning of the field work. The maintenance organization works with the engineers and subject matter experts to complete the work order. Drawing changes are controlled by MCP-1308, FDC process until the modification is complete, tested, and accepted by operations. Once these actions

are complete, the FDCs are incorporated into the drawings and other design documentation based upon the document designation (essential or master facility drawing) per MCP-2377 requirements. Per company procedures, 45 days are allowed to incorporate changes into master drawings and prior to turnover to operations as essential drawings. During the assessment, the team walked down a number of field changes using the approved drawings and evaluated the suite of changes identified by the FCF for a sample of changes. The IWTU engineering organization routinely confirms system status and possesses a high level of detailed knowledge regarding the system design, history, and current configuration. SEs were also knowledgeable of work related hazards and controls established to mitigate recognized hazards and concerning SSC material condition and vulnerabilities of assigned systems and impacts during upset conditions.

The IWTU uses company level processes to conduct its maintenance program as described in PDD-600 and implemented through MCP-101 and other Manual 6 company level procedures. IWTU has an adequate program for planning, developing, and performing maintenance work. The planning, scheduling, and coordination of work at IWTU are controlled through MCP-101.

Based on the experience at RWMC, Process Experiment Pilot Plant (PREPP), and INTEC concerning the amount of work and difficulty in changing out contaminated HEPA filters, IWTU engineering, maintenance, RadCon, and operations management will need to carefully evaluate the equipment and resources needed to stage and execute contaminated filter change outs. This preparation will be necessary to prevent adversely impacting the operation of the IWTU system.

In summary, IWTU has demonstrated that the engineering and maintenance organizations are adequately staffed with qualified personnel that use company level processes for corrective and preventive maintenance and to ensure critical equipment is maintained at a high level of operational readiness.

5. REFERENCES

Department of Energy Headquarters Memorandum to Field Offices, "EM-wide Extent of Condition Review on Deferred Maintenance," April 16, 2014.

Department of Energy- Idaho Operations Office letter to T. J. Dieter, "Contract No. DE-AC07-05ID14516- Assessment of Facility and Infrastructure Maintenance (EM-NSP-14-019)," April 24, 2014, CCN316373.

Appendix A

Factors to Consider in the Report

Appendix A

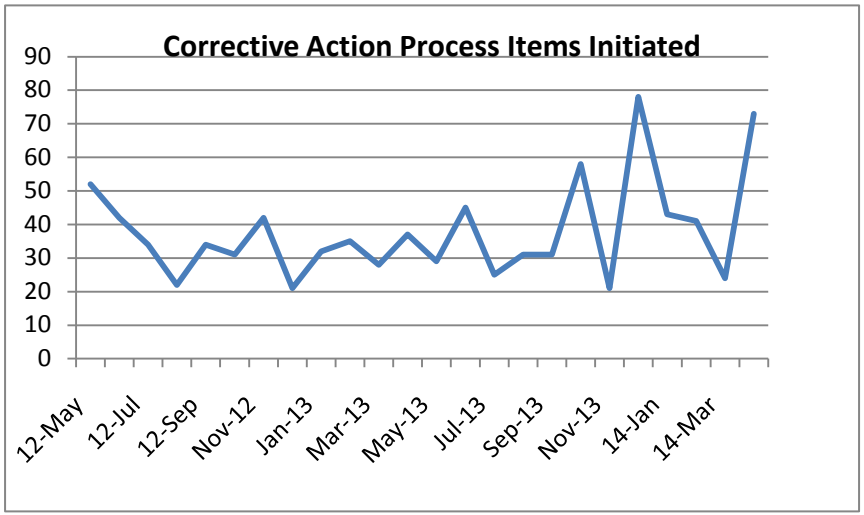
Factors to Consider in the Report

ICP Wide Factors

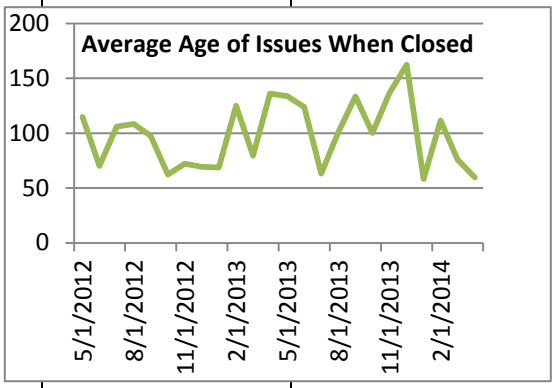
Item	*FACTOR*	*PA Notes*	*Comments/Clarifications*
1	Number of unplanned TSR LCO entries	DOE INR report evaluation	LES-EM-10/30/2012-51389, Fuel Operations Group Enters into LCO 3.114.1A, LES-EM-3/20/2013-33389, IWTU Entered Limiting Condition for Operations (LCO) 4.219.5.A Due to Missed Surveillance Requirement.
2	Number of inoperable control room indicators and controls		
3	Number of lit/alarming control room annunciators		
4	Corrective maintenance backlog, age, and trend		
5	Preventative maintenance backlog, and in grace period, and trend		
6	Surveillances performed in grace period and trend		
7	Safety system availability		
8	Number of safety system challenges (number of times a safety system has been demanded to respond or be manually initiated)		Criteria satisfied under 22-24.
9	Number of unplanned safety system actuations		Criteria satisfied under 22-24.

Item	FACTOR	PA Notes	Comments/Clarifications
10	Corrective action process (issues management system) items initiated and trend	Provide monthly numbers from ICARE system	

Month	Corrective Action Process Items Initiated
12-May	52
12-Jun	42
12-Jul	34
12-Aug	22
12-Sep	34
12-Oct	31
Nov-12	42
Dec-12	21
Jan-13	32
Feb-13	35
Mar-13	28
Apr-13	37
May-13	29
Jun-13	45
Jul-13	25
Aug-13	31
Sep-13	31
Oct-13	58
Nov-13	21
13-Dec	78
14-Jan	43
14-Feb	41
14-Mar	24
14-Apr	73



Item	FACTOR	PA Notes	Comments/Clarifications
11	Average age of open corrective action process items (both open issues and open corrective actions)	Provide monthly numbers from ICARE system	



	Collective Age in Days of All Issues Closed	Total Number of Issues Closed	Average Age of Issues When Closed
5/1/2012	5620	49	114.6939
6/1/2012	2807	40	70.175
7/1/2012	6781	64	105.9531
8/1/2012	2927	27	108.4074
9/1/2012	3609	37	97.54054
10/1/2012	2303	37	62.24324
11/1/2012	1733	24	72.20833
12/1/2012	1735	25	69.4
1/1/2013	2333	34	68.61765
2/1/2013	2878	23	125.1304
3/1/2013	2937	37	79.37838
4/1/2013	3402	25	136.08
5/1/2013	3477	26	133.7308
6/1/2013	2851	23	123.9565
7/1/2013	1583	25	63.32
8/1/2013	2314	23	100.6087
9/1/2013	5745	43	133.6047
10/1/2013	5918	59	100.3051
11/1/2013	7230	53	136.4151
12/1/2013	6166	38	162.2632
1/1/2014	4419	76	58.14474
2/1/2014	3238	29	111.6552
3/1/2014	2051	27	75.96296
4/1/2014	3460	58	59.65517
2 Year Avg	87517	902	97.0255

Currently open issues and actions

Open Issues Average Age: 126.7

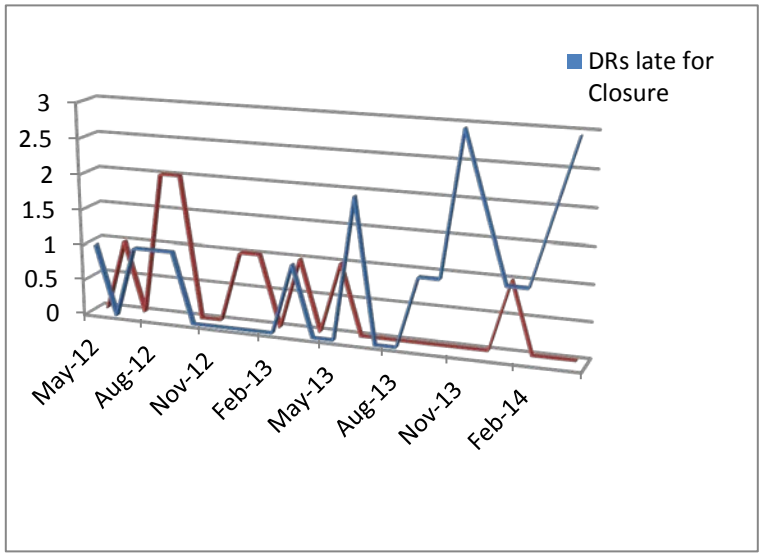
19252 of 152 = 126.7 Average Age in Days

Open Actions Average Age: 156.6

21922 of 140=156.6 Average Age in Days

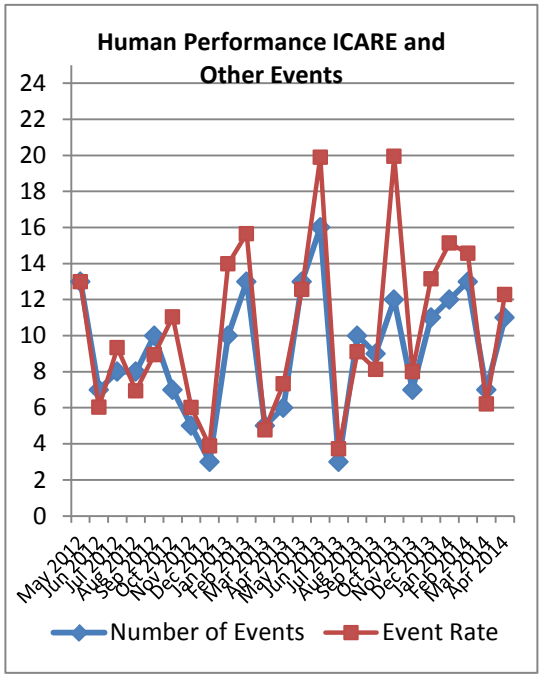
Item	FACTOR	PA Notes	Comments/Clarifications
12	Number of corrective action process items overdue	Provide monthly numbers from ICARE system	

	DRs late for Closure	NCRs Overdue for Disposition
May-12	1	0
Jun-12	0	1
Jul-12	1	0
Aug-12	1	2
Sep-12	1	2
Oct-12	0	0
Nov-12	0	0
Dec-12	0	1
Jan-13	0	1
Feb-13	0	0
Mar-13	1	1
Apr-13	0	0
May-13	0	1
Jun-13	2	0
Jul-13	0	0
Aug-13	0	0
Sep-13	1	0
Oct-13	1	0
Nov-13	3	0
Dec-13	2	0
Jan-14	1	1
Feb-14	1	0
Mar-14	2	0
Apr-14	3	0



Item	FACTOR	PA Notes	Comments/Clarifications
13	Number and rate of human performance errors	Raw information currently reported in quarterly report and in ICARE.	

Dataset	ICARE	Month / Year	Total Number of Events	Event Rate
5	8	5-1-12	13	12.99
4	3	6-1-12	7	6.03
4	4	7-1-12	8	9.33
6	2	8-1-12	8	6.94
5	5	9-1-12	10	8.94
2	5	10-1-12	7	11.04
2	3	11-1-12	5	6.01
2	1	12-1-12	3	3.88
7	3	1-1-13	10	13.98
5	8	2-1-13	13	15.66
2	3	3-1-13	5	4.78
2	4	4-1-13	6	7.33
7	6	5-1-13	13	12.57
10	6	6-1-13	16	19.9
3	0	7-1-13	3	3.72
7	3	8-1-13	10	9.1
4	5	9-1-13	9	8.13
2	10	10-1-13	12	19.94
5	2	11-1-13	7	8.01
4	7	12-1-13	11	13.15
7	5	1-1-14	12	15.13
8	5	2-1-14	13	14.57
6	1	3-1-14	7	6.21
5	6	4-1-14	11	12.29
114	105	Totals	219	10.04

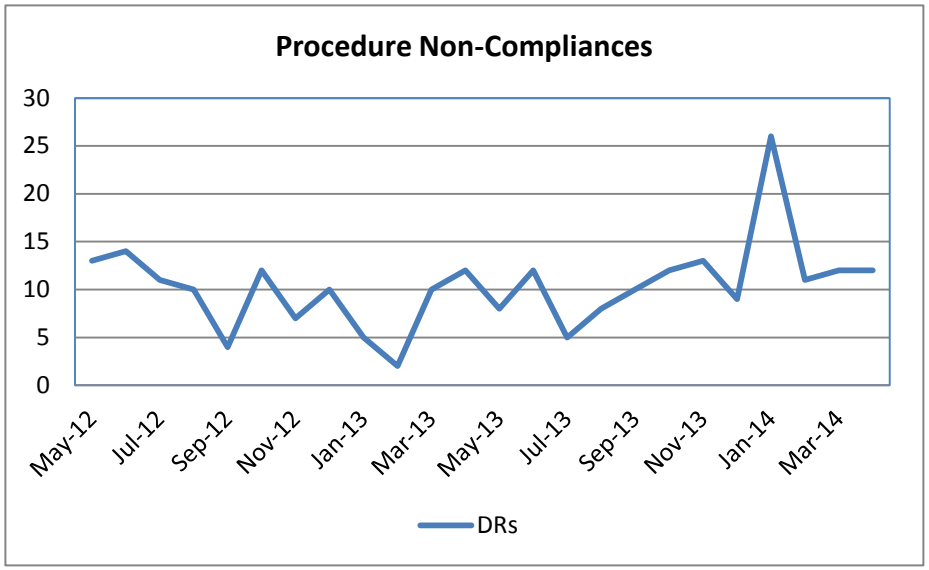


14	Number of abnormal procedure entries		
15	Number of emergency procedure entries	Number of applicable ORPS	For the time period, May 01, 2012 through April 30, 2014, CWI had 0 (zero) ORPS reportable Operational Emergencies, ORPS reporting criteria, Group 1, Operational Emergencies (OE).

Item	***FACTOR***	***PA Notes***	***Comments/Clarifications***
16	Number of unplanned process shutdowns	Number of applicable ORPS	For the time period, May 01, 2012 through April 30, 2014, CWI had 0 (zero) ORPS reportable operational events, ORPS Reporting Criteria Group 4B(5), Facility Status, Operations, A Facility Operational Event Which Resulted in an Adverse Effect on Safety, Such As, But Not Limited To: a) An inadvertent facility or operations shutdown (i.e., a change of operational mode or curtailment of work or processes), b) A manual facility or operations shutdown due to alarm response procedures, c) An inadvertent process liquid transfer, or d) An inadvertent release of hazardous material from its engineered containment.
17	Number of unplanned automatic process shutdowns	Number of applicable ORPS	For the time period, May 01, 2012 through April 30, 2014, CWI had 0 (zero) ORPS reportable operational events, ORPS Reporting Criteria Group 4B(5), Facility Status, Operations, A Facility Operational Event Which Resulted in an Adverse Effect on Safety, Such As, But Not Limited To: a) An inadvertent facility or operations shutdown (i.e., a change of operational mode or curtailment of work or processes), b) A manual facility or operations shutdown due to alarm response procedures, c) An inadvertent process liquid transfer, or d) An inadvertent release of hazardous material from its engineered containment.

Item	FACTOR	PA Notes	Comments/Clarifications
18	Number of procedure non-compliances	The monthly SPOMC info will be used with any additional information from the quarterly report	

Month	DRs
May-12	13
Jun-12	14
Jul-12	11
Aug-12	10
Sep-12	4
Oct-12	12
Nov-12	7
Dec-12	10
Jan-13	5
Feb-13	2
Mar-13	10
Apr-13	12
May-13	8
Jun-13	12
Jul-13	5
Aug-13	8
Sep-13	10
Oct-13	12
Nov-13	13
Dec-13	9
Jan-14	26
Feb-14	11
Mar-14	12
Apr-14	12

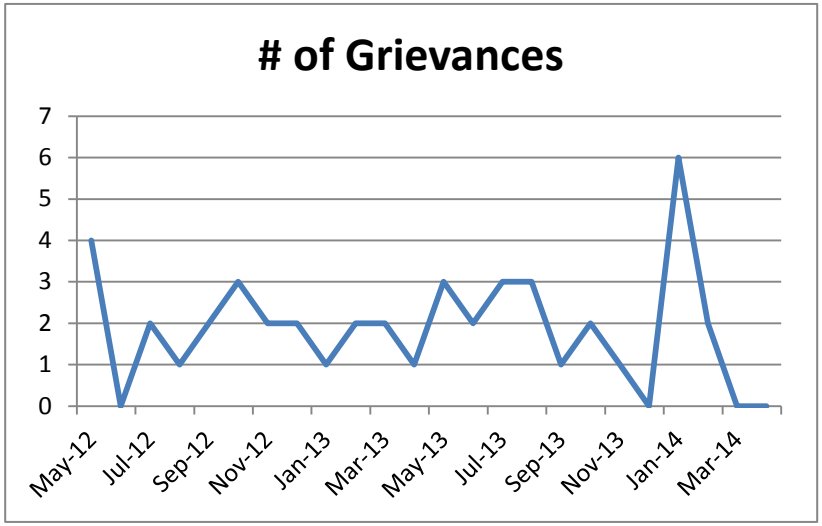


19	Number and age of LO/TO hanging		
20	Number and age of temporary modifications		
21	Number and age of inoperable safety systems		
22	Safety system performance (successful or not) when tested		

Item	*FACTOR*	*PA Notes*	*Comments/Clarifications*
23	Safety system performance (successful or not) in response to actual demand		
24	Number of spurious safety system actuations		
25	Number of significant unplanned production level changes		
26	Number of temporary procedure changes		

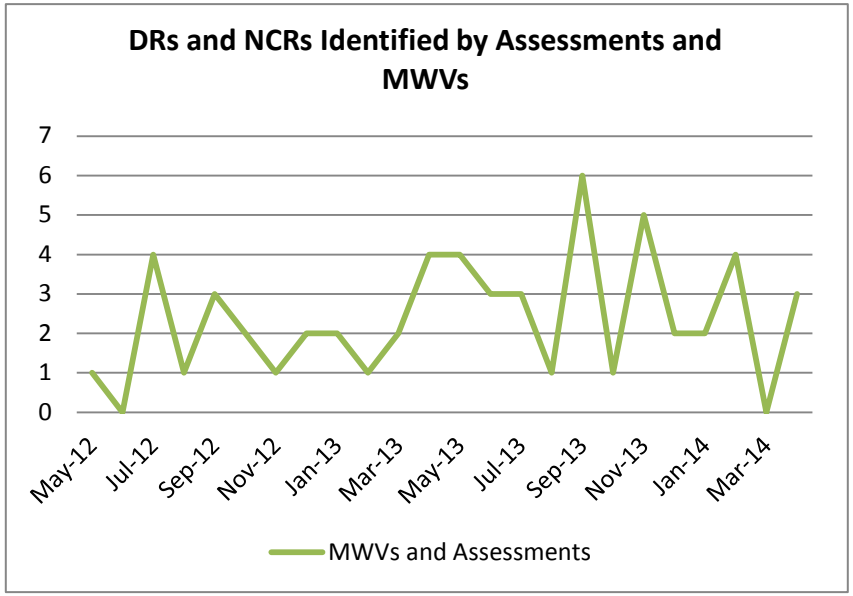
Item	FACTOR	PA Notes	Comments/Clarifications
27	Number of grievances	Work with labor relations to obtain the grievances by month	

	# of Grievances
May-12	4
Jun-12	0
Jul-12	2
Aug-12	1
Sep-12	2
Oct-12	3
Nov-12	2
Dec-12	2
Jan-13	1
Feb-13	2
Mar-13	2
Apr-13	1
May-13	3
Jun-13	2
Jul-13	3
Aug-13	3
Sep-13	1
Oct-13	2
Nov-13	1
Dec-13	0
Jan-14	6
Feb-14	2
Mar-14	0
Apr-14	0



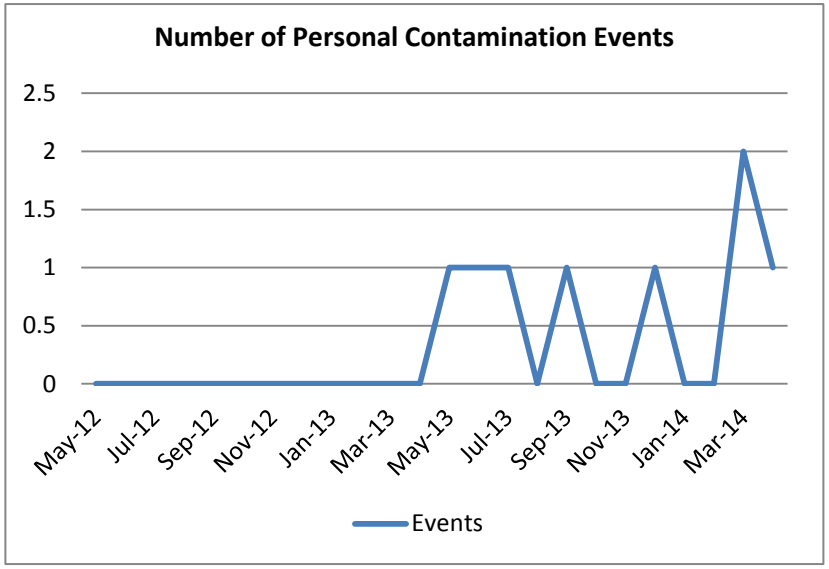
Item	FACTOR	PA Notes	Comments/Clarifications
28	Management observation system data, number of observations by senior managers, number of management observations that identify deficiencies and result in corrective action	Query ICARE and cross reference with MWV and IAS. Obtain numbers of MWVs/oversight and associated deficiencies. Projects provided separate data below the deficiency level.	

Date	MWVs and Assessments
May-12	1
Jun-12	0
Jul-12	4
Aug-12	1
Sep-12	3
Oct-12	2
Nov-12	1
Dec-12	2
Jan-13	2
Feb-13	1
Mar-13	2
Apr-13	4
May-13	4
Jun-13	3
Jul-13	3
Aug-13	1
Sep-13	6
Oct-13	1
Nov-13	5
Dec-13	2
Jan-14	2
Feb-14	4
Mar-14	0
Apr-14	3



Item	FACTOR	PA Notes	Comments/Clarifications
29	Number of personal contamination events	Use information currently reported in the quarterly report with additional guidance from Rad Con	

Month	Events
May-12	0
Jun-12	0
Jul-12	0
Aug-12	0
Sep-12	0
Oct-12	0
Nov-12	0
Dec-12	0
Jan-13	0
Feb-13	0
Mar-13	0
Apr-13	0
May-13	1
Jun-13	1
Jul-13	1
Aug-13	0
Sep-13	1
Oct-13	0
Nov-13	0
Dec-13	1
Jan-14	0
Feb-14	0
Mar-14	2
Apr-14	1



Item	FACTOR	PA Notes	Comments/Clarifications
30	Number of personal chemical exposure events	Use information currently reported in the quarterly with additional guidance from IH/IS	

Month	Events
May-12	0
Jun-12	0
Jul-12	0
Aug-12	0
Sep-12	0
Oct-12	0
Nov-12	0
Dec-12	0
Jan-13	0
Feb-13	0
Mar-13	0
Apr-13	0
May-13	0
Jun-13	0
Jul-13	0
Aug-13	0
Sep-13	0
Oct-13	0
Nov-13	0
Dec-13	0
Jan-14	0
Feb-14	0
Mar-14	0
Apr-14	0

INTEC Factors and Definitions

Scope: All work activities, locations and items pertaining to safety related systems, as defined below, with the following exceptions:

- NRC work is not included in the scope of this review.
- IWTU activities, which have recently been reviewed by RA/ORR, will be evaluated only on certain topics and with a qualitative perspective.

Report Guidance: Specific expected items for evaluation: INTEC ECS, FAST Resin, Underground Fire Main, and Diesels. In Executive Summary of final report, it is requested that the details on these items be included as well, not just the identification of their existence.

Definitions

Safety-related systems:

- LSS – Fire detection, alarm and indicating equipment, Fire Suppression Systems (including firewater distribution/pumps), Emergency Communication System, Fire Barriers, Dampers and Doors, Emergency exit lights.
- Safety Class and Safety Significant SSC, and key support systems (those systems necessary for the safety system to perform its function e.g., air compressors for damper operations, etc.)
- Systems which may not fit into one of the other categories but should be considered in this review: sub-stations, emergency diesel generators
- Nuclear Facility HVAC
- Permanently installed CAMs

Inoperable: Unable to perform an intended function in an operating facility. This does not include those systems with compensatory measures implemented through a formal impairment system (e.g. MCP-585) for planned maintenance. Unplanned impairments would be included in the definition of “inoperable”.

Unplanned: Not scheduled or anticipated.

Abnormal: An event that results in entry into an EAR.

Emergency: An event that results in implementation of EALs.

Control Room: As defined by the DOE Order

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
1	Number of unplanned TSR LCO entries		Mark Brown will provide to Steffa	
2	Number of inoperable control room indicators and controls	**INTEC Operations:** By performing a 2 year OOS logbook review, provide a list of inoperable indicators and controls for safety systems in IFSF, CPP-1683 and CPP-659 control rooms.	Provide numbers on a monthly basis and include SHR where available	**INEC Operations:** **IFSF Control Room (CPP-603)** There are 6 OOS tags listed on the IFSF index. One OOS tag was from 2009 and five from 2013 and 2014. Five of the tags have been cleared and one is open (dated 2/5/13). There were no OOS tags were on control room indicators or controls and none were on safety related equipment. **CPP-659 Control Room** There are six Operations OOS tags in the CPP-659 Index dating from 12/5/11 through 5/6/14. Four of the tags are cleared. None of the tags were on control room indicators or controls. One OOS tag hung on 5/8/2014 on an outlet in the NW corridor of CPP-659 has the potential to affect a CAM in the same circuit. When items other than the CAM are plugged into an outlet on this circuit, the breaker trips leaving the CAM without power. A work request was submitted for the outlet/circuit but as of 5/13/2014 had not been repaired. The Calciner process in CPP-659 has been shut down for several years, as a result there are 13 RAMs and 7 CAMS on the control room panel that have been permanently taken out of service. In addition, there are 2 RAMS with temporary tags dated in April 2014 that are temporarily OOS waiting for repairs. **CPP-1683 Control Room** A full two years of Out of Service (OOS) records is not available CPP-1683. Each of the operating areas maintains an out of service logbook that contains an index of the OOS tags that facility. As equipment is repaired and returned to service, the out of service tags is cleared and the tag destroyed. Once an index sheet is full and after all the tags on that sheet are cleared, the index sheet is removed from the binder and destroyed. There are twenty out of service tags in the CPP-1673 Index dating from 9/1/13 to 5/8/14. Fifteen of the tags have been cleared. • Thirteen of the tags are on control room advisory alarms. • One is on an alarm that has been disable because the associated CAM has been permanently removed • The six remaining tags are on operations equipment not related to safety Although the alarm panels associated with the FAST facility HVAC are not control room panels, there are currently 16 caution tags located on FAST HVAC local control panels LCP-41, 42, and 43. Most of the caution tags identify controllers that must be operated in manual mode because the automatic function of the controllers does not work. The HVAC system is operable but must be operated manually verses automatic control.

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
3	Number of lit/alarming control room annunciators	**INTEC Operations:** By performing a 2 year Operator Logbook review, and DCS alarm log review, provide a list of lit/alarming annunciators for safety systems in IFSF, CPP-1683 and CPP-659 control rooms.	Provide numbers on a monthly basis and include SHR where available IWTU qualitative evaluation only	There are no traditional alarm panels in the CPP-659 (NWCF) control room. The systems within CPP-659 are operated on a Distributed Control System (DCS). Following the last Calciner run, the process was shut completely down, however, there are about 80 alarm tags on the DCS system that are associated with the shutdown process. They remain in alarm status because the alarm set points are set with the assumption that the process is operating. As new alarms are received, the alarm appears in a separate window and flashes until it has been acknowledged. In the last two years the alarms received have been advisory alarms and alarms on instrumentation that requires attention such as probes cleared. No new alarms have remained lit. There are two traditional alarm panels for CAMS and RAMS in the CPP-659 control room, however, there are no alarm windows on these two panels that have remained lit longer than a shift. In accordance with TBL 180 “Instrument List for INTEC”, radiation instruments (RAMS and CAMS) are repaired or replaced within one shift of being found inoperable or one of the following compensatory measures are put in place: • Require supplemental controls for ongoing work (such as EDs for an OOS RAM or an air sample with periodic filter probes for an OOS CAM) • Continuous RCT coverage for ongoing work • Increased periodic surveys of the area • Restrict work that could require the instrument. The CPP-1683 control room also has no traditional alarm panels. The LET&D and PEWE processes in CPP-1683 are both controlled by a DCS system. Other than alarms associated with outages such as steam outages, plugged probes on instruments, and advisory alarms, there have been no alarms that remain lit longer than a shift. It has been two years since fuel was received in the IFSF at CPP-603 so other than shift rounds and periodic maintenance activities, the facility remains unmanned. In the past two years, there have been no lit alarm annunciators in the IFSF.
4	Corrective maintenance backlog, age, and trend	**INTEC Maintenance:** Obtain a count of open work requests and work orders not yet worked on the safety related systems and obtain age of each. Finally, organize total numbers by month over last 2 years.	Work reqs/work orders, crystal reports. Use criteria for # > 30 days Monthly numbers	INTEC has reviewed the CM backlog tracked by our CMMS (Asset Suite). Currently there are 69 items on the CM backlog against components in the Safety Related categories. The full report is attached.

Item	*FACTOR*	*INTEC Notes*	*Comments/Clarifications*	*INTEC Review Results*
5	Preventative maintenance backlog, and in grace period, and trend	**INTEC Maintenance:** Obtain a count of PM tasks not completed, deferred or performed in grace period on the safety related systems. Organize the count by month over last 2 years.	Work reqs/work orders, crystal reports. Use criteria for # > 30 days Monthly numbers	INTEC tracks PM performance by scheduling on the POD and by a maintenance report completed weekly. Critical and routine PM performance is tracked and reported to the INTEC Performance Assurance group and is followed by the INTEC Corrective Action Review Board (CARB). Routine PM performance exceeds 90% with a few items being deferred due to corrective maintenance actions on a monthly basis. Critical PM performance is routinely 100%. The list of corrective maintenance items on equipment in the safety related categories that has not been completed on schedule is included in the attached report.

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
6	Surveillances performed in grace period and trend	**INTEC Operations:** Using ABRAMS, provide a **2 year** list of TSR surveillances from SAR/TSR-112, 113, 114, 103, 105, 107, 108 and 120 that are were performed in grace.	Surveillances are those meeting the TSR/Nuc Safety definition IWTU qualitative evaluation only	**INTEC Operations:** In the last two years INTEC Operations has entered the grace period 8 times for 5 different TSR surveillances. Two TSR surveillances had multiple occurrences. Five of the occurrences were annual assessments that had gone into grace from 14 to 20 days. The remaining 3 occurrences were operability tests of the high-temperature automatic shutdown features on Process Equipment Waste Evaporators (PEWE) WL-129 and WL-161. The PEWE systems operate infrequently and only when there is enough feed solution to warrant a run. The operability tests of the high-temperature automatic shutdown features require operation of the evaporator (WL-129 or WL-161). In October 2013, Operation of WL-161 evaporator was delayed due to low feed volumes and then a steam outage. Operation of WL-129 evaporator was delayed another two weeks to allow the shift rotations to favor training of new operators during the operability test.

Reference	Description	Date Due	Date Complete	Days of Grace
SAR-114				
SR 4.114.1.1 Rev 7 Annual Frequency	Nuclear Facility Manager (NFM) shall provide a Contractor-Approved List Compliance performance summary to senior management.	8/15/2013	8/29/2013	14
SR 4.114.1.1 Rev 6 Annual Frequency	Ensure criticality safety assessment is conducted per PRD-112 and PLN-2178. This assessment is performed by the Crit Safety Org	2/28/2012	3/13/2012	14
SAR-112				
LCO 3.112.2 Annual Frequency	The UGFSF shall maintain inadvertent criticality beyond extremely unlikely (BEU) by complying with the limits and controls required by the applicable CSCL, CAFL, and CACL based on the CSEs for the UGFSF. (SPECIFIC ADMINISTRATIVE CONTROL) Ensure criticality safety assessment is conducted per PRD-112 and PLN-2178. This assessment is performed by the Crit Safety Org	2/27/2014 2/28/2013 2/28/2012	3/19/2014 3/14/2013 3/13/2012	20 14 14

SAR- 108				
LCO 3.108.1 Annual Frequency	PEWE VES-WL-129 Temperature limit Perform an operability test of the high-temperature automatic shutdown feature	9/26/2013 9/27/2012	10/23/2013 10/8/2012	26 11
LCO 3.108.2 Annual Frequency	PEWE VES-WL-161 Temperature Limit Perform an operability test of the high-temperature automatic shutdown feature.	9/26/2013	10/7/2013	11

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
7	Safety system availability	**INTEC Operations:** Perform a 2 year review of ABRAMS, Passport, Operator Logbooks, and/or OOS Logbooks to determine when Safety Significant/Safety Class SSC, nuclear facility HVAC and permanently installed CAMS were unavailable for use. **INTEC Maintenance:** LSS fire impairment log data, number of days open.	Does not include planned outages, impairments, or other formally controlled maintenance activities. Does NOT include key support systems	**INTEC Operations:** There are no Safety Class SSCs identified in any of the INTEC Operations facility SARs. All of the INTEC Operations Safety Significant SSCs are passive systems with the exception of the following: • Calciner ETS instruments T150-1C,2C, 3C, 4C, 5C, 6C, 7C, 8C, 9C, and 10C • Calciner Rapid Shutdown System (RSS) • PEWE Temperature Instrumentation System (Instrument loops T-WL-129-1,-2, -3 and T-WL-161-1,-2,-3) There has been no time in the last two years that the safety significant SSCs have not been available. The HVAC systems in CPP-666, 659, and 603 all have redundant supply and exhaust fans. There has been no time during the last two years that the systems have not been available. (see item 2 for a discussion of controllers within this system that are caution tagged requiring some system dampers by operated manually) Whenever a permanently installed CAM (or RAM) is found inoperable a portable CAM (RAM) is installed in its place until the permanent CAM is repaired. In accordance with TBL 180 “Instrument List for INTEC”, radiation instruments (RAMS and CAMS) are repaired or replaced within one shift of being found inoperable or one of the following compensatory measures are put in place: • Require supplemental controls for ongoing work (such as EDs for an OOS RAM or an air sample with periodic filter probes for an OOS CAM) • Continuous RCT coverage for ongoing work • Increased periodic surveys of the area • Restrict work that could require the instrument. **INTEC Maintenance**: INTEC uses an “Essential Equipment List” to track the operability of equipment required to support the mission. Typically the number of out of service items out of about 200 tracked components is a single digit number. OOS items are discussed with the INTEC Management team daily at the POD meeting. Actions to return deficient equipment to service and resource prioritization occurs at this meeting and ensures a high state of operability of important plant equipment. Additionally, equipment in the life safety category is tracked via impairment and is also reviewed daily as described above.
8	Number of safety system challenges (number of times a safety system has been demanded to respond or be manually initiated)	**NA**	Criteria satisfied under 22-24.	

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
9	Number of unplanned safety system actuations	**NA**	Criteria satisfied under 22-24.	
10	Corrective action process (issues management system) items initiated and trend			
11	Average age of open corrective action process items (both open issues and open corrective actions)			
12	Number of corrective action process items overdue			
13	Number and rate of human performance errors		Reported against a 200,000 man-hour normalization and reflect all items. Monthly reporting.	

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
14	Number of abnormal procedure entries	**INTEC Operations:** Perform a 2 year review of the nuclear facilities (BoP Liquid Waste and Fuel Handling) Operator logs to determine the numbers of EAR entries.		**INTEC (Other than Operations Facilities)** In the last two years there have been 4 entries into EAR 288 for partial or total loss of the ECS. The EARS listed below are those that affect all of INTEC • EAR-250 INTEC Power Operations Utility Control System Alarm Response • EAR-288 Partial or Total Loss of Emergency Communication System (ECS) • EAR-298 INTEC Emergency Response **INTEC Operations:** **In the last two years there have been no entries into EARs that are associated with safety related systems or conditions in any of the INTEC Operations facilities.** There 70 EARs associated with INTEC operations. Nineteen of the EARs affect safety related systems or conditions such as fire in a nuclear facility, and 51 address operational abnormalities such as responding to a sump high level alarm. Entry into one of the 51 EARs that address operational abnormalities were not included in this evaluation. Of the 19 EARs that affect safety (listed below), none have been entered in the last two years. **CPP-603 (IFSF)** • EAR-229 CPP-603 and IFSF Abnormal Conditions **CPP-749/2707** • EAR-140 Respond to CPP-749/2707 Abnormal Operating Conditions **CPP-666 (FAST)** • EAR-130 Respond to CPP-666 Loss of Electrical Power • EAR-131 Respond to Dropped FHU, Fuel-Loaded Cask or Heavy Object dropped on a Fuel- Loaded Cask. • EAR-132 Respond to Large Basin Water Leak in CPP-666 • EAR-133 Respond to Fire in CPP-666 • EAR-134 Respond to Chemical Spills in INTEC-666 • EAR-295 Respond to HVAC and Stack Monitor BETA Alarms at CPP-666 **CPP-1683** • EAR-178 PEW Temperature Instrument Alarm or Failure **CPP-659** • EAR-186 NWCF-Major Alarm Response • EAR-188 Respond to NWCF Building Fire or Fire Alarm • EAR-189 Respond to NWCF Control Room Fire • EAR-191 Respond to Calciner Exhaust Plenum Fire • EAR-192 Respond to Decon Cell/Decon Filter Handling Cell Fire • EAR-193 Respond to Decon Exhaust Plenum Fire • EAR-197 Simultaneous Loss of Normal and Standby and Uninterruptible Electrical Power • EAR-204 Respond to loss of Plant Air • EAR-208 Respond to Seismic Event • EAR-209 Respond to Plant Evacuation

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
15	Number of emergency procedure entries			
16	Number of unplanned process shutdowns		4B5 events	
17	Number of unplanned automatic process shutdowns		4B5 events with automatic initiator (Subset of #16)	
18	Number of procedure non-compliances		Procedure Compliance Index augmented by qtrly info as needed	
19	Number and age of LO/TO hanging	**INTEC Operations:** Review INTEC nuclear facility LO/TO logbooks for current LO/TOs associated with safety systems (Safety Class/Safety Significant SSC, nuclear facility HVAC, and permanently installed CAMs) and the age of these LO/TOs.	This would be a current status with any commentary that might be gleaned from an annual LOTO PEB review.	**INTEC Operations:** There are three LO/TO logbooks in INTEC Operations, Log #5 for the Spent Fuel Facilities, Log #16 for the Liquid Waste facilities, and Log #7 for INTEC Utilities. On 5/14/2014, the logbooks were reviewed to identify any active LOTOs on safety related equipment and their age. There were five active LOTOs hung in support of maintenance activities, none of which were associated with safety related systems or equipment. The following table lists the five LOTOs and shows the date they were installed.

LOTO Number	Equipment	Description	Date installed
16-523	C-12 and C-37 Transfer Valves	Prevents liquid transfers while construction works in the valve boxes	5/14/14
7-797	HP-1	Heat Pump #1 for CPP-663 – down for repairs	5/6/14
7-781	BUTI-609	Boiler 609 shut down for PM	4/28/14
7-777	684 Hot Cell Lights	Lights in CPP-684 hot cell - down for repairs	5/1/14
7-794	SHR-MA-158	Support PM on Shear in Maintenance Shop	5/14/14 (cleared 5/14/14)

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
20	Number and age of temporary modifications	**INTEC Engineering:** Very few temp mods installed in the last 2 years. Review DRF system history and SOM Temp Logs to obtain data.		**INTEC Engineering:** There is one temporary modification in place at INTEC. FDC-8644 was initiated in September 2012 and will remain in place until the tank farms are emptied. Temporary Modification FDC-8644, "WM-188 and WM-189 Transfer Line Caps," welded temporary pipe caps with a valved vent connection to the above ground transfer lines for WM-189 (2"PWL-AR-157516) and WM-188 (2"PWL-AR-157515) because the lines cannot be connected to tank risers TR-32 and TR-29 because new steam jets have not been installed. These lines are tied into the valve manifold in the 85 valve box, which is tied into existing Tank Farm transfer piping. The pipe caps are to prevent the possibility of radioactive material leaking out of the lines, and the valved vent is being provided as a method to zero energy check the line when the caps are removed. The caps are located above drip pans above the tank risers. This work is associated with Tank Farm closure.
21	Number and age of inoperable safety systems	**INTEC Engineering:** List any inoperable SS/SC safety systems identified in the INTEC system health reports completed within the past two years. Defer to Item #7 for LSS impairments	Current status as of today (with previous two months, for example) or full two year history SHRs for SS/SC and impairments for LSS Does NOT include key support systems	**INTEC Engineering:** Currently there are no inoperable safety systems at INTEC

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
22	Safety system performance (successful or not) when tested	**INTEC Engineering:** Review annual surveillance for single active SS SSC over past two years. Review INTEC SHRs for previous two years to identify any system performance issues of key support systems when tested.	Current status as of today (with previous two months, for example) or full two year history	**INTEC Engineering** A review of INTEC System Health Reports for the past two years identified the following for safety systems: **Equipment** / **Status** INST-SYS-659 ETS Temperature instrumentation, INST-SYS-PEWE-1 PEWE Temperature instrumentation — The evaporator temperature instrumentation is calibrated and tested annually. No problems have been identified for several years. The equipment has functioned properly while in-service. Fire Water System — Fire water leak near CPP-603 - repaired Fire Water System — Modify jockey pumps to reduce pressure - smaller, variable speed jockey pump motors are being pursued. Replace P-UTI-673 fire pump controller - an upgraded controller has been purchased and is pending installation CPP-666 HVAC System — Recommendations: Replace CPP-666 HEPA filters and pre-filters (Working to replace in May 2014). Replace CPP-666 HVAC controllers - completed replacement of some controllers. Replacement of additional controllers needs to be scheduled. Repair of D-FV-982-50 - complete. Balance HVAC after filters and controllers are complete. Replace indicator lights - complete CPP-604 HVAC System — Modify Blowers to reduce power consumption, and eliminate stack monitoring - FCF-8562 has been initiated to install a smaller blower CPP-659 HVAC System — Repair inlet vanes on BLO-NCM-285-3 - work request has been initiated Emergency Communication System — CPP-1687 Dial Room - PMs are not being performed on batteries. PM is being planned.
23	Safety system performance (successful or not) in response to actual demand	**INTEC Engineering:** Review INTEC SHRs for previous two years to identify any system performance issues of SS and key support systems when operating.	Current status as of today (with previous two months, for example) or full two year history	**INTEC Engineering** See Item 21 and 22.

Item	FACTOR	INTEC Notes	Comments/Clarifications	INTEC Review Results
24	Number of spurious safety system actuations	**INTEC Operations:** Perform a 2 year review of the BoP Liquid Waste and IFSF Operator logs to determine the number of spurious safety system actuations. **INTEC Maintenance:** LSS CFA Central Alarm log entries by date of occurrence.	This does not include supervisory alarms or those as a direct result of fine tuning the fire protection systems as a result of wind (motion) or lighting activation. These have occurred but are responded to as real events and the system has been adjusted accordingly to prevent subsequent alarms.	**INTEC Operations:** There have been no spurious safety system actuations within INTEC operations in the previous two years. **INTEC Maintenance:** CFA Fire Department alarm response information is not available at this time. Review of the "INTEC Operations Summaries" for the time period 01/01/12 through 12/31/13 indicated one (1) spurious fire alarm activation from CPP 659 on 6/30/13 due to a failed circuit board in the fire alarm control panel.
25	Number of significant unplanned production level changes	**NA**	There is nothing at the ICP that falls under this criteria	
26	Number of temporary procedure changes	**INTEC Operations:** Perform a 2 year EDMS review of temporary BoP and Fuel Handling procedure changes and identify those temporary changes associated with safety systems in nuclear facilities (safety class, safety significant, nuclear facility HVAC and permanently installed CAMs).	Safety related system document temp changes will be reported along with the total number of applicable documents Does NOT include key support systems	**INTEC Operations:** There were a total of 40 temporary procedure changes in the BOP and Fuel Handling procedures in the last two years. Thirty-seven of the changes were to address specific configuration anomalies such as to allow use of a different tool when the one specified in the procedure failed. Three temporary procedure changes were associated with safety systems. One temporary procedure change affected the ETS automatic shutdown system verification procedure at NWCF. This change was effective 11/20/13 and expired 2/28/2014. The other two temporary changes affected the FAST HVAC procedure. The first was effective 9/13/12 and expired 9/20/12. The second was effective 5/21/13 and expired 8/15/2013.
27	Number of grievances			

<table>
<tr><th>Item</th><th>FACTOR</th><th>INTEC Notes</th><th>Comments/Clarifications</th><th>INTEC Review Results</th></tr>
<tr><td>28</td><td>Management observation system data, number of observations by senior managers, number of management observations that identify deficiencies and result in corrective action</td><td>INTEC PA: The number of actions that were COTS, WGTs, and Work requests from MWVs, WOTs and IASs.</td><td>This will be reported by PA for DR and greater. Items tracked below the DR level will also be reported by the projects.</td><td>INTEC PA:
<table>
<tr><th>COTS</th><th>WGT</th><th>WR</th><th colspan="2">MWV/SSW</th><th>WOT</th><th>IAS</th><th>RadCon</th><th>Total</th></tr>
<tr><td>727</td><td>605</td><td>120</td><td>294</td><td>53</td><td>41</td><td>196</td><td>143</td><td>1,452</td></tr>
</table>
The numbers in yellow are the requested numbers for actions that were COTS, WGTs, and Work requests. The numbers in the MWV, WOT, SSW, SA, and RadCon columns represent the number of COTS from these sources only. The WR and WGT column represent the number of action from all of the previously mentioned source documents. The 2 year data is available in a master spreadsheet upon request.</td></tr>
<tr><td>29</td><td>Number of personal contamination events</td><td></td><td></td><td></td></tr>
<tr><td>30</td><td>Number of personal chemical exposure events</td><td></td><td></td><td></td></tr>
</table>

RWMC Factors

Item	*FACTOR*	*Lead Actionee*	*Query Results/Clarification Comments*	*RWMC Notes*	*Comments/Clarifications*
1	Number of unplanned TSR LCO entries	PA			Mark Brown will provide to Steffa
4	Corrective maintenance backlog, age, and trend	Projects	**Corrective Maintenance Backlog:** **1).** RWMC/ARP currently has zero (0) open work requests for the identified safety systems (HVAC/ CAMS/FIRE DETECTION) **2).** RWMC/ARP currently has zero (0) CM work orders not yet worked for the identified safety systems (HVAC/ CAMS/FIRE DETECTION) **Constant Air Monitors (CAMs) specifically** Every quarter a Work Order is produced from Model #622595 "Perform Checks and Repair on RadCon Instruments". The facility instrument technicians document those radiological instruments worked on and ensure there are no outstanding work requests or open work orders at the end of the quarter. Number of open work requests: 0 Number of open work orders: 0	**RWMC Planning:** Obtain a count of open work requests and work orders not yet worked on the safety related systems and obtain age of each. Finally, organize total numbers by month over last 2 years.	Work reqs/work orders, crystal reports. Use criteria for # > 30 days Monthly numbers
5	Preventative maintenance backlog, and in grace period, and trend	Projects	RWMC/ARP equipment inspected daily via FRM-191. Preventive Maintenance is performed at 200 hour intervals per the manufacturer's recommendations. Equipment is routinely cleaned when visible dirt and/or oil becomes present and prior to any maintenance to ensure the removal of contaminants prior to work as part of good housekeeping and radiological controls practices. Based upon inspections and continuous monitoring of RA equipment, deficiencies are documented and immediate repairs are made. The hydraulic fluid used in the RA equipment is fire resistant and credited as part of the safety basis and engineered design. RWMC/ARP RA equipment have automatic/manual onboard fire suppression systems that are maintained and inspected daily via FRM-191, monthly preventive maintenance inspections, and in-depth 6 month preventive maintenance inspections. If for any reason, the equipment on board fire suppression is compromised, that piece of RA equipment is placed	**RWMC Planning:** Obtain a count of PM tasks not completed, deferred or performed in grace period on the safety related systems. Organize the count by month over last 2 years	Work reqs/work orders, crystal reports. Use criteria for # > 30 days Monthly numbers

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			out of service and an impairment is issued. The hydraulic fluid used in the RA equipment is fire resistant and credited as part of the safety basis and engineered design. **CAMs specifically** Every 6 months a PM is produced from Model #627470 “ARP 6 month Calibrate ALPHA 7 CAMs”. The PM list CAMs that are coming due for calibration. Number of CAM PMs not completed: 0 Number of CAM PMs deferred: 0 **RWMC Delinquent Work Order Report** From May 2012 to current, 11 preventive maintenance work orders show as not being completed by the required due date. Further review shows that all work scope had been completed as required, however multiple situations existed were work orders were duplicated and one situation were a work orders was physically lost. **1)** RWM 700 00647079 SEASONAL VEGETATION CONTROL 2013 09 27 PM Delinquent This is a duplicate work order that was not worked and should have been canceled. This scope of work was performed utilizing work order 646011 (closed and located in EDMS) for this time period **2)** RWM 1612 00644332 WMF-697/1612-CLEAN BUILDUP ON THE SAMPLE PIPE 2013 01 31 PM Delinquent This work order was generated and performed by INTEC LSS. It is an on demand work order in support of the Analaser system in ARPS I and II that was generated and determined to not be needed but was not canceled in passport. This was an administrative error and did not affect the operation of the equipment.	.	

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			3) RWM 700 00641847 SEASONAL VEGETATION CONTROL 2012 09 27 PM Delinquent This is a duplicate work order that was not worked and should have been canceled. This scope of work was performed utilizing work order 641549 (closed and located in EDMS) for this time period **4)** RWM 1615 00647586 WMF-1615 (Y01) CALIBRATE PRESSURE DIFFERENTIAL INSTRUMENT**S** 2013 10 31 PM Delinquent The pre job briefing for this work order was held on 10-15-2013. All work scope for this work order was completed by 10-22-2013 well before the required completion of 10-31-2013. The work order was not closed out in passport by 10-31-2013 which caused the work order to show up as a delinquent PM. This is purely an administrative issue since the equipment and system was not impacted by this administrative error. All evidence is located under this work order number in EDMS **5)** RWM 1612 00644700 WMF-697/1612-CLEAN BUILDUP ON THE SAMPLE PIPE 2013 02 28 PM Delinquent This work order was generated and performed by INTEC LSS. It is an on demand work order in support of the Analaser system in ARPS I and II that was generated and determined to not be needed but was not canceled in passport. This was an administrative error and did not affect the operation of the equipment. **6)** RWM 700 00641550 RWMC SEASONAL VEGETATION CONTROL FOR WILDFIRE PROTECTION 2012 07 31 PM Delinquent This is a duplicate work order that was not worked and should have been canceled. This scope of work was performed utilizing work order 641549 (closed and located in EDMS) for this time period		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			7) RWM 1617 00646471 FABRICATE COMPONENTS FOR RWMC RCRA DRUM PROJECT 2013 08 31 PM Delinquent This work order was an input error and was entered as preventative maintenance in error. Fabrication work orders should have been entered as corrective maintenance. This scope was not performed and should have been canceled **8)** RWM 1617 00646470 FABRICATE COMPONENTS FOR RWMC RCRA DRUM PROJECT 2013 07 31 PM Delinquent This work order was an input error and was entered as preventative maintenance in error. Fabrication work orders should have been entered as corrective maintenance. This scope was not performed and should have been canceled **9)** RWM SDA 00642411 M01/M03 INSPECTION OF FIRE EXTINGUISHERS IN MOBILE EQUIPMENT 2012 09 30 PM Delinquent It appears that this PM was not performed in the 9th month of 2012. This was confirmed in Passport and by the system engineer. However upon further examination of available materials and resources it became apparent that work scope was actually completed. Evidence to support this became available from Fire Protection Engineer. The Fire Protection Engineer submits a quarterly report of fire extinguisher inspections to the ICP Fire Marshall. The quarter reported to the Fire Marshall included Jul/Aug/Sept of 2012. Included in report was the completed Inspection/Data sheet from work order 642411. The Inspection/ Data sheet indicated that the fire extinguishers had been completed. Taking all this information into account, conclusion is that the work scope was completed as required and the work order was misplaced and or lost. This would explain why it was indicated as delinquent in Passport and the System Engineer. A review of the completion of this work scope from December 2010 to present and this situation that		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			occurred in September 2012 had not occurred previous or since then. **10)** RWM -98 00642023 ARP- MONTHLY INSPECTION FOR THE MANITOWOC 4100 CRANE 2012 08 31 PM Delinquent 2012 07 31 monthly was performed utilizing work order 641608 (closed and located in EDMS) Crane was being utilized for ARP VIII which was completed and the crane was dismantled and sent back to the owner (crane was leased by ICP) 642023 was automatically generated and should have been canceled. **11)** RWM -98 00642020 ARP MONTHLY/ANNUAL 60 TON RT MOBILE CRANE 2012 08 31 PM Delinquent 2012 07 31 monthly was performed utilizing work order 641605 (closed and located in EDMS) Crane was being utilized for ARP VIII which was completed and the crane was dismantled and sent back to the owner (crane was leased by ICP) 642020 was automatically generated and should have been canceled **RWMC DEFERRED PM REPORT** **00648950** PM ARP Q03 BREATHING AIR GRADE D FOR MOBILE EQUIPMENT This work scope was completed on 2014-02-18 was due 2014-03-31 set to finish on 2014-04-02 **NO DEFERRAL** MWO-89826 PMID-5908 **00650331** PM TH-6 ANNUAL HOISTING AND RIGGING INSPECTION This work scope was completed on 2014-04-29 was due 2014-04-30 set to finish on 2014-05-05 **NO DEFFERAL** MWO-632205 PMID-51160 **00641702** PM WMF-1612 WEEKLY HV-FAN-RE203 & HV-FAN-RE204 LUBRICATION This work order scope was changed from a weekly PM to a monthly PM as determined by the system engineer.		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			NEW MWO-605931 NEW PMID 50868 replacing OLD MWO-605934 OLD PMID-50139 **NO DEFFERAL** **00641844** PM WMF-1612 WEEKLY HV-FAN-RE203 & HV-FAN-RE204 LUBRICATION This work order scope was changed from a weekly PM to a monthly PM as determined by the system engineer. NEW MWO-605931 NEW PMID 50868 replacing OLD MWO-605934 OLD PMID-50139 **NO DEFFERAL** ***00648390*** PM ARP (Y01)TH3 H&R PM TELEHANDLER FORKLIFT The inspection was completed within the 25% grace period on TH3 on 2014 02 13 was due 2013 12 31 set to finish on 2014 02 25. When TH3 was placed back in service, the PM was completed prior to use. **NO DEFFERAL** **00645093** PM ARP Y05 EX-5 REPLACE BOTH BREATHING AIR DOT CYLINDERS was generated prior to the require maintenance date due to a passport entry error. PM was completed prior to the actual required due date. MWO-632931 PMID-51195 **00649447** MI RCRA WMF-1617 INSPECT DPS HOIST CHAINS This work order was not preventative maintenance it was the initial inspection of the hoist chains. This initial work order was converted to preventative maintenance annual model work order 632403. **NO DEFFERAL** MWO-632403 PMID-51168 **00641135** PM OCVZ UNIT ANNUAL MAINTENANCE AND CALIBRATION The work scope on this work order was completed on 2012 06 19 was due on 2012 06 30 set to finish on 2012 07 02 **NO DEFFERAL** **00639334** PM ARP (M03) REPAIR TENTS, GLOVE BAGS AND/OR GLOVE BOXES The work scope on this work order was completed on		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			2012 04 19 was due on 2012 04 30 set to finish on 2012 05 01 **NO DEFFERAL** MWO-630921 PMID-51117 **00648948** PM ARP (M03) REPAIR TENTS, GLOVE BAGS AND/OR GLOVE BOXES This work order is a quarterly PM to perform as needed repairs on Tents, Glove Bags and Glove Boxes. This work order was worked on 2014-02-20 thru 2014-04-01 (completed). The due date was 2014-04-30 the work order was set to finish on 2014-05-14 **NO DEFFERAL** MWO-630921 PMID-51117 **00649698** PM ARP M01 CO SENSOR CALIBRATIONS This work scope was completed on 2014-04-21 was due 2014-04-30 set to finish on 2014-05-05 **NO DEFFERAL** MWO-603081 PMID-51082 **00649673** PM RWMC (Y01) PROTEAN SCALER CALIBRATION RME-SCTR-RW13 This work scope was completed on 2014-04-29 was due 2014-04-30 set to finish on 2014-05-05 **NO DEFFERAL** MWO-12564 PMID-2404 **00649680** PM RWMC MANITOWOC M01 MOBILE CRANE INSPECTION 20140430 This work scope was completed on 2014-04-30 was due 2014-04-30 set to finish on 2014-05-01 **NO DEFFERAL** MWO-31790 PMID-3973 **00648349** PM ARP MONTHLY RELAMPING The work scope on this work order was completed on 2013 12 11 was due on 2013 12 31 set to finish on 2014 01 06 **NO DEFFERAL** MWO-605740 PMID-2280		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
6	Surveillances performed in grace period and trend	Projects	A review of the RWMC shift supervisor log books, EDMS, and IAS dating back to May 2012 was conducted to identify any surveillance that might have been performed in a grace period. **1. Daily TSR Surveillances** TSR-4 SR 4.004.1.1 – Verify that included NTW meets LCO 3.004.1 configuration requirements. Include verification that soil sacks that become exposed following REBURIAL comply with STAGED array requirements. Frequency: Daily, when WASTE-HANDLING activities are being conducted. TSR-4 SR4.004.2.1 – Verify that waste STAGED for processing within a RETRIEVAL AREA meets LCO 3.004.2 configuration requirements. Frequency: Daily, when WASTE-HANDLING activities are being conducted. TSR-4 SR 4.004.3.1 – Verify that no more than 2 gal of fossil fuel are present in the Storage Enclosure. Frequency: Daily, when operations that may include waste container movement are conducted in the Storage Enclosure These TSR surveillances were documented on the following forms: FRM-557 Combustible Loading Inspection for WMF-698 and ARP Exteriors – Daily/Operations Approximately 351 surveillances were performed between 5/2012 and 5/2014. During the review, a surveillance to verify less than 2 gallons of fossil fuel in WMF-698 was found and did go into the grace period. On June, 19th, 2013, access was restricted into WMF-698 due to structural damage to the facility caused by high winds (>60 mph). The daily surveillance TSR-3/4.004.3 “Accelerated Retrieval Project Storage Enclosure Fossil Fuel Limit” was not performed due to the access restriction. TSR 100, AC 5.100.10	**RWMC Issues Management:** Provide a **2 year** list of TSR surveillances from SAR/TSR-4 performed in grace	Surveillances are those meeting the TSR/Nuc Safety definition IWTU qualitative evaluation only

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
—			Emergency Actions was entered. This AC allows departure from the TSR if an emergency situation exists and actions are required to protect workers. This action was approved by the nuclear facility manager and reported to DOE. Engineering inspected the allowed access and the surveillance was completed. facility the following day and <u>FRM-556 Combustible Loading Inspection for WMF-697 and WMF-1618</u> Approximately 87 surveillances were performed between 5/2012 and 10/2012. <u>FRM-750 Combustible Loading Inspection for WMF-1612 – Daily/Operations</u> Approximately 107 surveillances were performed between 6/2012 and 2/2013 <u>FRM-889 Combustible Loading Inspection for WMF-1614 – Daily/Operations</u> Approximately 141 surveillances were performed between 5/2012 and 2/2014. <u>FRM-863 Combustible Loading Inspection for WMF-1615 – Daily/Operations</u> Approximately 98 surveillances were performed between 7/2012 and 12/2013. <u>FRM-1088 Combustible Loading Inspection for WMF-1617 – Daily/Operations</u> Approximately 368 surveillances were performed between 5/2012 and 5/2014. <u>FRM-1232 Combustible Loading Inspection for WMF-1619 – Daily/Operations.</u> Approximately 135 surveillances were performed between 5/2012 and 5/2014. FRM-1500 Combustible Loading Inspection for WMF-1621 – Daily/Operations	.	

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			Approximately 94 surveillances were performed between 10/2013 and 5/2014 Source: Searched EDMS and SS logs for relevant surveillances performed between 5/2012 and 5/2014. Randomly selected 17 dates during which SS logs indicated waste handling occurred and verified a corresponding surveillance was performed and available in EDMS. **2. Combustible Loading Inspections** In addition to the daily TSR surveillance requirements described above, the RWMC Fire Protection Engineer also performs Weekly, Bi-Weekly and Monthly Combustible Loading Inspections. Weekly Combustible Loading Inspections – WMF-697 FRM-556 and WMF-1618 FRM-556 A total of 20 weekly Combustible Loading inspections were performed from 5/1/12 through 9/11/12. There are no weekly inspections beyond 9/11/12 as WMF-697 and WMF-1618 were turned over to D&D and were demolished. All inspections were completed on time. None of these inspections was completed during the grace period. Source: Integrated Assessment System (IAS). Compiled a list of Weekly Combustible Loading Inspections performed during the review period and compared the due dates with the completion dates. Bi-Weekly Combustible Loading Inspections – WMF-698, WMF-639 and ARP Exteriors FRM-557; WMF-1612 FRM-750; WMF-1614 FRM-889; and WMF-1615 FRM-863. A total of 53 Bi-Weekly Combustible Loading inspections were performed during between 5/1/2013 and 4/30/2014. All inspections were completed on time within the time allowance of SAR-100. One of these inspections was completed during the grace period due to Christmas curtailment. Source: Integrated Assessment System (IAS). Compiled a list of Bi-Weekly Combustible Loading Inspections performed during the last two years and compared the due dates with the completion dates.		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			Monthly Combustible Loading Inspections – WMF-1617 FRM-1088, WMF-1619 FRM-1232, and WMF-1621 FRM-1500 Twenty-four Monthly Combustible Loading inspections performed during the review period. All inspections were completed on time. None of the assessments were performed during the grace period. Source: Integrated Assessment System (IAS). Compiled a list of Monthly Combustible Loading Inspections performed during the last two years and compared the due dates with the completion dates. **3. TSR-4 SR4.004.4.1 - Monitor WMF-1612 main structure and air lock for new differential settlement in locations where changes may occur.** Frequency: Quarterly Nine quarterly subsidence surveillances were performed between 5/1/12 and 5/8/14. All were completed on time. None of these surveillances was completed during the grace period. Source: Integrated Assessment System (IAS). Compiled a list of Quarterly Subsidence surveillances performed during the last two years and compared the due dates with the completion dates. **4. TSR-4 SR 4.004.5.1- Perform Criticality Safety Program assessment for the ARP in accordance with PRD-112, Program Requirements Document for the Criticality Safety Program.** Frequency: Annually Two Criticality Safety Program assessments were performed during the review period. Both Criticality Safety Program assessments were performed on time within the grace period allowance of SAR-100. Source: Integrated Assessment System (IAS). Compiled a list of Criticality Safety Program Note: They are due annually and each was completed within 1 – 4 days of the year mark. They were in the grace period.		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			CAMs specifically The data listed below for FRM-870 consists of 47 CAMs that operate 24hrs/day during a normal work week (Mon-Thur) over a 24 month period. The calibration, source check and operability check data comes from 65 CAMs that are used during normal daily operation over 24 months. Tracking and trending of CAM surveillances. Number of FRM-870 checks completed. ~18,800 Number of FRM-870 deficiencies found 14 total. (3 Low Flow, 1 air pump off, 1 failed source check, 1 SBC failure, 1 MCA failure, 1 display failure, 1 door failure and 5 other issues) Number of source checks performed. ~6,760 Number of operability checks performed. ~ 26,000 Number of calibrations performed. ~130		
7	Safety system availability	Projects	Minimum operating requirements are built into each process due to the limited equipment required for safe, compliant production. As a result, the quantity of out of service equipment is self-regulating and tracked daily at the morning POD and the end of shift foremen meeting. Further, the operational requirements for items such as ventilation and DPSs are covered in various pre-operational inspection forms prior to going into operations mode. Pre-operational checks are also completed on the heavy equipment used within the facility. All of the ARP facility HVAC systems were designed with redundant exhaust blowers to maintain specified D/P and Air Flow in support of waste handling operations. The D/P and/or airflow required for waste handling (depending on the facility) are specified on a pre-operational checklist and verified prior to going into operations mode and commencing waste handling operations. If the specified conditions are not met, waste handling operations cannot be performed (proceduralized). In addition, each of the ARP facilities have a minimum of four exhaust blowers with attached portable CAMs. Of the four, a minimum of two units are on line during operations activities. Although an individual unit may be taken out of service for preventative maintenance, filter changes,	**RWMC :** Perform a 2 year review of Passport, Operator Logbooks, and/or OOS Logbooks to determine when Safety Significant/Safety Class SSC, nuclear facility HVAC and permanently installed CAMS were unavailable for use.	Does not include planned outages, impairments, or other formally controlled maintenance activities. Does NOT include key support systems

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			etc., the redundancy engineered into the system still ensures adequate flow and/or D/P for continued operations and the overall system is still operable and capable of performing it's intended function. If parameters cannot be maintained, alarms are received and actions taken per the applicable TPR to secure waste handling in the facility. If an operating unit were to fail, the system parameters would indicate an alarm condition and one of the standby units would be placed in operation. Thus the ventilation systems in the ARP facilities are never out of service. A review of the RWMC Out of Service Logbook was conducted and all safety systems, nuclear facility HVAC systems are currently managed in accordance with applicable company procedures (e.g. MCP-2978). The following items are currently permanently OOS as a result of system failures. Compensatory measures are in place to account for the OOS flow meters that are used by radiological controls to determine radiological source terms of the IONEX filters. These compensatory measures are conservative in that RadCon determines the IONEX run times from FRM-1231IONEX CAM Tracking Form and then multiplies the highest airflow rate (20,000CFM) of the IONEX unit to determine a conservative value. The fans that are out of service are either on inoperable facilities or, in the case of operating facilities, are inconsequential as a result of the built in redundancy and parameter checks required before handling waste: HV-FAN-RE501, HV-FIT-RE501, HV-RE502, HV-FIT-RE502, HV-RE503, HV-FIT-RE503, HV-RE-504, HV-FIT-RE504, HV-FAN-RE401, HV-FIT-RE401, HV-FAN-RE403, HV-FIT-RE403, FP-MDRE2-07, FP-MDRE2-08, FP-MDRE2-09, FP-MDRE2-10, FP-MDRE2-11. **CAMs specifically** Reviewed RadCon logbook entries for the last 24 months.		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			Number of RadCon logbook entries reviewed related to CAMs. ~3,500 Number of CAMs that were found OOS and not replaced per company procedures. After review of OOS (Out of Service) log book and CAM location walk downs, 0 CAMs were found OOS that had not been replaced by procedure.		
10	Corrective action process (issues management system) items initiated and trend	PA			
11	Average age of open corrective action process items (both open issues and open corrective actions)	PA			
12	Number of corrective action process items overdue	PA			
13	Number and rate of human performance errors	PA			Reported against a 200,000 man-hour normalization and reflect all items. Monthly reporting.
14	Number of abnormal procedure entries	Projects	A review of the RWMC shift supervisor logs dating back to May 2012 was conducted and 6 abnormal procedure entries did occur during that time period. EAR-282 “Emergency Medical Response” was entered 3 times; November 20th, 2012, December 5th, 2012, and January 24th, 2013. Two of the incidents were due to personal illness and one on 12/5/2012 was a worker that had symptoms of heat stress. EAR-246 “Response to Fire” was entered on August 2nd, 2012 due to a roaster oxide reaction inside the DPS of ARP VII, December 5th, 2013 for a manual pull due to horns and strobes going off in ARP VIII, and April 17th, 2013 FAC contacted for battery fire in TR-23. All events were responded to by operations personnel appropriately.	**RWMC Operations:** Perform a 2 year review of the ARP facilities Operator logs and SS Logs to determine the numbers of EAR entries.	
15	Number of emergency procedure entries	PA			

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
16	Number of unplanned process shutdowns	PA			4B5 events
17	Number of unplanned automatic process shutdowns	PA			4B5 events with automatic initiator (Subset of #16)
18	Number of procedure non-compliances	PA			Procedure Compliance Index augmented by qtrly info as needed
19	Number and age of LO/TO hanging	Projects/PEB	A review of the RWMC LOTO log book was conducted and as of 5/13/14 there are NO LOTOs hanging in the RMWC facilities. LOTOs are managed in accordance with company procedures PRD-5051 and MCP-3651. The Project Evaluation Board conducts an annual LOTO assessment. The most recent assessment was completed in May, 2014 (IAS1443). **CAMs specifically** There are no RWMC CAMs that are permanently installed or locked and tagged out per company requirements. NFM review completed of the RWMC LO/TO logbooks.	**RWMC Operations:** Review RWMC LO/TO logbooks for current LO/TOs associated with safety systems (Safety Class/Safety Significant SSC, nuclear facility HVAC, and permanently installed CAMs) and the age of these LO/TOs.	This would be a current status with any commentary that might be gleaned from an annual LOTO PEB review.

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
20	Number and age of temporary modifications	Projects	A review of the RWMC Temporary Modification Log was conducted. There are no temporary modifications at RWMC. Temporary modifications are managed in accordance with MCP-2978. Temp modifications on HVAC systems from May 1, 2012 through May 1, 2014. FDC DATABASE 19 HVAC SYSTEM FDCs – NO TEMPORARY 9 PROPANE SYSTEM FDCs – NO TEMPORARY 1 CAM VACUUM SYSTEM FDCs – NO TEMPORARY FCF DATABASE 4 FDCs THAT MODIFIED SOME PART OF THE HVAC SYSTEMS – ONE WAS A TEMPORARY CHANGE TO THE ARP-1 FACILITY FOR THE D&D WORK THAT HAS SINCE BEEN COMPLETED. **CAMs specifically** There are no RWMC CAMs that are temporary modified per company requirements. RadCon management review completed of the RWMC CAM systems.	**RWMC Engineering:** temp mods installed in the last 2 years. Review DRF system history and SOM Temp Logs to obtain data.	
21	Number and age of inoperable safety systems	Projects	**Number and age of inoperable HVAC systems from May 1, 2012 through May 1, 2014.** There are no HVAC systems out of service; there are several components of some of the HVAC systems that are out of service or have malfunctioned. 1) The flow indications for the ARP-4 and ARP-5 exhaust fans have failed due to failure of the sensing elements inside the HFB. The flow indications being out of service do not impact the operation of the HVAC systems or the facility. These indications have been out of service for over 2 years, FDC-9818 and Work Order 650350 have been written to replace the failed flow elements with a different design for the	**RWMC Engineering:**	Current status as of today (with previous two months, for example) or full two year history SHRs for SS/SC and impairments for LSS Does NOT include key support systems

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			ARP-5 HVAC system, at this time there are no plans to replace the ARP-4 failed flow elements. 2) The differential pressure indicator across the rollup door between ARP-3 and ARP-4, HV-PDIT-RE402, is out of service for over 2 years. There are currently no plans to reactivate this indicator since the rollup door has been removed. 3) The ARP-2 flow measuring system has been taken out of service at operations request. The system was causing inaccurate spurious alarms and operations did not need the flow indications for facility operations. 4) The ARP-3 flow measuring system is out of service and was never activated at operations request. The system is similar to the ARP-2 flow measuring system and operations did not need the flow indications for facility operations. 5) The ARP-2 supply air heater for the RMU/RMUE/SPE has been taken out of service when the power supply was removed as part of the Vestibule installation work. The RMU/RMUE/SPE is no longer used and the heater is no longer needed 6) The bottom tier of HV-HFB-RE204 (2 HEPA filters) at ARP-2 is out of service due to the failure of the HEPA filters to pass the annual aerosol test. The HEPA filter clamping mechanism has failed. An attempt was made to replace this mechanism but the corrosion was so bad that the work could not be completed. The dampers are closed and Out of Service tag 10-033 has been placed on the outlet damper. 7) The bottom tier of HV-HFB-RE304 (2 HEPA filters) at ARP-3 is out of service due to the failure of the HEPA filters to pass the annual aerosol test. The HEPA filter clamping mechanism is bent and after 3 attempts to repair this mechanism failed the dampers are closed and Out of Service tag 10-017 has been placed on the outlet damper. 8) HV-HFB-RE305 (IONEX unit) at ARP-3 is out of service due to the need to perform the annual aerosol test. This HEPA filter bank is no longer used since all of the work in ARP-3 is complete and the combined		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			ARP-3 north side ventilation system is operating and the ARP-4 IONEX units are operating providing adequate ventilation for ARP-3. Out of Service tag 11-38 has been placed on the IONEX unit. 9) HV-HFB-RE306 (IONEX unit) at ARP-3 is out of service due to the need to perform the annual aerosol test. This HEPA filter bank is no longer used since all of the work in ARP-3 is complete and the combined ARP-3 north side ventilation system is operating and the ARP-4 IONEX units are operating providing adequate ventilation for ARP-3. Out of Service tag 11-12 has been placed on the IONEX unit. 10) The upper tier of HV-HFB-RE301 (2 HEPA filters) at ARP-3 is out of service due to the failure of the HEPA filters to pass the annual aerosol test. Work order 650583 has been prepared to repair this HEPA filter bank is being prepared. Out of Service tag 14-45 has been placed on the outlet damper. 11) The upper tier of HV-HFB-RE303 (2 HEPA filters) at ARP-3 is out of service due to the failure of the HEPA filters to pass the annual aerosol test. Work order 650583 has been prepared to repair this HEPA filter bank is being prepared. Out of Service tag 14-46 has been placed on the outlet damper. 12) The lower tier of HV-HFB-RE303 (2 HEPA filters) at ARP-3 is out of service due to the failure of the HEPA filters to pass the annual aerosol test. Work order 650583 has been prepared to repair this HEPA filter bank is being prepared. Out of Service tag 14-47 has been placed on the outlet damper. **RWMC Fire Protection:** Impairments to RWMC Fire Protection (FP) and Life Safety Systems (LSS) are managed in accordance with MCP-585 to ensure return to service in an acceptable and timely manner. MCP-585 implements the requirements of DOE O 420.1B Chg 1, “Facility Safety;” PRD-199, “ICP Fire Protection Program;” NFPA 25, “Standard for the Inspection, Testing, and Maintenance of Water Based Fire Protection Systems;” NFPA 72, “National Fire Alarm Code;” and NFPA 101, “Life Safety Code.”		

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			Impairments to RWMC FP and LSS were reviewed for the period from 05/15/12 through 05/15/14. Since Un-Planned Impairments (UPI) were not defined until release of Revision 9 of MCP-585, effective 12/11/13, impairments between 05/15/12 and 12/11/13 were evaluated to determine if they met the definition of UPI. One-hundred seventy (170) impairments were issued between 05/15/12 and 05/15/14. Of these, 19 were long-term Planned Impairments (PI) which were written to ensure that fire protection systems on out-of-service Drum Packaging Systems (DPS) and mobile equipment in facilities where waste excavation was completed (i.e., WMF-1612, WMF-1614, WMF-1615) would receive preventive maintenance prior to return to service (e.g., transfer to another ARP facility). Of the remaining 151 impairments, 112 (74%) were issued as PI, 36 (24%) were issued or re-classified as UPI, and 3 (2%) were issued as System Restriction Impairments (SRI). No Emergency Impairments (EI) were issued during this period. Seventy-five percent (75%) of all (151) impairments were returned to service within 7 days, 97% were returned to service within 30 days, and 99% were returned to service within 60 days. Curb valve FW-CW-SA11 is failed in the open position and is unable to isolate a single fed fire hydrant. This valve has been placed out of service and is tracked as Out-of-Service Impairment (OSI) WMF-11-180. (Attachment – List of RWMC UPI) Corrective maintenance Work Order 650569 is currently being planned to make needed repairs. In the event isolation is needed, adjacent isolation valves can be closed to isolate the fire hydrant being fed until repairs are made.		
22	Safety system performance (successful or not) when tested	Projects	**RWMC Fire Protection:** Inspection, Testing, and Maintenance (IT&M) of RWMC Fire Protection (FP) and Life Safety Systems (LSS) is managed in accordance with PRD-158 to ensure proper operation of fire protection systems in emergency situations and in accordance with DOE O 420.1B, NFPA Codes and Standards, and 10 CFR 851, Worker Safety and	**RWMC Engineering:** SS systems SSC. ventilation, life safety systems and CAMs. Will require field walk downs, reviews of system status history,	Current status as of today (with previous two months, for example) or full two year history What does SHR and impairments capture? Maybe use these?

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			Health Program. Responsibility for performance of IT&M of fire protection (FP) systems is shared by the RWMC Maintenance and the Life Safety Systems (LSS) organizations. Results of all FP IT&M are reviewed by the RWMC Fire Protection System Engineer and the RWMC Facility Fire Protection Engineer. Results of IT&M performed by RWMC Maintenance are summarized and reported to the CWI Fire Marshall on a quarterly basis. Results of IT&M performed by the LSS organization are summarized on an annual basis. Quarterly summaries for IT&M performed by RWMC Maintenance were reviewed from QTR3 (APR/MAY/JUN) FY2012 through QTR2 (JAN/FEB/MAR) FY2014. During this period RWMC Maintenance performed IT&M on 13,227 FP-related systems, structures, or components (SSC), and identified 10 failed components (e.g., batteries for emergency lighting), for a total failure rate (0.0008) of less than 0.1%. Similarly, annual summaries of IT&M performed by the LSS organization were reviewed for CY2012 and CY2013. In the period CY2012 through CY2013 the LSS organization performed IT&M on 4,292 RWMC FP-related SSC, identifying 4 deficient devices, for a total failure rate (0.0009) of less than 0.1%. Corrective **CAMs specifically** Actions taken to gather information: Interviews with instrument RCTs and SMEs, CAM record review and logbook entries. Number of CAMs that passed initial performance testing. ~130 CAMs were calibrated and put into operation over the last 24 months with all of them passing the initial performance test. Number of CAMS that did not pass performance testing. 0. The last thing to be checked on a CAM prior to being put into service is the performance testing (reference values established). If any issues are noted prior to or during this step, the CAM stays tagged OOS and is scheduled for repair maintenance was managed in accordance with MCP-101.	work order history, and log books.	

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
23	Safety system performance (successful or not) in response to actual demand	Projects	RWMC Fire Protection: No actual demands have been placed on RWMC/ARP fire suppression systems, wet or dry chemical, during the last 24 months. One portable fire extinguisher was discharged (04/17/13) to suppress flames from a lithium ion battery that had a thermal runaway during recharging. The INL Fire Alarm Center (FAC) recorded 17 'incidents' at the RWMC, including 2 phone notifications from the RWMC Shift Supervisor 1 phone notification for a propane smell at wmf-1619 (Found a leak at a tank fitting, tank was placed out of service while repairs were made) and one phone notification due to a personnel illness. (1 ea., HAZMAT, EMS) and 15 class A alarms from facility alarm panels identified as Structural Fires, specifically 1 alarm from WMF-1614 and 14 alarms from WMF-1621, during the period June 2013 through April 2014 (earlier data not available). None of the alarms from WMF-1614 and 1621 were associated with an actual fire event. The alarm from WMF-1614 (11/21/13) was associated with a failed manual pull station that was subsequently replaced. Alarms from WMF-1621 (several dates) were all associated with known limitations of the video fire detection design (i.e., camera vibration during high wind conditions, 4 events) or diagnosed faults in detection or support devices (e.g., foreign material in fire detection camera housings, changes in facility lighting, failure of relay modules – 9 events). Causes were identified for all events, no events were identified as 'spurious,' and corrective maintenance was managed in accordance with MCP-101. Video fire detection cameras in WMF-1621 are now impaired when local wind gusts exceed 50 mph and a compensatory fire watch provided by the INL FAC in accordance with SOP-3.2.5. **CAMs specifically** Actions taken to gather information: Information gathered from RadCon instrument Access Database and personal walk down of inventory. Number of CAMs in service. 65 CAMs in place and verified operational. Number of CAMs waiting to be placed into service. 17	**RWMC Engineering:** SS systems SSC. ventilation, life safety systems and CAMs. Will require field walk downs, reviews of system status history, work order history, and log books	Current status as of today (with previous two months, for example) or full two year history What does SHR and impairments capture? Maybe use these?

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
			Number of CAMs waiting to be calibrated. Currently 2CAMs have been removed from the field prior to calibration expiration and replaced with operational calibrated CAMs from the spare CAM inventory. Number of CAMS Out of Service waiting to be repaired 22. CAMs waiting to be placed in service. CAMs are calibrated and operational.		
24	Number of spurious safety system actuations	Projects	A review of the RWMC shift supervisor logs dating back to May 2012 was conducted and no spurious alarms actuations have occurred during that time period. **RWMC Fire Protection:** There have been no spurious actuations of RWMC fire protection systems, that is, actuations without a known cause, in the last 24 months. (See Item 23) **CAMs specifically** Seven different log books were reviewed over a two year period. 23 CAM alarms identified. Number of spurious CAM events. 1. Equipment failure. 11. (2 electrical, 2 Peak Shift, 2 flow failure, 3 MCA failure, 2 broken door latch) 2. Natural activity. 11 (All verified to be natural activity) Other. 1 (Instrument Technician changed display without updating the settings)	**RWMC Operations:** Perform a 2 year review of the Operations Logs, SS Logs, FAC Logs, LSS Logs, Engineering logs to determine the number of spurious safety system actuations	This does not include supervisory alarms or those as a direct result of fine tuning the fire protection systems as a result of wind (motion) or lighting activation. These have occurred but are responded to as real events and the system has been adjusted accordingly to prevent subsequent alarms. Includes key support systems What does SHR and impairments capture? Maybe use these?
26	Number of temporary procedure changes	Projects/Doc Control	A review of temporary procedure changes was conducted on EDMS for the last two years. 2 temporary procedure changes have been made since April 2012. Both of these have since been cancelled and are no longer active: 1. TPR7418-5 to install blanks in the glove and bag ports in the DPS units of ARP II to facilitate inactivation of the facility. 2. TPR-7415 to insure the water valve to the dust suppression hose reel is shut off to avoid flooding the service bay of ARP-IV. Temporary procedure changes are made in accordance with MCP-2985 and MCP-135. **CAMs specifically** A review of EDMS indicates that all RWMC RadCon CAM procedure changes have been permanent changes only.	**RWMC Engineering:** Perform a 2 year EDMS review of temporary procedure changes and identify those temporary changes associated with safety systems in nuclear facilities (safety class, safety significant, nuclear facility HVAC and permanently installed CAMs).	Safety related system document temp changes will be reported along with the total number of applicable documents Does NOT include key support systems

Item	FACTOR	Lead Actionee	Query Results/Clarification Comments	RWMC Notes	Comments/Clarifications
27	Number of grievances	Labor Relations			
28	Management observation system data, number of observations by senior managers, number of management observations that identify deficiencies and result in corrective action	PA/Projects	The MWV database was reviewed. 2193 MWVs were performed during the period of May 1, 2012 through April 30, 2014. Of these, 680 MWVs identified 915 items requiring action from simple items that were corrected on the spot to work requests. RWMC/ARP management performs regular and unscheduled management work place visits (MWVs) and senior supervisory watch surveillances. The MWVs are reviewed routinely by senior management to identify areas for additional focus and to identify any issues that require further corrective actions. Weekly, the previous week's MWVs are identification of items that should be further pursued or included in the ICARE system. Additionally, LST-202 contains company required assessments to ensure compliance with the applicable DOE orders. The MWV program, ICARE, and LST-202 identify the accountability for these programs and processes. routed to management for further review and **CAMs specifically** Information gathered from SMEs and review of documentation. ~2100 MWVs were reviewed with 50 of them being CAM specific. 4 of them had issues that were addressed by a WO or TPR. -0 Work requests generated from ICAREs. -0 Work requests generated from IASs issues.	**RWMC Issues Management:** The number of actions that were Work requests from MWVs, ICARE and IASs.	This will be reported by PA for DR and greater. Items tracked below the DR level will also be reported by the projects.
29	Number of personal contamination events	PA			
30	Number of personal chemical exposure events	PA			

WM Factors

Considering the matrix from Appendix A, Waste Management does not consider that similar vulnerabilities such as lack of equipment maintenance, not maintaining up to date configuration control, and not making necessary upgraded to support system infrastructure exist within the organization.

Waste Management utilizes the INTEC Maintenance department for the majority of maintenance activities. [INTEC has a robust maintenance program as discussed in xx.xx]. Daily inspection forms and round sheet monitor the various nuclear facilities, including Hazard Category 2. Any deficiencies are documented, proper notifications are made, and work requests submitted to correct the deviation. Frequent management oversight, as well as the performance of Management Workplace Visits, ensures that company processes are being followed.

The following is a list of information pulled from Appendix A showing issues and resolutions from the time period May 2012 to May 2014:

3. From May 2012 to present, the following control room annunciators alarmed:

Error Code 37 (Absolute Under Voltage Monitoring)

4/30/12

5/29/12

7/12/12

Error Code 63 (Door Contact 1&2 Open)

9/18/12

9/26/12

2/11/13

Error Code 127 (Under Voltage Cathode Generator)

11/14/13

Error Code 48 (Overcurrent Cathode Has Released)

1/14/14

All of the above conditions were repaired by performing general maintenance on the RTR equipment and we currently have no control panel error codes.

6. TSR-103 LCO 3.103.2 has a Surveillance Requirement SR 4.103.2.1 with an **annual** frequency.

Over the last two years, the following assessments have been performed to meet the SR 4.103.2.1 requirement:

Report Number	Title	Date Effective	Grace Period Used
IAS12542	IAS12542 and IAS12543 Waste Management Surveillances for TSR-103 - Annual Surveillance of SR 4.103.2 MAR Control	5/31/12	None
IAS13100	WM Specific Administrative Controls Surveillance and Annual Surveillance of TSR 4.103.2 MAR Control	5/22/13	None
IAS1462	WM Specific Administrative Controls Surveillance and Annual Surveillance of TSR 4.103.2.1 MAR Control	On schedule for 5/29/14	None projected

14. Waste Management experienced two abnormal procedure entries. Both were due to ventilation upsets at the CPP-666 Fluorine Dissolution Process Area (FDPA) cell.

On 3/10/14, ventilation was lost due to unidentified causes.

On 4/10/14, while switching blowers during the execution of a preventative maintenance procedure, ventilation was lost.

In both cases, proper actions were taken per the Emergency Alarm Response procedure.

20. There are currently three temporary modifications in place for Waste Management:

On June 9th 2006 it was discovered that CPP-1688 had a failure in the P-trap primary containment line. This resulted in decon water from CPP-1688 and rain water from the decon equipment pad to enter the secondary containment line. After review of the cost to repair and mission of the building, it was decided to discontinue use of CPP-1688 and the decon pad and place them in warm stand –by. However, to deal with removing rain water from the secondary containment in lift station (MAH-YDJ-SW-498) a temporary pump was installed to pump water from the secondary into the primary containment where the water would then be pumped by the designed system pumps out the evaporation ponds.

On March 12, 2013, a non-functioning actuator for the hatch over room 306 in CPP-659 (COV-NCD-1) was replaced with a modified actuator to allow operations to open and close the hatch in an efficient and safe manner. It has been determined that the modified actuator will be made permanent, and the configuration processes are being pursued for the appropriate updates .

On September 30, 2013, a manipulator was removed from the CPP-666 Fluorine Dissolution Process Area (FDPA) cell. This was done to allow the manipulator to be utilized as a spare, and to use the penetration to accommodate a cable bundle going into the cell.

In all cases, the appropriate configuration management processes have been followed.

28. For conditions corrected below the “deficiency” threshold

MWV numbers by the month – Total 434

OTHER Issues and SCRS (Non DRs) – Total 20

Other corrective actions from MWVs, assessments etc. are not tracked by month – Total 38.

2012 May - Sept

	May	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
	13	14	21	22	29	15	15	16	145
Non-DR issues	1		3		1		2		7

2013

	Jan	**Feb**	**Mar**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Total**
	24	20	16	15	17	16	17	21	21	15	15	15	212
Non-DR issues		2	1		1	3				1			8

2014

	Jan	**Feb**	**Mar**	**April**	**Total**
	18	25	19	15	77
Non-DR issues			5		5

Appendix B

Documents Reviewed

Appendix B

Documents Reviewed

AHJ-15-11, AHJ Record for RWMC Fire Water Main Distribution System

CTR-116, Executive Safety Review Board

CTR-185, “Corrective Action Review Boards”

EAR-246, “RWMC – Respond to Fire”

EAR-282, “RWMC – Emergency Medical Response”

EAR-288, “Partial or Total Loss of Emergency Communication System (ECS)”

Form 442.17, “Job Safety Analysis”

GDE-411, “ICP Management Workplace Visit Program”

IAG-508, “Interface Agreement Between INTEC and Waste Management for the Operation of the CPP-666 Fluorinel Dissolution Process Area (FDPA)”

IAS13334, “Configuration Management Safety Management Program and Engineering Program Assessment Report”

LST-774, “ICP D&D Conduct of Operations Best Management Practice Implementation Matrix”

Manual 13,” Quality Assurance Program”

MCP-8, “Performing Management Assessments and Management Reviews”

MCP-101, “ICP Integrated Work Control Process”

MCP-135, “Document Management”

MCP-152, “Surveying Indoor Air Quality”

MCP-190, “Event Investigation and Occurrence Reporting”

MCP-192, “Processing Lessons Learned and Operating Experience Information”

MCP-538, “Control of Non-Conforming Items”

MCP-598, “Corrective Action System”

MCP-1308, “Field Design Change”

MCP-1450, Conduct of Engineering

MCP-1492, “Technical Baseline”

MCP-1541, “Employee Concerns Program”

MCP-2042, “Temporary Modification Control”

MCP-2377, “Development, Assessment, and Maintenance of Drawings”

MCP-2747, “Specialized Ventilation”

MCP-2811, “Nuclear Facility Change”

MCP-2978, “Control of Equipment and System Status”

MCP-2980, “Logkeeping”

MCP-3358, “Evaluating the Structural Integrity of Structures, Systems, and Components”

MCP-3450, “Developing and Using Job Safety Analysis”

MCP-3480, “Environmental Instructions for Facilities, Processes, Materials and Equipment”

MCP-3562, “Hazard Identification, Analysis, and Control of Operational Activities”

MCP-3574, “Management of Data in the Configuration Management Database”

MCP-3630, “Digital Instrumentation and Control System Management”

MCP-6201, “Preventive/Predictive Maintenance Program”

MCP-6402, “Master Equipment List and Maintenance History”

MCP-6303, “Calibration of Facility Process and Control Instrumentation”

MCP-9436, “Identification, Control, Storage and Transfer of Item Traceability”

MWO 650350, Maintenance Work Order

MWO 650569, Maintenance Work Order

PDD-60, “Conduct of Operations”

PDD-155, “Feedback and Improvement Program”

PDD-600, “ICP Nuclear Maintenance Management Program”

PRD-851, “10 CFR 851 Program Requirements Matrix”

PDD-851, “10 CFR 851 Worker Safety and Health Program”

PLN-1280, “CPP-666 Fuel Storage Area (FSA) Corrosion Surveillance Plan”

PLN-1304, “Water Quality Monitoring and Control Program for the INTEC-666 Fuel Storage Area (FSA)”

PLN-2697, INTEC Treated Water Control System Configuration Management Plan

PRD-600, “Maintenance Management Requirements”

PRD-115, Configuration Management

PRD-5087, “Corrective Action”

PRD-5091, “Assessments”

SAR-100, “ICP Standardized Safety Analysis Report (SAR) Chapters

SAR-100-14, “Quality Assurance”

TSR-100, “ICP Standardized Technical Safety Requirements (TSR) Document”