AFCEE’s ERP-O: A Journey from System Optimization to Program Optimization

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Outline

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Optimization Evolution

Evolution (1997 – 2007)

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Foundation for ERP-O

Better Business Practices

- GSR 2009
- RPRM - 2008
- PBM - 2004
- Exit Strategy - 2003
- Streamlined Investigation - 2003
- Remedial Process Optimization - 1999
- Long-Term Monitoring Optimization - 1997

Value Engineering

Integrity - Service - Excellence
What we are doing now
Environmental Restoration Program Optimization (ERP-O) is a comprehensive and systematic review of an installation’s past, current and planned cleanup activities whose goal is to ensure protection of human health and the environment over the entire restoration life-cycle at minimal risk and optimal costs.

ERP-O provides all the needed tools to manage risk and complies with AFSO21.
ERP-O Flow Chart

Environmental Restoration Program Optimization

Investigation Process Optimization
- Preliminary Site Assessment/Site Investigation (PA/SI)
- Remedial Investigation/Feasibility Study (RI/FS)

Remedial Process Optimization
- Remedy Selection, Proposed Plan, and Record of Decision (ROD)
- Remedy in Place
- Response Complete NFRA NFAP
- Cleanup Confirmed Site Closure

Technical Assistance Visits
- Remedial Design (RD)/Remedial Action Construction (RA-C)
- Remedial Action Operations (RA-O)
- Long-Term Monitoring
- Post-Closure Care (Site Closed)
An Iterative/Systematic Planning Approach for 
**Evaluating Remedial Study Programs** 
with the Goal of Improving Overall:

- Study Program Effectiveness
- Time and Cost to Achieve Site RIP Milestone
- Timely Feedback to Decision Makers

**Definition:**

A component of the overall AFCEE ERP-O
An Iterative/Systematic Planning Approach for Evaluating Existing/Proposed Remediation Processes with the Goal of Improving Overall:

- Control Effectiveness
- Site Cleanup Time and Costs
- Timely Feedback to Decision Makers

A component of the overall AFCEE ERP-O
An Iterative/Systematic Planning Approach for Evaluating Existing/Proposed Remediation Processes with the Goal of Improving Overall:

- Control Effectiveness
- Site Cleanup Time and Costs
- Timely Feedback to Decision Makers

A component of the overall AFCEE ERP-O
A Systematic Analytical Approach for resolution of regulatory, technical, contractual, programmatic issues

- Conceptual Site Models and Exit Strategies
- Decision Documents
- Contractual Strategies
- Decision Logic
- Background Studies

A component of the overall AFCEE ERP-O
Where we have been

ERP-O Visits Completed

Integrity - Service - Excellence
Where are we in execution of ERP-O?
Where we are now

- ERP-Os Completed at:
  - 45 Air Force Bases
    - Primary Bases identified with sites at risk for RIP 2012
    - 90% of Total CTC
  - 4 Joint Bases
- ERP-O impact has been realized at many bases
  - Sites closed
  - Eliminated risk
Common Deficiencies

At the Installation Level

- Current, concise and representative CSMs not available
- Exit Strategies not defined nor documented
- Performance Metrics not adequately selected, defined or documented
- Decision Logic not well defined or documented
Where we are now

➢ Working to achieve ERP-O ROI
  ❆ Implementation Challenges
    □ It takes time (12 to 18 months)
    □ It takes resolve (consistent committed effort by all stakeholders)
    □ It takes teamwork (coordinated efforts with PMO-PM and RPMs)
    □ It’s hard (technically, programmatically, contractually, regulatory)
  ❆ Actions needed by ERP-O
    ❆ Base review, concurrence, and follow-through for implementation for Phase II and Phase III taskings
    ❆ Getting PMO PM involved to execute the action(s)
    ❆ Regulatory interface
Did it Work as Planned

- ERP-O recommendations were not being implemented years after the visit
- Needed a process to transfer responsibility of execution to the base
- A Management review was incorporated into ERP-O
  - Recommendations are reviewed by base and management
  - Approval from regulatory agency (if needed) pursued by team with base present
  - Request for funding documents are prepared for approved recommendations
- Now it is working
Original PBM Elements

Expert Team

- Defined Problem
- Representative CSM
- Current & Future Land Use
- Established ARAR Analysis Strategy
- Remediation Decision Logic
- Exit Strategy
- Performance Based Contracting
- Process Optimization
- Defined Problem

I n t e g r i t y - S e r v i c e - E x c e l l e n c e
Current ERP-O Elements

REMEDIAL PROCESS OPTIMIZATION
Peer Review

Process Optimization

Asset Management, Defined Problem, Reuse Objectives

Representative CSM

Restoration Performance Risk Management

Established ARAR Analysis Strategy

RIP/SC EXIT STRATEGY

R-PMO/ TDV Expert Team

VALIDATION & PERFORMANCE BASED CONTRACTING

Contracting or Privatization Strategy

Restoration Exit Strategy

Restoration Decision Logic
ERP-O Phases

High-Level Overview

1. Program Planning
   - 1.1 Plan future projects at biannual meeting
   - 1.2 Use R2TM in validation process

2. Pre-Visit (Phase I)
   - 2.1 Pre-Visit Planning
   - 2.2 Pre-Visit

3. Visit (Phase I)
   - 3.1 Plan ERP-O visit
   - 3.2 Complete ERP-O Visit

4. Detailed Assessment (Phase II)
   - 4.1 Defined as ERP-O project beyond the scope of the site visit team (See 3.2.7)
   - 4.2 Form recommendations for phase II actions (See R2TM 4.2.4)
   - 4.3 Perform phase II actions

5. Implementation of Recommendations (Phase III)
   - 5.1 Implemented by Base and Contractors
   - 5.2 Oversight and Quality Assurance

6. R2TM (Phase IV)
   - 6.1 Produced from ERP-O Visit products
   - 6.2 Coordinate with R-PMO and TD annually

7. Communications
   - 7.1 Participate in dry-run out-brief and review report
   - 7.2 Write article draft
   - 7.3 Editor approves article and article goes to publication

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**ERP-O Tools**

- EDITT
- R2TM
- UAT
- PTT
- SRT
Environmental Decision Information Tracking Tool (EDITT)

System Inventory
- Decision Document Inventory
  - Site Inventory
    - R2TM
      - LUC/IC Inventory
        - ERP-O Tracker
          - Emerging Issues
            - LUC/IC E-mail Notification

PTT
- Compliance
  - Phase
- Restoration
  - Phase
- Support Documents
- Tech-Visits
  - Peer Review
    - Five Year Review
      - Triad
        - Phase 1
        - Phase 2
        - Phase 4

AF-wide since 2006 (Formerly RIPS)
Summer 2008
February 2009
March 2009
May 2009

TBD
381 Remedial Systems in Operation*

*Based on FY08 EDITT System Inventory as of 15 March 2010
AF Remediation System

Annual Costs by Technology

381 Remedial Systems in Operation*

Energy Intensive (66% annual costs)
- Soil Vapor Extraction, $5.1M / 11%
- LNAPL Recovery, $1.5M / 3%
- Pump and Treat, $23.9M / 52%

Low Energy / Passive (28% annual costs)
- Enhanced Bioremediation, $7.9M / 17%
- Monitored Natural Attenuation, $4.1M / 9%
- Wall/Barrier, $852K / 3%
- Other, $2.8M / 6%

*Based on FY08 EDITT System Inventory as of 15 March 2010

Integrity - Service - Excellence
Average Life-Cycle Costs by Technology

- **Pump and Treat**: $8.39 M, 30 yrs
- **Soil Vapor Extraction (SVE)**: $2.04 M, 13 yrs
- **LNAPL Recovery**: $2.60 M, 11 yrs
- **Enhanced Bioremediation**: $1.45 M, 11 yrs
- **Monitored Natural Attenuation (MNA)**: $1.51 M, 27 yrs
- **Wall/Barrier**: $2.8 M, 30 yrs
- **Other**: $1.01 M, 15 yrs

Energy Intensive Inventory – 38% LCC - 73%

Low Energy / Passive Inventory – 48% LCC – 24%

Average Lifetime O&M Costs $1.25B

*Based on FY08 EDITT System Inventory as of 15 March 2010*
Partnerships

- ITRC
- USACE
- USGS
Partnerships

- Interstate Technology Regulatory Council
  - Participates in ERP-O visits
  - Co-authored the Exit Strategy Factsheet
  - Provides support during regulatory interface
  - Provides free environmental training through the internet and class room
- Developed RPO, PBEM Technical Regulatory guidance
- Developing Remediation Risk Management Tech-Reg guidance
- Developing Green and Sustainable Tech-Reg guidance
Summary

- How we got here is a long and tortuous journey
- Over 10 years
- It is essential that we promote wise remediation where we truly manage and when possible eliminate risk
- But we have to stop transferring the risk to others
  - Digging material to send to a landfill (transfer)
  - Removing ounces of pollutants from GW while dumping tons in the atmosphere (transfer)
Conclusion

IMPLEMENT SMART REMEDIATION

QUESTIONS??