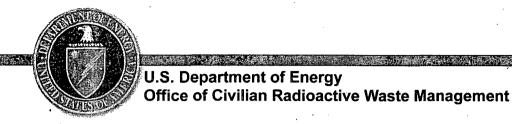




DOE/NRC Quality Assurance
Technical Exchange

June 26, 2007.

Las Vėgas, Nevada





Building Quality Into the Yucca Mountain License Application

Presented to:

DOE/NRC Quality Assurance Technical Exchange

Presented by:

Bob Warther

Federal LA Project Director

Office of Civilian Radioactive Waste Management

U.S. Department of Energy.

Las Vegas, NV June 26, 2007

Topics

- Quality Requirements for the LA
- Primary Challenges to a High Quality LA
- LA Project Organization
- Development of the LA
- Methods and Metrics to Confirm Quality
- DOE OQA Oversight





Quality Requirements for the LA

LA is complete

- Addresses all applicable regulations (Part 63, Part 73, etc.)
- Addresses all applicable guidance (YMRP, etc.)
- LA supports NRC's Safety Evaluation Report for construction authorization

LA is accurate

 Accurately reflects underlying engineering and science products that are prepared in accordance with the QARD





Integration has been the Biggest Challenge

- One License Application
 - Six major organizations
 - Five groups among the six organizations
 - 71 sections to the LA
- Integrated team approach with all organizations participating
 - Engineers, scientists and LA authors (~135 team members)
 - Senior Management Team (licensing, science, engineering, NNPP, legal)
- Weekly LA section meetings with all groups represented
- Monthly Integrated Project Team (IPT) meetings
- LA integration achieved throughout four-phase development process



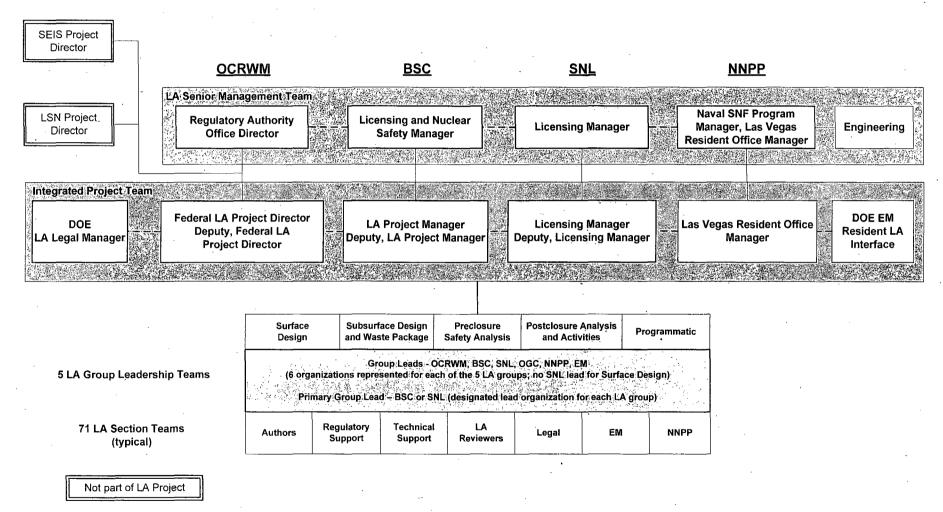
Parallel Development of LA and Underlying Design/Science Products

- Product Integration achieved throughout fourphase development process
- All underlying design/science products identified early in LA planning process
- Integrated project schedule identifies products and links to specific LA sections
- Proposed changes in design approved by Technical Management Review Board considering impact on LA





LA Project Organization







Organizational Roles and Responsibilities

- License Applicant: DOE
- Design Authority: BSC
- Lead LA Integrator: BSC
- Lead Laboratory: Sandia National Lab
- Support Organizations: DOE-EM and NNPP





LA Development Process

- The OCRWM approach to submitting a high quality LA consists of 3 key elements
 - Build quality into the LA development process
 (3 month planning effort)
 - Complete review of LA sections at 4 separate phases to provide confidence that quality is being maintained as the LA matures
 - Conduct self assessments, surveillances and independent third party reviews of the LA to provide additional assurance that quality is achieved





LA Project Planning Documents

- Management Plan for Development of the Yucca Mountain License Application
- Yucca Mountain Repository License Application Conceptual Design Reports
 - Surface Design
 - Subsurface Design and Waste Package
 - Preclosure Safety Analysis
 - Postclosure Analysis and Activities
 - Programmatic
- License Application Performance Baseline
- License Application Product Baseline





LA Management Plan

Establishes LA development process

- Organizational responsibilities and authorities
- LA project management
- LA draft development, review and approval by phase
- Configuration control and integration
- LA assurance reviews (self-assessments)
- Issue resolution and escalation (Licensing Strategy Team)
- Final LA review, validation and production





Four-phased LA Development

Phases

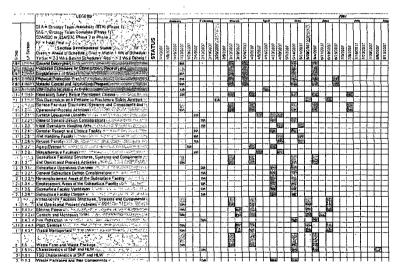
- Storyboard Draft
- Interim Draft
- Final Draft
- Final Validated Section
- Review and Approval at Each Phase
 - By all organizations
 - By Senior Management Team



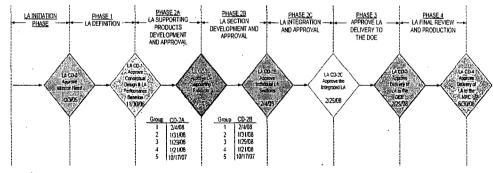


Management Plan Ensures Compliance with NRC Regulations, Guidance Documents and Expectations

- Regulation and NUREG 1804 compliance crosswalks
- Project Organization charts
- Schedule requirements
- LA development process



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Conceptual Design Reports (CDRs)

- Establish the Scope and Content of the LA
 - Group 1 Surface Design
 - Group 2 Subsurface Design and Waste Package
 - Group 3 Preclosure Safety Analysis
 - Group 4 Postclosure Analysis and Activities
 - Group 5 Programmatic
- Each CDR describes (for each LA section)
 - Regulatory requirements and NRC guidance (YMRP, etc.)
 - Planned content
 - Expected level of detail
 - Supporting products
 - Interfaces within LA





Monthly Reporting to OCRWM Director and Senior Management

Topics Covered

- Accomplishments during reporting period
- Performance to date
- Critical path
- Quality summary
- Key issues
- Near term milestones (30 day look ahead)
- Interfaces and data feeds over next 60 days





Methods and Metrics to Confirm Quality

- LA quality surveys
- LA assurance reviews
- Senior nuclear industry consultants integrated into DOE staff
- Section team certification for completeness and accuracy
- Final validation process at phase 4
- Certification by SNL and BSC General Manager at phase 4





LA Quality Surveys

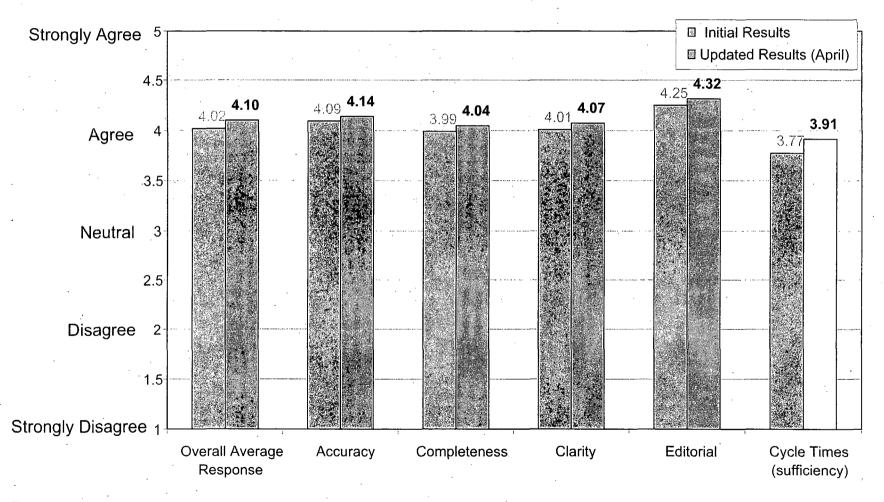
- Quality attributes measured at each phase
 - Accuracy
 - Completeness
 - Clarity
 - Editorial
 - Cycle times (sufficiency)
- LA Quality surveys for 34 Interim Drafts and 24 Final Drafts were sent June 5th and 6th; Surveys closed June 14, 2007
- The six-month rolling average of LA Quality Survey responses increased to 4.10 and is reported as "Green"
- Interim Draft sections showed modest improvement in quality compared with their Storyboard Draft versions





LA Quality Surveys

Quality Survey Responses: Updated Results for Interim Drafts (April)







LA Quality Assessment Initiatives

- LA self assessments are ongoing
- LA independent review (third party contractor)
- Assessing condition reports for potential impact on the LA
- Joint QA planning/coordination activities
 - Integrated oversight plan of LA Project
 - Over 30 surveillances anticipated









U.S. Department of Energy Office of Civilian Radioactive Waste Management

Quality Assurance Oversight for the Yucca Mountain License Application

Presented to

DOE/NRC Quality Assurance Technical Exchange

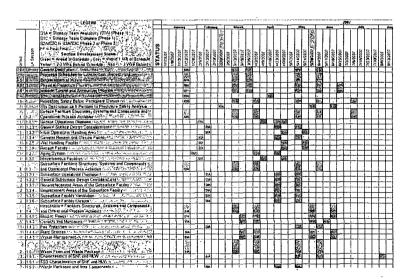
Presented by:

Jerry McMahon (Project Enhancement Corporation

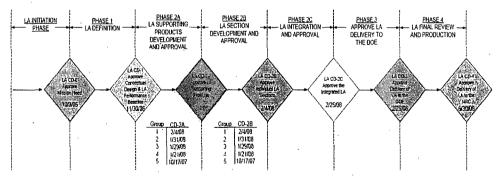
June 26, 2007 Las Vegas, Nevada

Management Plan Ensures Compliance with NRC Regulations, Guidance Documents and Expectations

- Regulation and NUREG 1804 compliance crosswalks
- Project Organization charts
- Schedule requirements
- LA development process



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U.S. Department of Energy Office of Civilian Radioactive Waste Management

Recent Root Cause Analysis Summary / OCRWM Strategic Objective: Organizational Development

Presented to

DOE/NRC Quality Assurance Technical Exchange

Presented by:

Richard L.: Craun/

Senior Policy Advisor

Office of Civilian Radioactive Waste Management

U.S. Department of Energy

June 26, 2007 Las Vegas, NV

Recent Performance Indications

- Self-assessments, audits, and surveillances performed by the OCRWM and oversight by external agencies GAO, DOE Office of Inspector General (OIG) and NRC during 2005 and 2006 indicated multiple performance effectiveness issues
- The Nuclear Energy Institute (NEI) was invited to visit OCRWM to assess the effectiveness of the OCRWM Quality Assurance Program
- The NEI Team concluded that elements of the program were not effectively implemented





NEI Report Summary

- The focus of the assessment was excellence in the Quality Assurance Program
- Using industry standard of excellence the NEI team concluded:
 - The YMP QA Program meets requirements
 - Progress is being made to improve the overall QA performance
 - Improvements needed in a number of areas to achieve the goal of excellence





Information Time Line Corrective Action Program

Jan - March April - June Jan - March July - September October - December 04/19/06 - MRC Charter Rev. 13 G 07/12/06 - BQA-BSC-06-08 10/3/06 - BQA-SI-06-065 (Level A & B 01/09/07 - MRC Charter Rev 14 01/18/06 - CST Charter Rev. 12 04/19/06 - CST Charter Rev. 13 01/26/06 - MRC Charter Rev. 12 condition reports closed in Aug.) 01/17/07 - RCAT Charter issued 07/31/06 - AP-16.10 Rev 9 ICN 1 10/02/06 - AP-16.1Q Rev 10 ICN 0 06/12/06 - OR-06-01 NRC Quarterly 09/26/06 - OR-06-02 NRC Quarterly 01/09/06 - OAR-05-05 of BSC Internal 11/06/06 - BSC QA Assessment of 01/07 - BSC QA Assessment of audit BQAP-BSC-05-07 Performance Performance 01/20/06 - OQA-BSC-06-02 audit of 11/09/06 - Lessons Learned CR's 08/16/06 - DOE/IG-0736 Audit Report: with Root Cause Analysis or The Office of Civilian Radioactive Waste 01/4/07 - CR 9774 issued Significant Investigation Efforts MRC 01/31/06 - CR 7458 - Ineffective Trending Management's Corrective Action 01/11/07 - OQA-BSC-07-03: Assessment activities Corrective Actions and Trending 02/06/06 - OR-05-05 NRC Quarterly 10/06 - OCRWM 2006 Organizational Report 01/19/07 - NRC OAR-07-01 observation Climate & SCWE Survey 03/06/06 - ODD-2006-S02 CAP Selfof OQA Audit OQA-BSC-07-03 10/12/06 - OQA-OCRWM-06-015 Assessment 10/16/06 - DOE CAP Performance 03/17/06 - GAO-06-313 Report: YM Improvement Plan (PiP) Quality Assurance at DOE's Planned 12/01/06 - DOE-MRC-2007-S01 - SA of Nuclear Waste Repository Needs Increased Management Attention 12/8/06 (draft) - Yucca Mountain independent Quality Assurance Review 12/06/06 - OR-06-03 NRC Quarterly 12/11/06 - DOE initiated CR 9664 (Inadequate RCA for CR 7395) Change to the CAP Process (procedure, software, etc.) or CAP and/ or Trending was assessed to be effective, satisfactory or no significant issues were identified

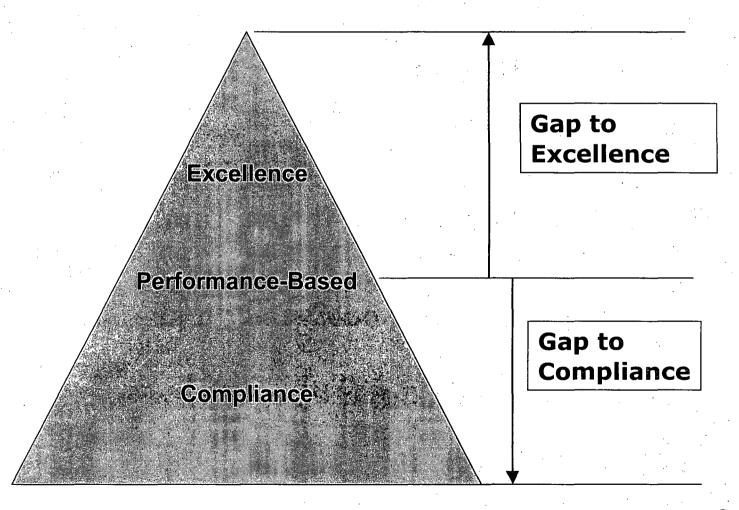




Change to the CAP Process (procedure, software, etc.) was reversed or Assessment of CAP and/or Trending identified multiple issues

CAP and/or Trending was assessed to be ineffective

Continuous Improvement Strategy







Underlying Causes for Excellence Gap

- OCRWM senior management failed to establish and hold the OCRWM organization accountable for meeting quality expectations with regard to the infiltration products
- OCRWM senior management failed to consistently exercise leadership by establishing expectations and standards for CAP performance and enforcing them as a core business activity for all project personnel
- OCRWM senior management, as a team, has not demonstrated the skill, knowledge, aptitude, and experience necessary of leadership to establish expectations, standards, and culture for Self-Assessment Program (SAP) performance and enforce SAP as a core business continuous improvement activity for all Program personnel





Contributing Causes for Excellence Gap

- OCRWM did not fully implement quality assurance requirements (and culture) with line management
- Lack of effective barriers contributed to the lack of recognition by management of the ineffective performance
- Significant unresolved issues identified by internal and external assessments have been tolerated by management
- The organizations' self-assessments for continuous improvement are not self critical
- Line management does not effectively utilize CAP to drive continuous improvement and does not demonstrate ownership and follow-through necessary to resolve issues and prevent recurrence
- Authority and accountability for CAP effectiveness have not been either clearly defined or effectively enforced
- DOE has not provided a central vision to implement a self-critical culture focused on excellence rather than compliance
- Senior management team does not model appropriate behaviors that indicate that Self-Assessment is a core business process
- Lack of OQA oversight to drive performance



Recommended Corrective Actions

- Create Vision (Based on Industry)
- Set Expectations (Individual and Organizational)
- Communications (Buy in from all OCRWM Personnel)
- Mentoring (Ensure Management Behaviors)
- Measuring (Measure Effectiveness)
- Complete the Quality Improvement Plan





Initial Review Results CR-10141

- The Root Cause Analysis (RCA) investigation did not discover evidence or information that differed significantly from that documented by the previous recent RCA reports
- Based on the investigation, the RCA team concluded that it was unlikely to identify further substantive evidence or to arrive at conclusions that differed from previous recent RCAs and assessments
- The team could provide more value by analyzing the consolidated evidence, conclusions and recommended corrective actions from the previous RCAs to assess completeness





Extent of Cause & Condition

- The extent of cause is that management behaviors actively impede the effectiveness of the Quality Assurance, Corrective Action, and Self Assessment programs and thus the achievement of performance excellence
- The extent of condition affects other OCRWM processes and procedures
- The causes and conditions identified are potentially present throughout OCRWM





Recommended Corrective Actions CR-10141 (Summary)

- The OCRWM Director commission a group of senior mangers to develop a comprehensive "Nuclear Quality Culture and Quality Implementation Change Management Plan"
- The OCRWM Director identify and charter a senior management team to oversee and ensure accountability for implementation of the plan, as noted above
- The OCRWM Director initiate a mentor program for select senior managers (Engineering, Science, and Licensing) for DOE, BSC, and SNL





Conclusions from CR-10141

- The Root Cause Analysis team concluded that the Condition Reports shared a common cause:
 - Senior management has consistently failed to exercise leadership by not establishing a nuclear quality culture to drive performance excellence
 - Senior management has attempted to address this chronic weakness through several previous improvement initiatives
 - The RCAT was unable to conclude that the senior management team had a consistent position on the need for urgent change





Organization Development

To design, staff, and train the OCRWM
 Organization such that it has the skills and culture needed to design, license, and manage the construction and operation of the Yucca Mountain Project with safety, quality, and cost effectiveness





Organization Development Plan Elements (underdevelopment)

- Business Process Improvement
- Human Capital (skills/competencies)
- Structure (organization)
- Performance (individual and organizational)
- Leadership/Culture (current and sustaining)



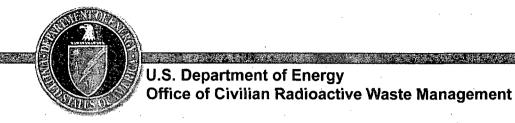


Summary

- Organizational Development action plan is under development
- The recommended actions from the discussed root cause analyses and the Quality Improvement Plan will be integrated into this plan
- The corrective actions are progressing









Quality Improvement Plan 2007

Presented to:

DOE/NRC Quality Assurance Technical Exchange

Presented by:

Michael Ulshafer

Office of Quality Assurance

Office of Civilian Radioactive Waste Management

U.S. Department of Energy*

Las Vegas, NV June 26, 2007

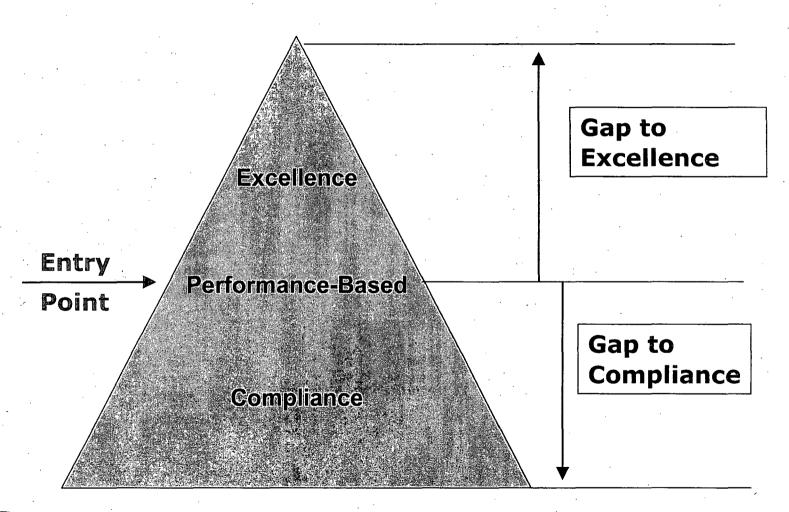
Background

- December 2006 five experienced nuclear utility QA managers performed an assessment of OQA against excellence criteria used by industry
- Issued report on March 1, 2007





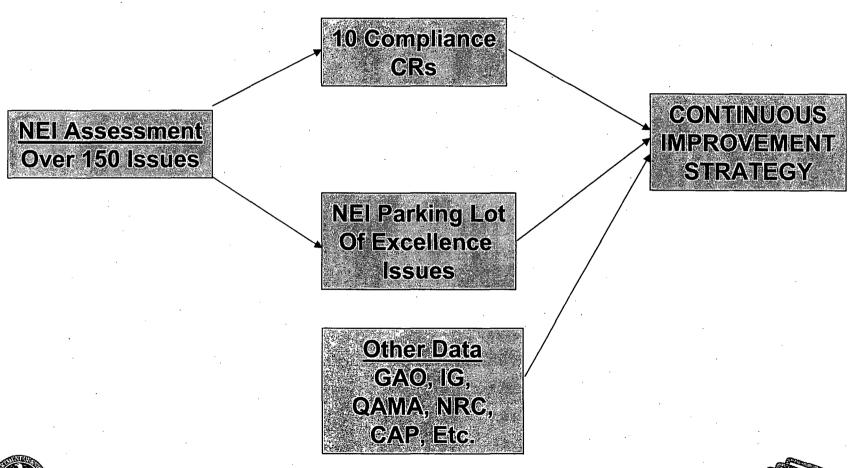
Continuous Improvement Strategy







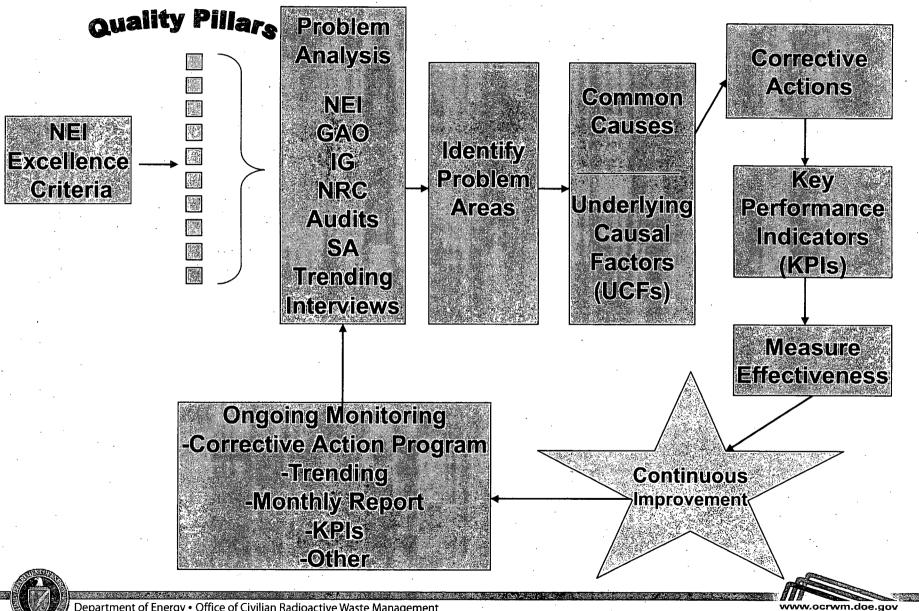
Source of Input to the Quality Improvement Plan



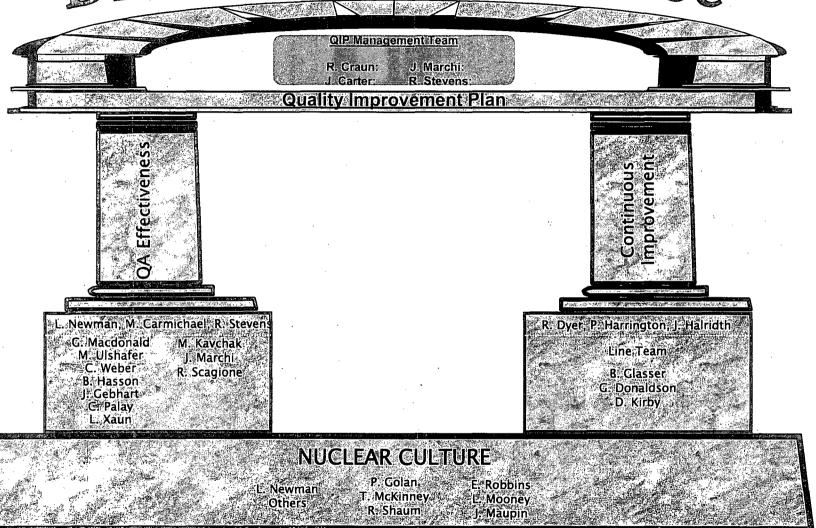




Continuous Improvement Strategy



Drivers of Excellence











U.S. Department of Energy Office of Civilian Radioactive Waste Management

Line Ownership of Quality – Science for the License Application

Presented to:

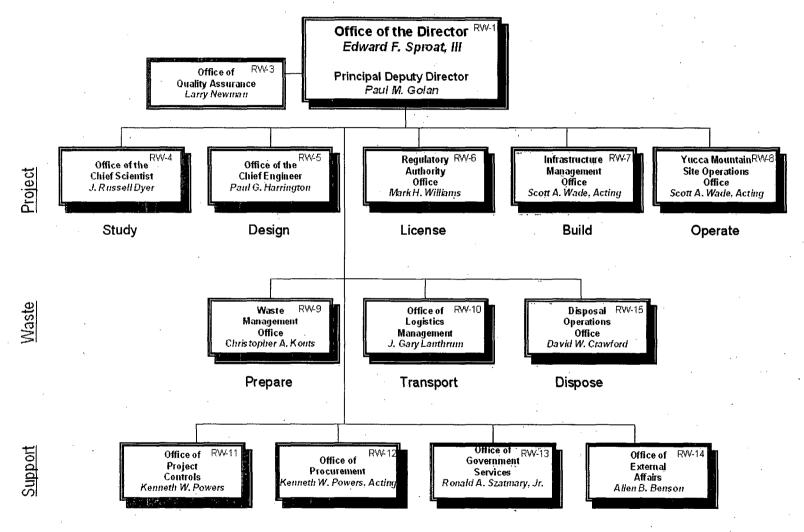
DOE/NRC Quality Assurance/Technical Exchange

Presented by:

J. Russell Dyer, Director
Office of the Chief Scientist
Office of Civilian Radioactive Waste Management
U.S. Department of Energy

June 26, 2007 Las Vegas, NV

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT



6/11/2007



Office of the Chief Scientist (OCS) ROLES AND RESPONSIBILITIES (Partial)

- Ensure technical and regulatory adequacy of postclosure safety assessment and performance confirmation results
- Defend technical and regulatory adequacy of performance assessment and performance confirmation results and criteria in licensing proceedings





Overview of Work

- Review and Acceptance of Work Plans
 - All Postclosure Technical Work Plans are Deliverables
- Review and Acceptance of Analysis and Model reports
 - All AMRs are Deliverables
- Corrective Action program
 - Participate in CAP Screen Team
 - DOE owned Condition Reports
 - Oversight of Contractor CRs
- Self Assessments
- Support and Participate in Audits and Surveillances
- External Review
- Review of LA Chapters
 - Technical Quality
 - Transparency
 - Traceability





Review and Acceptance of Deliverables – Deliverable Acceptance Criteria (from LP-7.5Q-OCRWM)

- Have all Condition Reports that could adversely impact the quality of the deliverable been closed?
- Does the deliverable comply with the criteria documented in the Multi-Year Plan?
- Does the deliverable address all appropriate source document requirements?
- Does the deliverable contain the appropriate level of detail?
- Has the contractor provided objective evidence that the contractor has verified that the deliverable conforms to applicable OCRWM requirements as stated in the appropriate procurement document and Deliverable Definition Sheet?





Review and Acceptance of Deliverables – Deliverable Acceptance Criteria (from LP-7.5Q-OCRWM)

(Continued)

- Access OQA and contractor audit and surveillance reports relating to the activities associated with the development and contents of the deliverable to determine if any problem areas were identified, and what, if any, adverse impact they may have on the acceptability of the deliverable
- Verify all CRs associated with the deliverable are closed, and have no impact on the acceptability of the deliverable





Audits and Surveillances

- Lead Lab Readiness Review 9/06
- Audits and Surveillances
 - OQA
 - ♦ Internal Audits FY07 3 complete, 3 in progress, 1 planned
 - Surveillances FY07 4 complete, 3 planned
 - BSC
 - Internal Audits FY 07 1 complete
 - Surveillances FY07 5 complete, 1 scheduled
 - SNL
 - Internal Audits FY07 1 complete, 2 planned
 - ♦ Surveillances FY07 11 complete, 6 in process, 4 planned





Review of LA Chapters Postclosure LA Project Team

LA Section	Section Title
Group #4	POSTCLOSURE ANALYSIS AND ACTIVITIES
GI-05.00	Site Characterization
SAR-02.00	Repository Safety After Permanent Closure
SAR-02.01	System Description and Demonstration of Multiple Barriers
SAR-02.02	Scenario Analysis and Event Probability
SAR-02.03	Model Abstraction
SAR-02.03.01	Climate and Infiltration
SAR-02.03.02	Unsaturated Zone Flow
SAR-02.03.03	Water Seeping into Drifts
SAR-02.03.04	Mechanical Degradation of the Engineered Barrier System
SAR-02.03.05	In-Drift Physical and Chemical Environment





Review of LA Chapters Postclosure LA Project Team (continued)

Group #4'	POSTCLOSURE ANALYSIS AND ACTIVITIES
SAR-02.03.06	Waste Package and Drip Shield Corrosion
SAR-02.03.07	Waste Form Degradation and Mobilization and Engineered Barrier System Flow and Transport
SAR-02.03.08	Radionuclide Transport in Unsaturated Zone
SAR-02.03.09	Saturated Zone Flow and Transport
SAR-02.03.10	Biosphere Transport and Exposure
SAR-02.03.11	Igneous Activity
SAR-02.04	Demonstration of Compliance with the Postclosure Public Health and Environmental Standards
SAR-04.00	Performance Confirmation Program





Corrective Action Program Open OCS Owned Level A CRs

Level A

- Potential Noncompliance with Qualification Requirements (USGS issues)
- 27 Actions spread across four organizations
 - DOE, BSC, SNL/LL, U.S. Geological Survey





Instilling Personal Accountability

- Federal staff performance standards emphasize quality
 - Performance standards include separate elements on
 - Promote Licensing Culture
 - Implementation of QA Program
 - Quality, accountability, and continuous improvement metrics incorporated into performance appraisal elements
- Federal staff review all deliverables and advise Director on appropriate action (accept, accept with conditions, reject)
- Federal staff sign off on LA section content





Summary

Accomplishments

- Emphasis on Corrective Action Program
- Emphasis on line ownership of technical quality, traceability, and transparency of products
- Established quality as a standard for performance
- Ongoing activities to ensure quality
 - Incorporating results of audits, surveillances and external reviews into final work products
 - Ongoing review/acceptance of LA supporting products
 - Ongoing review of LA as it is developed to ensure quality









U.S. Department of Energy Office of Civilian Radioactive Waste Management

Line Ownership of Quality – Engineering and Preclosure Safety Analysis for the License Application

Presented to

DOE/NRC Quality Assurance Technical Exchange

Presented by:

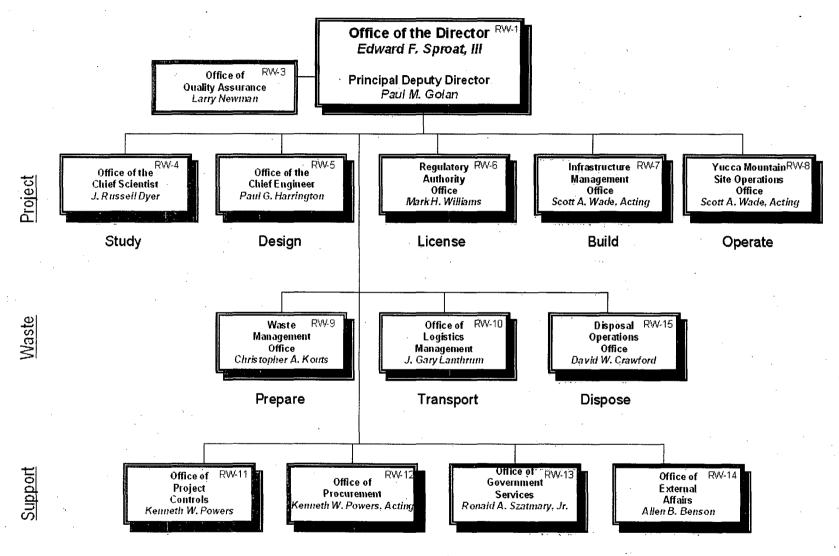
Kirk Lachman

Engineering Design Group Supervisor
Office of Civilian Radioactive Waste Management

U.S.:Department of Energy

June 26, 2007 Las Vegas, NV

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT



6/11/2007



www.ocrwm.doe.gov

Office of Chief Engineer (OCE) Roles and Responsibilities (partial)

- Ensure technical and regulatory adequacy of design and preclosure safety analysis
- Defend technical and regulatory adequacy of design and preclosure safety analysis in licensing proceedings





Overview of Work

- Review and Acceptance of Design and Preclosure Safety Analysis Products
 - Line ownership of technical quality, traceability, and transparency of products
- Responsible for development and maintenance of project-level requirements
- Corrective Action Program
 - Participate in CAP screen team
 - DOE owned Condition Reports
 - Oversight of Contractor CRs
- Self Assessments and Independent Assessments
- Support and Participate in Audits and Surveillances
- External Reviews
- Review of LA Chapters
 - Technical Quality
 - Transparency
 - Traceability





Review and Acceptance of Engineering Design and PCSA Products, LP-7.21Q-OCRWM

Acceptance Criteria Include:

- Have the requirements in 10 CFR Part 63 been met?
- Have the requirements in the CRWMS Requirements Document been met?
- Have the requirements in the MGR Requirements Document been met?
- Has the guidance in NUREG-1804 been incorporated?
- Have industrial codes and standards been identified appropriately, selected, and followed?
- Is the documentation provided fully traceable and transparent?
- Additional criteria can be added by Lead Reviewer, as appropriate





Audits and Surveillances

- Audits and Surveillances
 - OQA
 - Internal Audits FY07 1 complete, 1 ongoing, 2 scheduled
 - BSC
 - Internal Audits FY07 1 complete, 3 scheduled
- Engineering Readiness Review 6/06





Review of Surface Design Chapters

LA Section	Section Title	
Group #1	SURFACE DESIGN :	
SAR-01.00	Repository Safety Before Permanent Closure	
SAR-01.01	Site Description as it Pertains to Preclosure Safety Analysis	
SAR-01.02	Surface Facility Structures, Systems, and Components and Operational Process Activities	
SAR-01.02.01	Surface Operations Overview	
SAR-01.02.02	General Surface Design Considerations	
SAR-01.02.03	Initial Handling Facility	
SAR-01.02.04	Canister Receipt and Closure Facility	
SAR-01.02.05	Wet Handling Facility	
SAR-01.02.06	Receipt Facility	
SAR-01.02.07	Aging Facility	
SAR-01.02.08	Balance of Plant Facilities	
SAR-01.04	Infrastructure Structures, Systems, Components, Equipment, and Operational Process Activities	
SAR-01.04.01	Electric Power	
SAR-01.04.02	Controls and Monitoring	
SAR-01.04.03	Fire Protection	
SAR-01.04.04	Plant Services	
SAR-01.04.05	Waste Management	





Review of Subsurface Design Chapters

LA Section	Section Title
Group #2	SUBSURFACE DESIGN AND WASTE PACKAGE
SAR-01.03	Subsurface Structures, Systems, and Components and Operational Activities
SAR-01.03.01	Subsurface Operations Overview
SAR-01.03.02	General Subsurface Design Considerations
SAR-01.03.03	Non Emplacement Areas of the Subsurface Facility
SAR-01.03.04	Emplacement Areas of the Subsurface Facility
SAR-01.03.05	Subsurface Facility Ventilation
SAR-01.03.06	Subsurface Facility Closure
SAR-01.05	Waste Form and Waste Package
SAR-01.05.01	Characteristics of Spent Nuclear Fuel and High Level Radioactive Waste
SAR-01.05.02	Waste Packages and Their Components





Review of PCSA and Criticality Chapters

LA Section	Section Title
Group #3	PRECEOSURE SAFETY ANALYSIS AND CRITICALITY
SAR-01.06	Identification of Hazards and Initiating Events
SAR-01.07	Event Sequences
SAR-01.08	Consequence Analyses
SAR-01.09	Structures, Systems, and Components Important to Safety; Safety Controls; and Measures to Ensure Availability of the Safety Systems
SAR-01.14	Nuclear Criticality Safety





Corrective Action Program Open OCE Owned Level A CRs

The Office of the Chief Engineer Owns 1 Level A CR

- CR 6278, Yucca Mountain Site Characterization Project Requirements Document (YMP-RD), is not current.
 - All DOE requirements documents have been revised and are current and correct
 - There were 18 actions
 - 11 Actions are closed
 - 7 Actions remain open
 - » Projected completion date End of FY 2007





Corrective Action Program Open Contractor Owned Level A CRs

The Office of the Chief Engineer has Oversight for 1 BSC-owned Level A CR

- CR 10381, Inadequate corrective actions to prevent recurrence for conditions related to requirements management
 - Initiated April 6, 2007
 - Root Cause Analysis is well underway
 - Investigation is complete
 - Results are being formulated





Instilling Personal Accountability

- Federal staff Performance Standards emphasize quality
 - Performance standards include separate elements on
 - Promote Licensing Culture
 - Implementation of QA Program
 - Quality, accountability, and continuous improvement metrics incorporated into performance appraisal elements
- Federal staff review all deliverables and advise Director on appropriate action (accept, accept with conditions, reject)
- Federal staff sign off on LA section content





Summary

Accomplishments

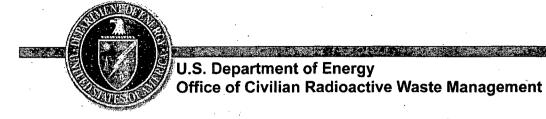
- Emphasis on Corrective Action Program
- Emphasis on line ownership of technical quality, traceability, and transparency of products
- Established quality as a standard for performance

Ongoing Activities

- Incorporating results of audits, surveillances, CRs, and external reviews into final work packages
- Ongoing review/acceptance of LA supporting products
- Ongoing review of LA as it is developed to ensure quality









Corrective Action Program Performance Improvement

Presented to:

DOE/NRC Quality Assurance Technical Exchange

Presented by:

Scott Wade, Acting Director
Yucca Mountain Site Operations Office
Office of Civilian Radioactive Waste Management

U.S. Department of Energy 2014

June 26, 2007 Las Vegas, NV

CAP Performance Improvement: Introduction

- Performance improvements previously discussed:
 - Integrated OCRWM Improvement Plan
 - Recent Route Cause Analyses (RCAs)
 - Quality Improvement Plan
 - Integrated Audit Program
 - Line Ownership of Quality
- Next: CAP Performance Improvement
 - Root Cause Assessment 9774
 - Accomplishments to Date
 - Future Plans





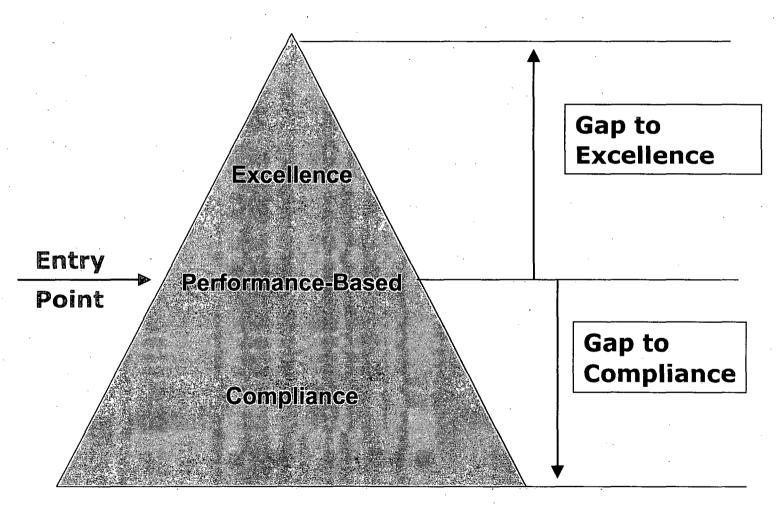
RCA 9774: Background

- Internal & External Assessments in 2005, 2006 found:
 - CAP was not fully effective
 - CAP was not being effectively implemented
- OQA (December 2006) concluded:
 - CAP was not being effectively implemented
- Level "A" CR 9774 (1/4/2007) initiated a Root Cause Analysis
- OCRWM Director personally reviewed and approved RCA 9774 and corrective actions





Continuous Improvement Strategy







Root Cause 9774 Problem Statement

Management failed to recognize the significance of repeated external and internal reviews that identified the CAP as ineffective and did not take aggressive actions to correct the identified problems and ensure effectiveness of the CAP





Root Cause of CAP Ineffectiveness

OCRWM senior management failed to consistently exercise leadership by establishing expectations and standards for CAP performance and enforcing them as a core business activity for all Project personnel





Contributing Causes

- Lack of effective barriers (e.g., management expectations, MRC oversight, QA oversight)
- Management tolerated significant unresolved CAP issues
- Ineffective self-assessments
- Lack of Line ownership and use of CAP
- Authority and accountability for CAP effectiveness not clearly defined, not effectively enforced





RCA 9774: 5 Categories of Corrective Actions

- Create Vision (Based on Industry)
- Set Expectations (Individual and Organizational)
- Communications (Buy in from all OCRWM Personnel)
- Mentoring (Ensure Management Behaviors)
- Measuring (Measure Effectiveness)





INPO Guidelines for CAP 'Excellence'

Ownership

- Organization "owns" CAP
- CAP is "core business", used as management tool

Focus

- One system for identification, tracking and trending of problems
- OCRWM currently has multiple systems

Management Sponsorship

 Management has "questioning attitude"; accepts issues and determines cause and solution

Timeliness

- CRs are initiated quickly
- Significant CR actions are identified and implemented promptly

Learning

- Actively seek opportunities to improve behaviors and processes
- Discourage defensive behavior



Management Behavioral Factors

- Problem Identification (e.g., the writing of CRs)
- Problem Categorization (e.g., assigning "levels" to CRs)
- Causal Investigation (e.g., finding the causes, Extent of Condition, and Extent of Cause of the problems identified in CRs)
- Corrective Action (e.g., designating and implementing actions to address effects, causes, and extent)
- Closeout (e.g., determining the completeness, timeliness, and effectiveness of corrective actions)
- Trending (e.g., determining the numerical performance of CAP in the above areas)
- Self-assessment (e.g., CAP participants finding issues in the above areas and using CAP to correct them)





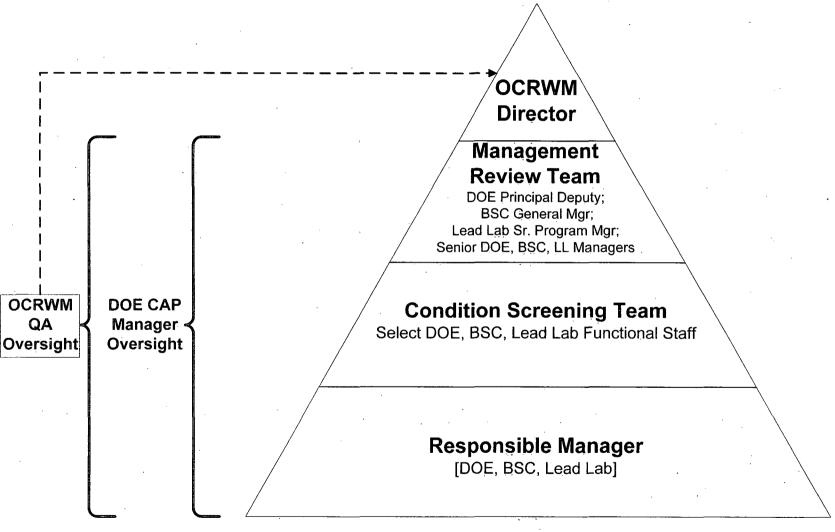
Actions in Response to CAP Issues

- Restructured Management Review Committee (7/2006)
- Issued CAP Performance Improvement Plan (10/2006)
- Hand-picked RCA Team formed (1/2007)
- QA temporarily placed in the CR closure process
- QA began revising Root and Apparent Cause Analysis programs
- RCA Report Issued (3/2007)
- Condition Screen Team reconstituted; responsibility reassigned to DOE manager (3/2007)





Progressive Levels of CAP Oversight and Management







Focus on Quality of CRs

CST actions for screening and closure prioritize responses and traceability

Condition Reports have been returned for inadequate

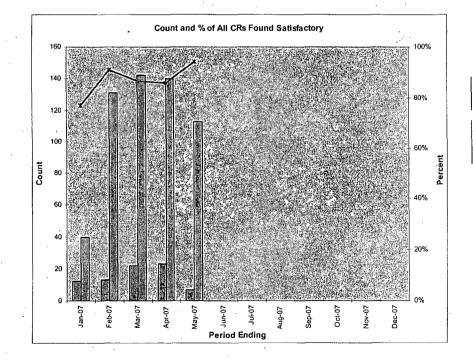
extent of condition, causal analysis, and documentation

Rate of return is decreasing

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		May-07	

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Focus on Quality of CRs

(Continued)

MRC monitors overall performance of CAP:

- CAP Performance Metrics
 - Focus on responsible manager accountability for managing CRs
- Review and approve Level A, select Level B CRs
- Review Root and Apparent Cause Analyses
- Review of trends
- Monitor Effectiveness Reviews of Corrective Actions



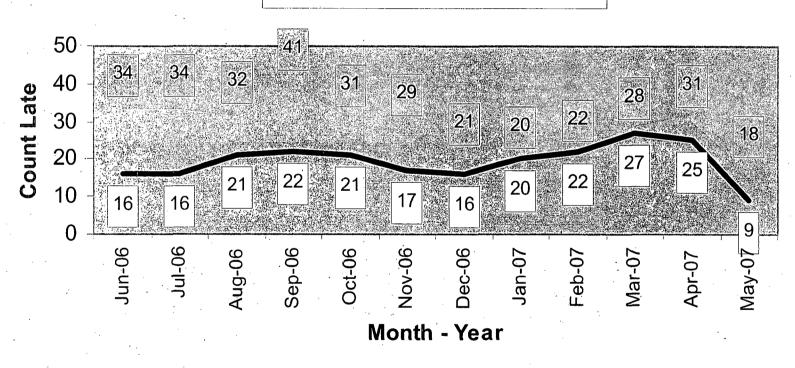


Late Plans and Completions - All Levels

This graphic provides data on the number of late plans and late action completions for Level A through Level D Condition Reports by month for DOE as an organization.

Late Plans and Comps All Levels (A-D) - DOE





The goal is to have 0 late plans and 0 late action completions.



Trending Program Improvements

- Trend Working Group established to revise trend program; Patterned after successful nuclear utility trend programs
- New OCRWM trend procedure issued April 2007
- New trend codes instituted and retrofitted to CRs
- OCRWM Trend Report issued June 14, 2007





Continuing Actions

- Further restructuring of MRC and CST to foster accountability
- Management supports and celebrates CR identification
 - Managers tasked to thank originators
 - Recognition given for well-written CRs
- Senior management meeting (May 2007)
 focused on value of CAP and appropriate CAP
 'Management Behaviors'
- Improvements in CAP procedures to promote quality, timeliness, accountability for action





CAP: Summary

- CAP was not being used as performance improvement tool
- CAP improvement is sponsored by OCRWM Director & Principal Deputy Director
- Actions from RCA 9774 will drive overall CAP corrective actions
- An effective CAP is critical to Project success



