U.S. Navy
Unexploded Ordnance Cleanup

Pacific Division Naval Facilities Engineering Command

Overview

- Background
- Definitions
- DoD/Regulatory Roles
- UXO Technologies
- UXO Working Group
- Navy UXO Quality Assessment Program
- Summary
- Points of Contact

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Unexploded Ordnance (UXO)

- 15 Million Acres/ 1,500 Sites in U.S.
- $100 – $400 Billion to Address U.S. Clearance Needs

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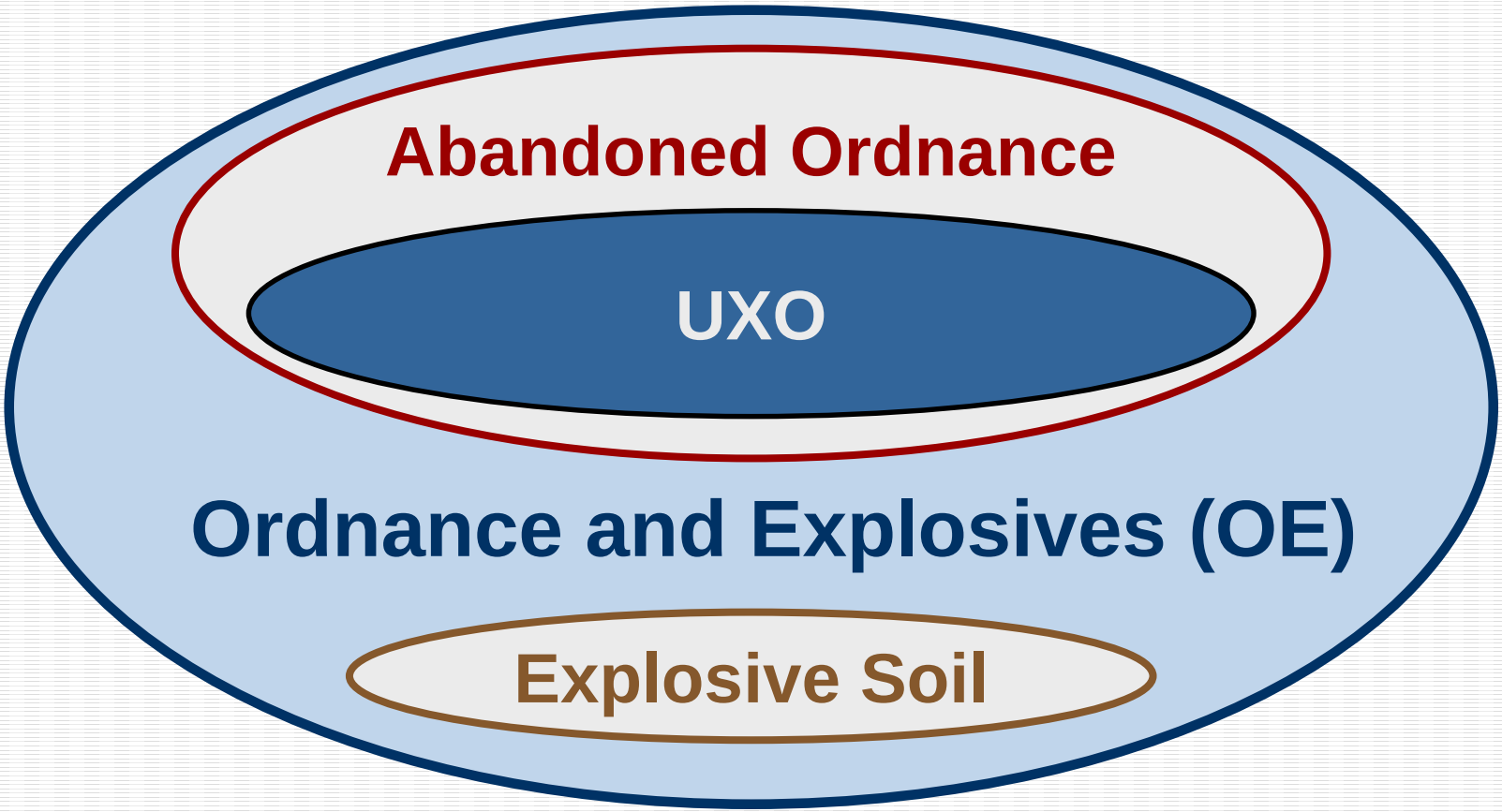
Before We Begin…

- UXO is a subset of OE as shown here:



Range Definition Chart

DoD Range Definition	**Active/Inactive**	**CTT**
Governing Regulations	RCRA	CERCLA
Funding	O&M	ER, N, BRAC...
Environmental Oversight	Compliance	Cleanup

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  - Explosive Safety Oversight
  - Current Issues
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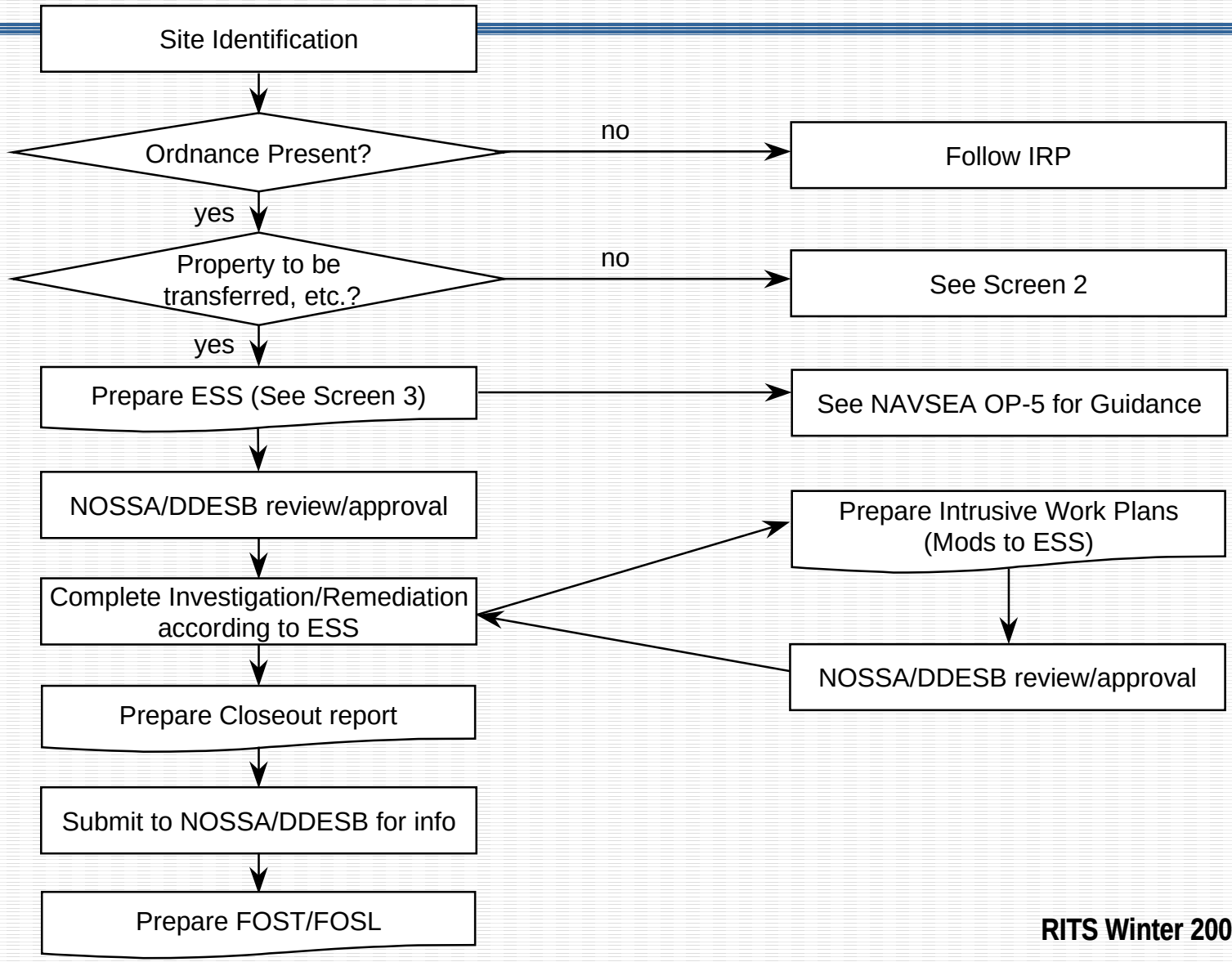
Explosive Safety Oversight

- **NOSSA**
  - Explosive Safety Submission: For transferring/leasing property
    - See NAVSEA OP 5 for requirements
  - Should also submit work plans for intrusive work for investigations required for these properties to NOSSA
  - Site Approval: For construction of facilities handling OE, go to NOSSA
    - See NAVSEA OP 5 and NAVFACINST 11010.44 for requirements

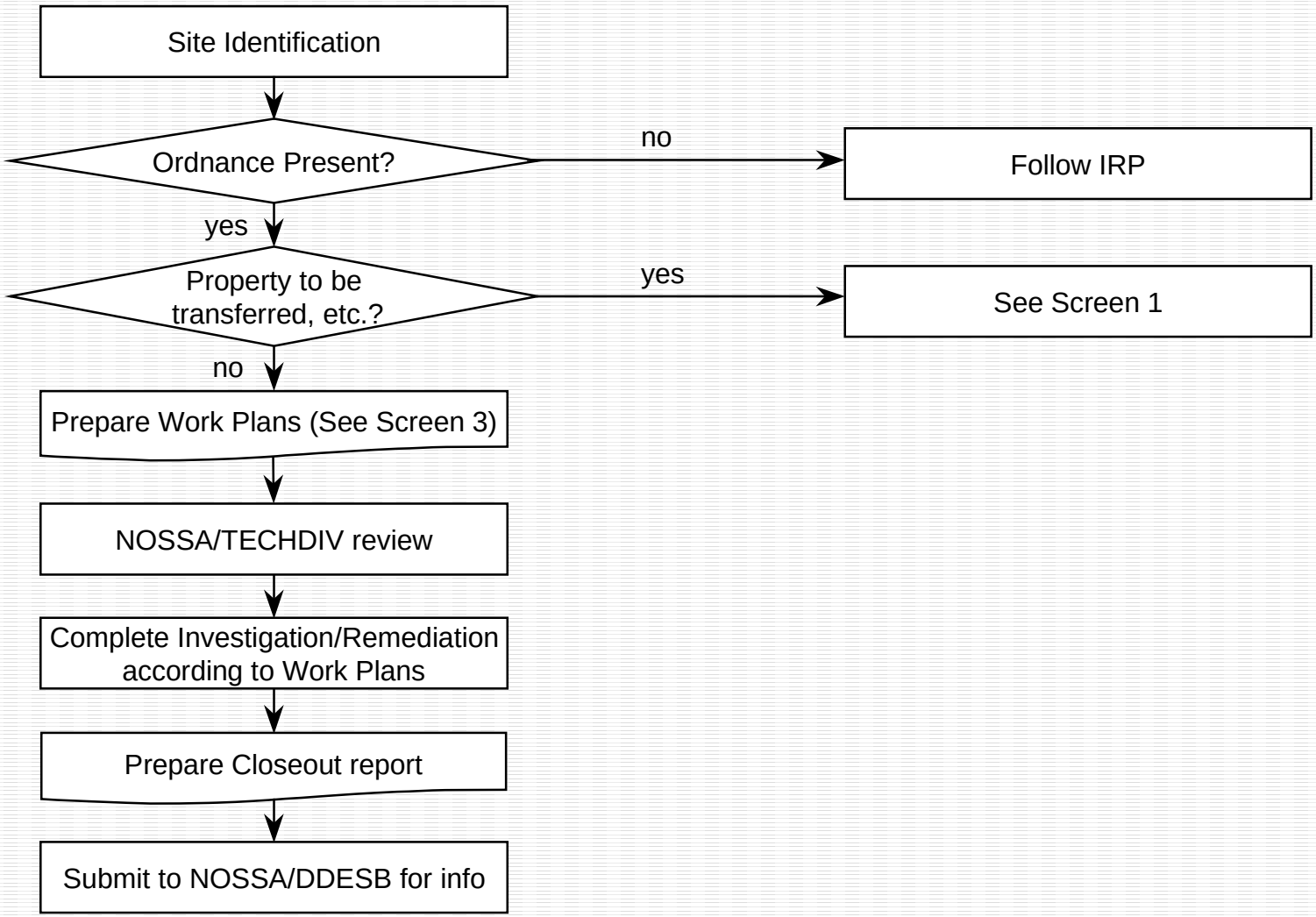
Explosive Safety Oversight

- **DDESB**
  - DoD Directive 6055.9 states in Section 5.4.12 that the Secretaries of Military Departments shall: "Submit to the DDESB plans for the removal of unexploded ordnance or explosives when land known or suspected to contain such items is considered for the lease, transfer outside of the Department of Defense, or disposal."

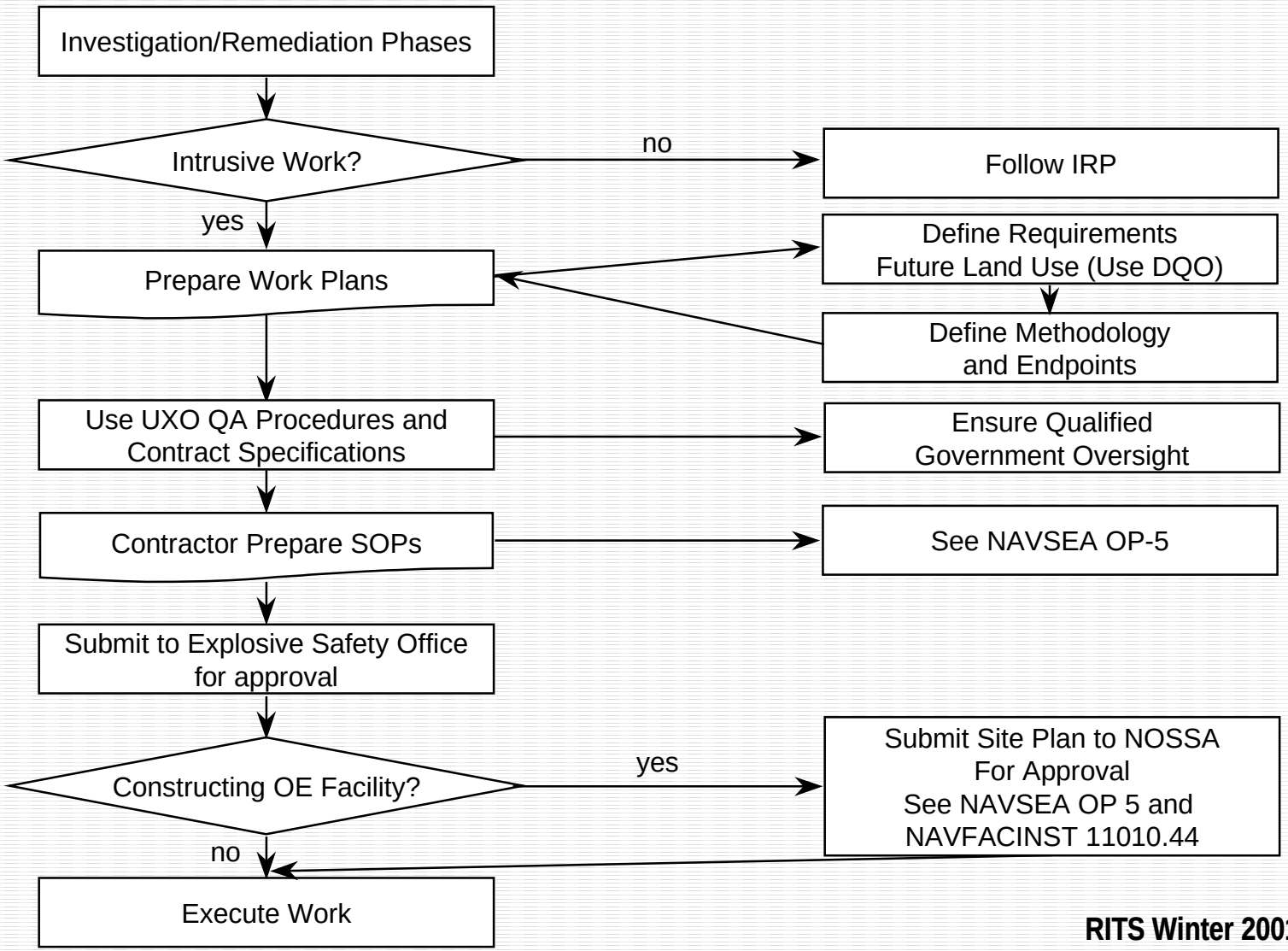
Site Approval/Review Process Screen 1



Site Approval/Review Process Screen 2:
Property to stay under control of Navy



Site Approval/Review Process Screen 3:
Intrusive/OE Site Work



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  - Detection Methods
    - Description
    - Site Examples
  - Removal Technologies
    - Description
    - Site Examples
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UXO Projects

- Kaho'olawe Island, HI
- Mare Island Naval Shipyard, CA
- Pearl Harbor Channel, HI
- Naval Air Facility, Adak, AK

Detection Examples

- Naval Air Station, New Orleans, LA
- Ikego Pond, Yukusuka, Japan
- Camp Hansen & Schwab, Okinawa
- Coral Sea Coral Pit, HI

Removal Examples

Kaho'olawe Island

Kaho'olawe Island

Kaho'olawe Island

Kaho'olawe Island

Kaho'olawe Island

Kaho’olawe Island Ordnance Display

Kaho'olawe Island

Electromagnetic Detector for Rough Terrain

Kaho'olawe Island

Step 1: GPS Survey

Step 3: Area Preparation

Step 2: Area Assessment

Step 4: Surface Clearance

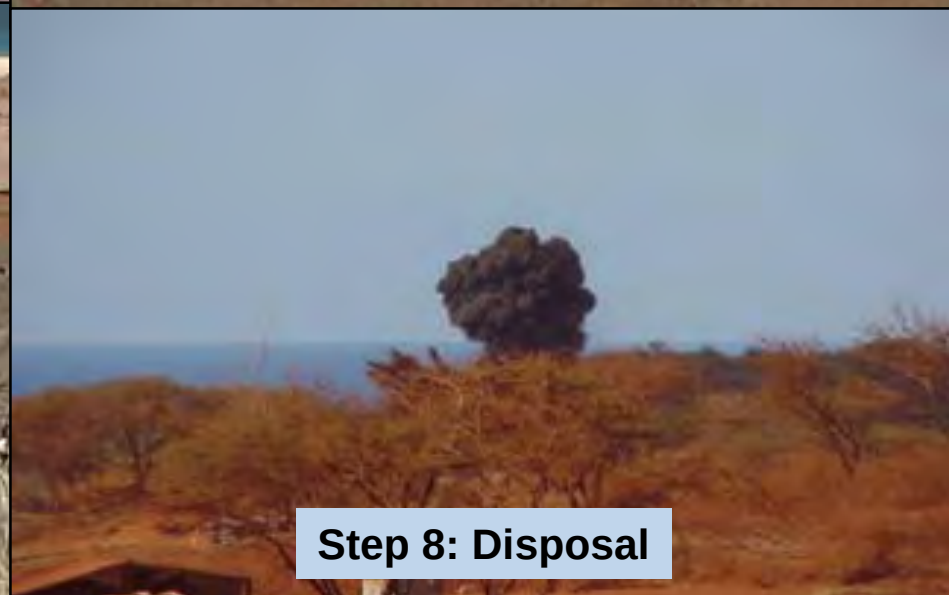
Electromagnetic Detector

Kaho'olawe Island

Step 5: Subsurface Detection

Step 7: Access & Identification

Step 6: Excavation



Step 8: Disposal

Kaho'olawe Island

Bip of a 500-Lb Bomb near the Base Camp

Mare Island Naval Shipyard

- Investigations and Response Action for Sites Containing UXO
- 230 Acres Underwater
- 20 Acres Shoreside

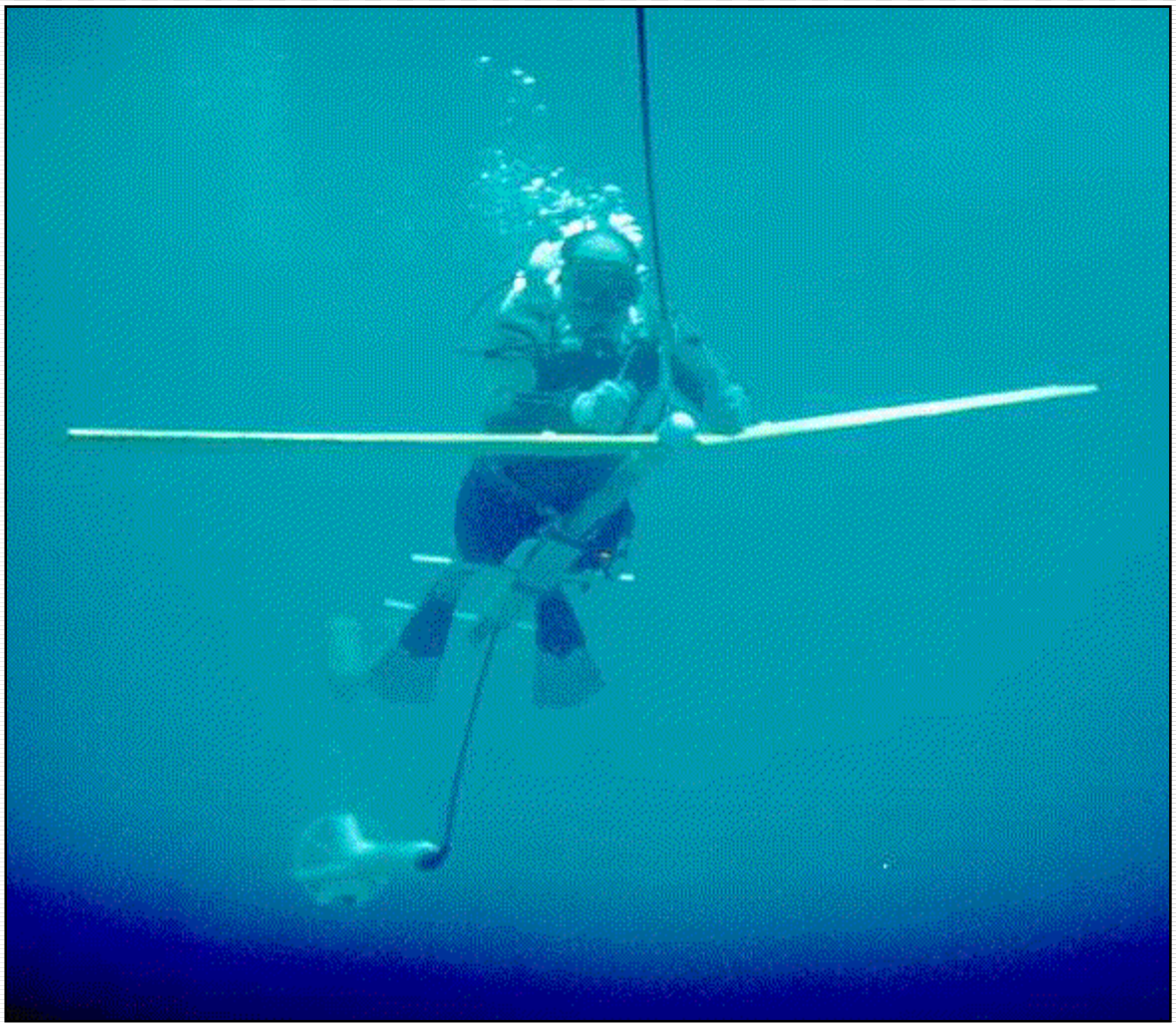
Mare Island Naval Shipyard

Mare Island Naval Shipyard

Pearl Harbor Channel

Sewer Outfall Extension, Ft. Kamehameha, Pearl Harbor, HI

Pearl Harbor Channel



Pearl Harbor Channel

Six-Inch Shell

Pearl Harbor Channel

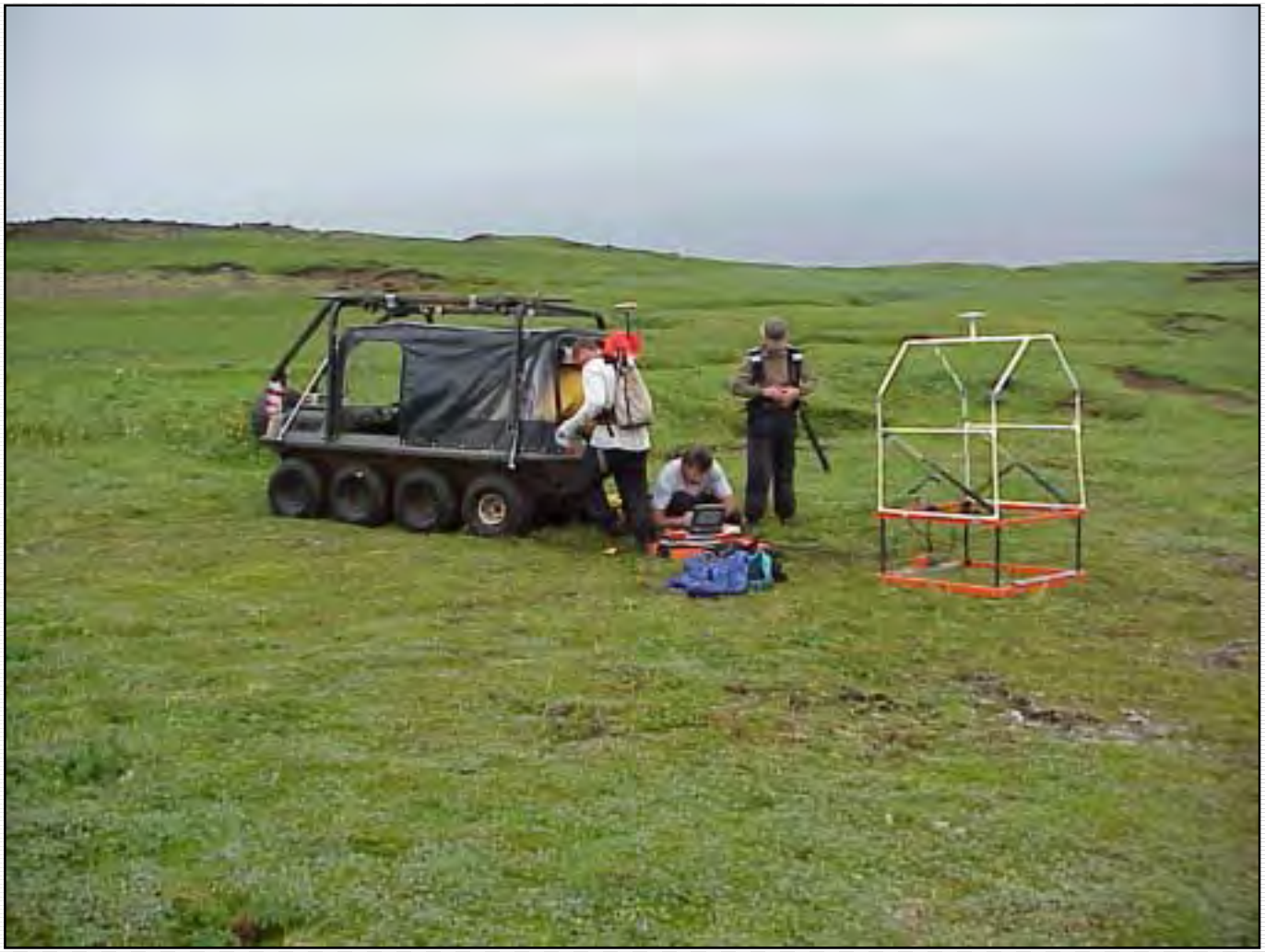
Shells removed from Channel

NAF Adak

NAF Adak


DANGER
NO DIGGING
WARNING!
HAZARDS FROM UNEXPLODED ORDNANCE EXIST IN THIS AREA.
DIGGING IS STRICTLY PROHIBITED.
OUTDOOR SAFETY AND HUNTING PERMIT (BLUE CARD) REQUIRED.
IF YOU FIND SUSPECTED UNEXPLODED ORDNANCE, DO NOT DISTURB.
CALL 555 AND REPORT IMMEDIATELY.
STAY ON TRAILS. PROCEED AT YOUR OWN RISK.

NAF Adak



NAF Adak

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NAS New Orleans

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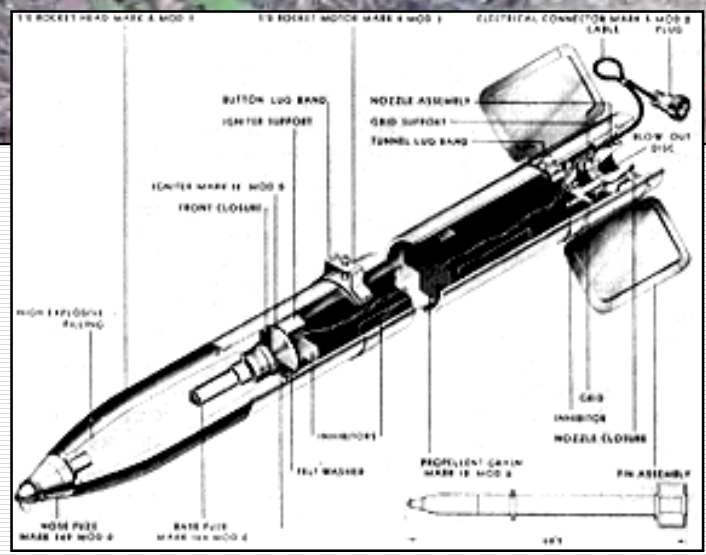
NAS New Orleans

Coral Sea Coral Pit, HI

Coral Sea Coral Pit, HI



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UXO Working Group

- Established Spring 2000
- Quarterly Meetings
- Participants
  - All EFDs/EFAs
  - NAVFAC
  - CNO
  - NFESC
  - EODTECHDIV
  - CECOS

Navy UXO Response Contract (NURC)

- Investigate for UXO
- Identify UXO
- Remove/Detonate UXO
- Address Chemical Contamination
- $50M Capacity
- Cost Plus Award Fee
- 4 Option Years
- Awarded July 1999
- Worldwide

UXO Working Group Goals

- Develop NAVFAC-Wide UXO Guidance
- Produce a QA Guide
- Design and Implement UXO Training
- Standardize UXO Contract Language
- Promote the use of Innovative Technologies
- Enhance Navy's Capabilities in UXO Field

UXO Working Group

- Detection and Threshold Levels
  - EODTECH DIV Presentation
  - Development Technologies
  - System Deployment
- Effects of Underwater UXO and BIPs
  - NFESC Lead
- Parametric Risk Assessments
  - EFA WEST
  - Mare Island Naval Shipyard

UXO Working Group

- Training
  - Modularize
  - Include Safety Awareness
  - Incorporate Existing Courses
- Standardizing Contracts
  - Guide Specification for Construction Contracts when UXO Suspected
  - Detailed Specifications for Detailed UXO Investigations and Cleanups

UXO Working Group

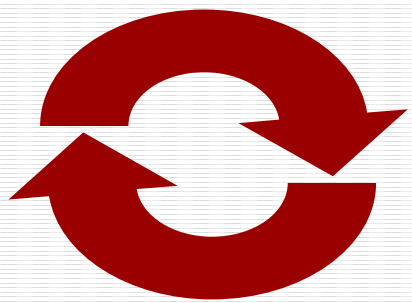
- Draft Quality Assurance Program Plan Issued
  - Awaiting Comments
- Site Approval and Property Transfer Review
  - Construction

UXO Working Group Web Page

- https://pacinfo.efdpac.navfac.navy.mil/uxo
  - Charter
  - Meeting Minutes
  - DoD References
  - Navy References
  - UXO Organization

Overview

- Background
- Definitions
- DoD Regulatory Policies
- UXO Technologies
- UXO Working Group
- Navy UXO Quality Assessment Program
  - Overview of the QA Approach
  - UXO Quality Systems Drivers
  - Basis for the UXO QA System and its Relationship to CERCLA
  - UXO QA Components and the Implementation Cycle
  - Plans for the Future
- Summary
- Points of Contact



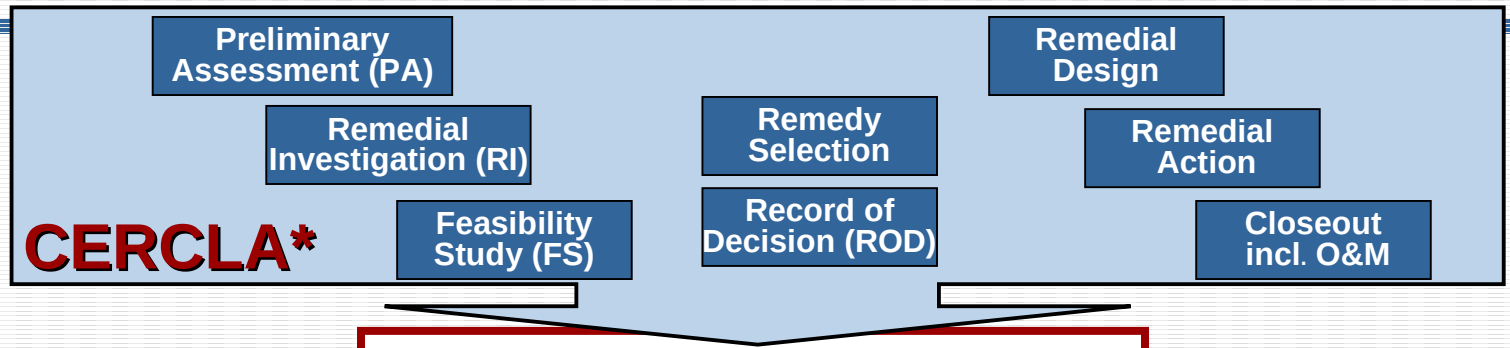
Quality System Drivers

- Keep explosives safety first
- Capture quantifiable data to:
  - Qualify plans & processes for execution
  - Measure cleanup contractor performance & contract specification compliance
  - Support post clearance certification for use
  - Minimize risk & liability after site turnover
  - Support public/stakeholder confidence by providing measurable evidence of cleanup
  - Identify lessons learned
- Data: Repeatable, reusable and verifiable

Today Overview

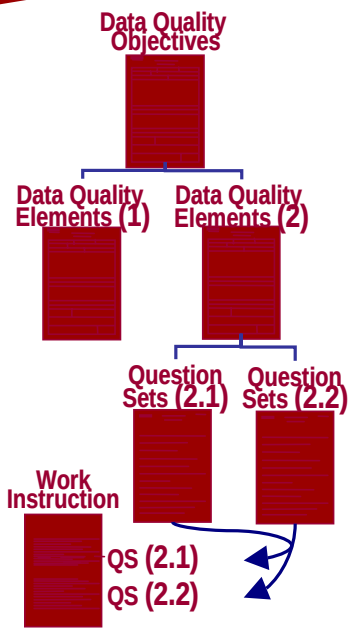
- UXO QA system development is occurring in an evolutionary environment
- QA system currently addresses:
  - PA & RI: first two phases of CERCLA
  - Portions of later CERCLA Phases
- Validation testing: ongoing
- Anticipate addressing all facets of UXO clearance, structured to parallel CERCLA

Program Relationship to CERCLA



Quality Assessment Process

- DQOs Specify DQEs with Associated Measures
- DQEs Relate to Question Sets (QS)
- WI are Compiled to Check & Verify Measures



Data Quality Objectives (DQO)

Data Quality Elements (DQE)

Question Sets (QS)

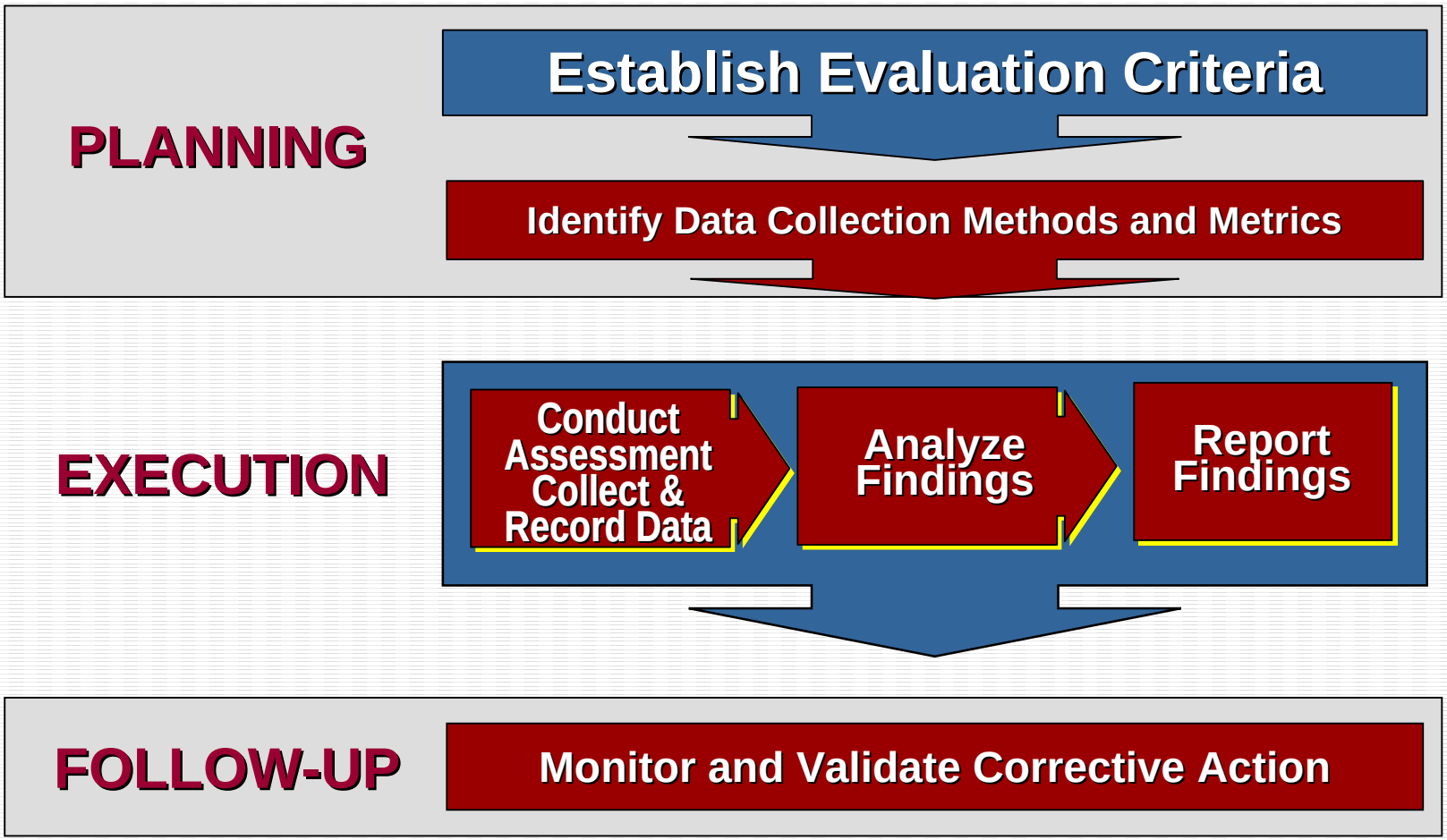
Work Instruction (WI)

*Comprehensive Environmental Response, Compensation, and Liability Act

Aspects of Program

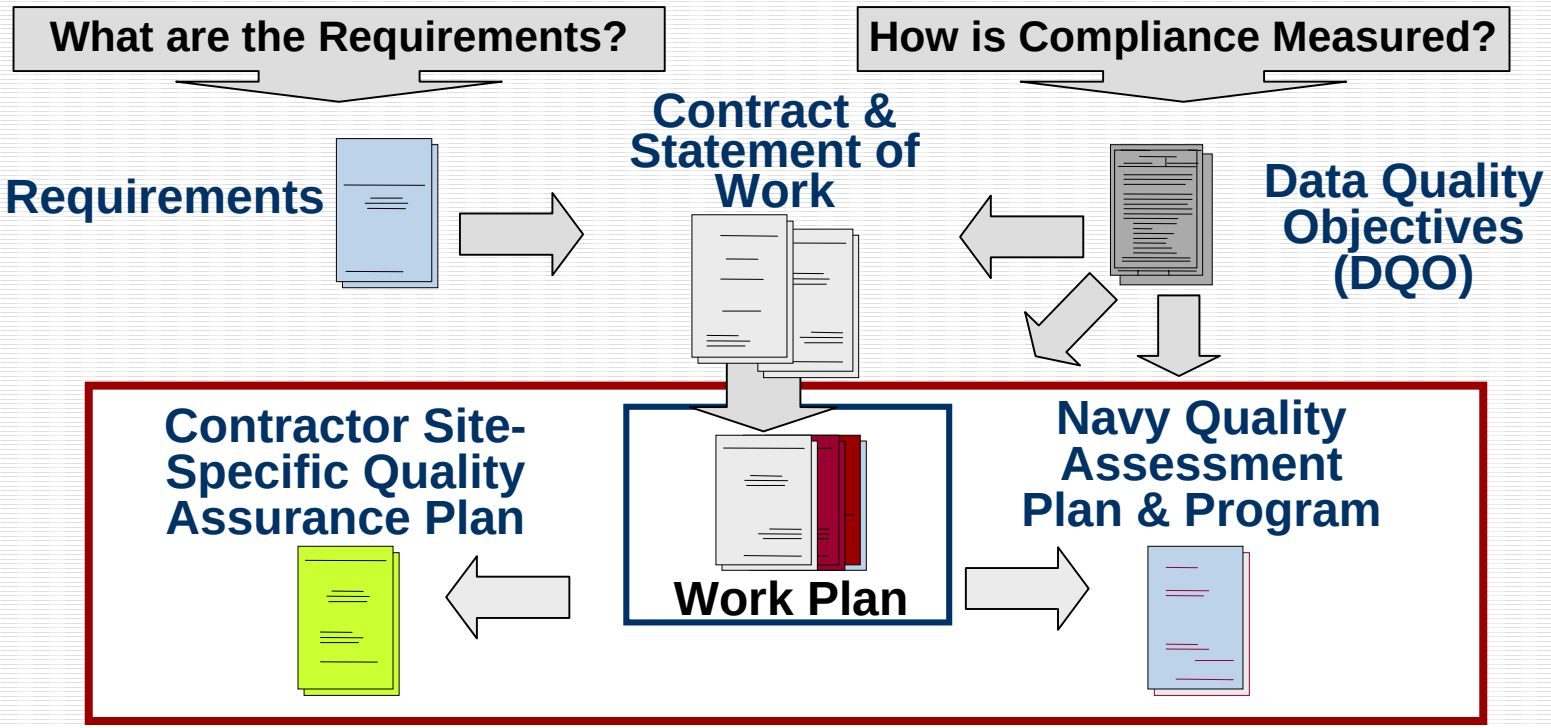
- Based on recognized standards and regulations
  - CERCLA
  - ISO 9000
  - Mil-Std-1916
  - Others
- Modular, logical, easily understood and measurable
- Can be tailored/modified/customized for situational conditions
- Provides methods for the capture and collection of quantifiable objective evidence
- Traceable, verifiable and accountable
- Require a specific skill mix

Basic Quality Measurement Cycle

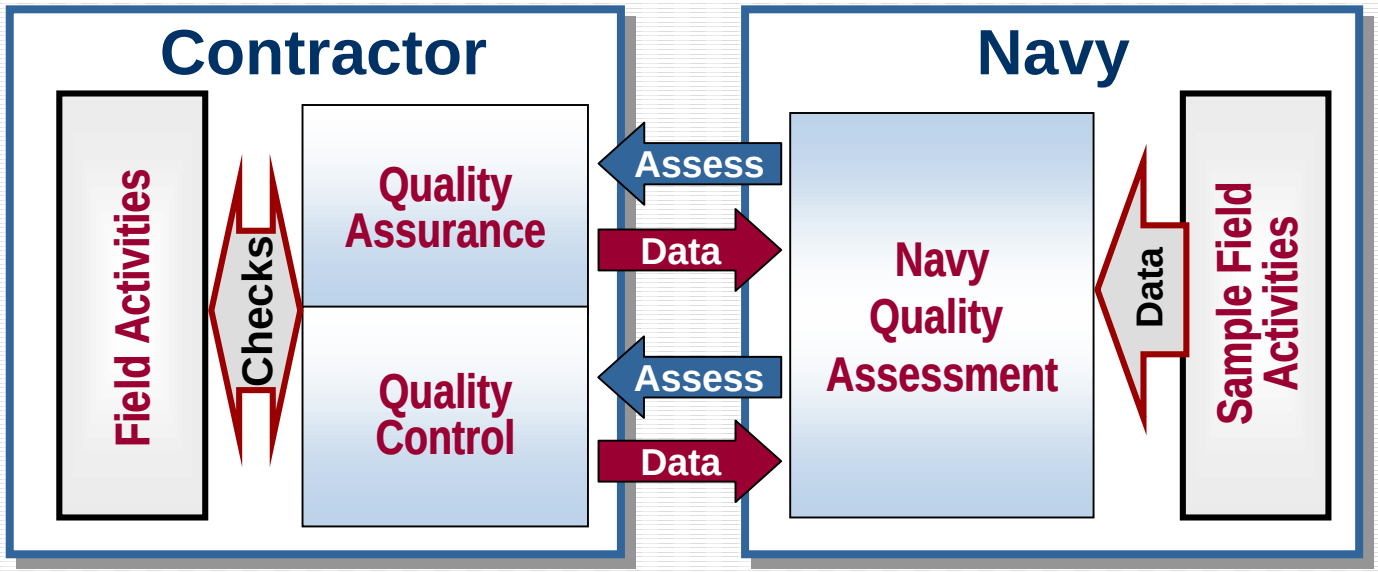


Planning: Program Supports UXO Cleanup Activities

What is the Land Reuse Objective?
What are the UXO Cleanup Goals?
Are the Objectives and Goals Compatible?



Execution: Team & Responsibilities



- ***NAVY Quality Assessment:*** Planned systematic independent activities executed to provide confidence of compliance to stated objectives and requirements
- ***Quality Assurance:*** All the planned and systematic activities implemented within the quality system needed to provide adequate confidence that an entity will fulfill its requirements for quality
- ***Quality Control:*** The operational techniques and activities used to fulfill requirements for quality

Program "Decision Tree"

Data Quality Objectives (DQO)

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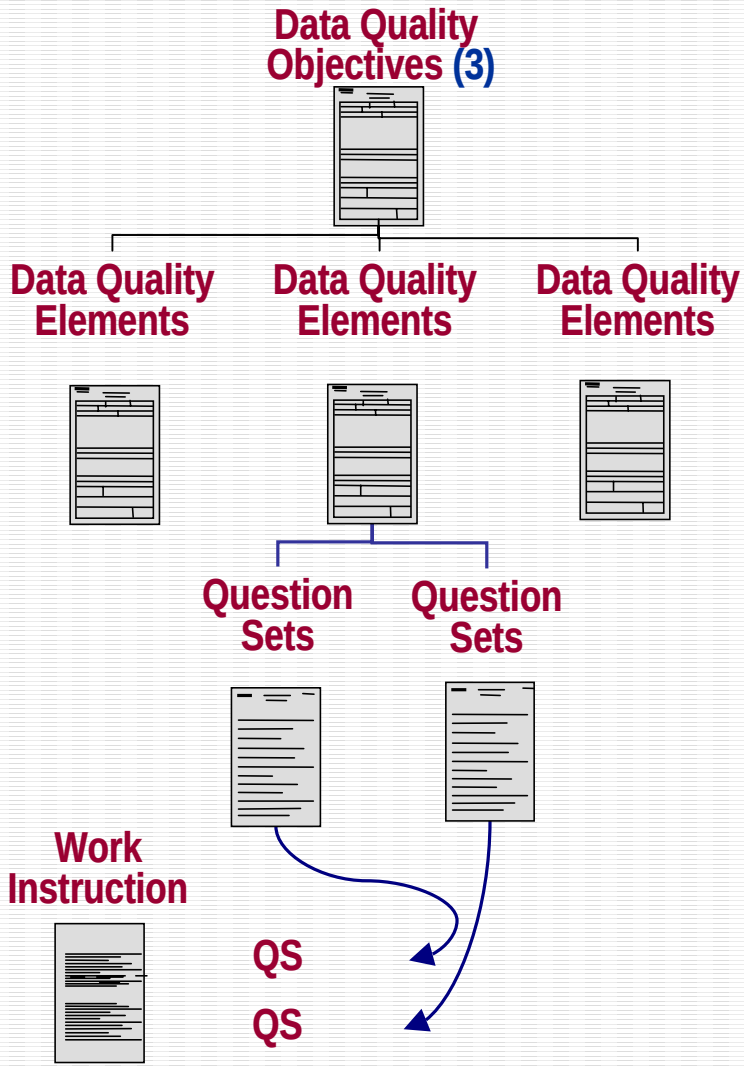
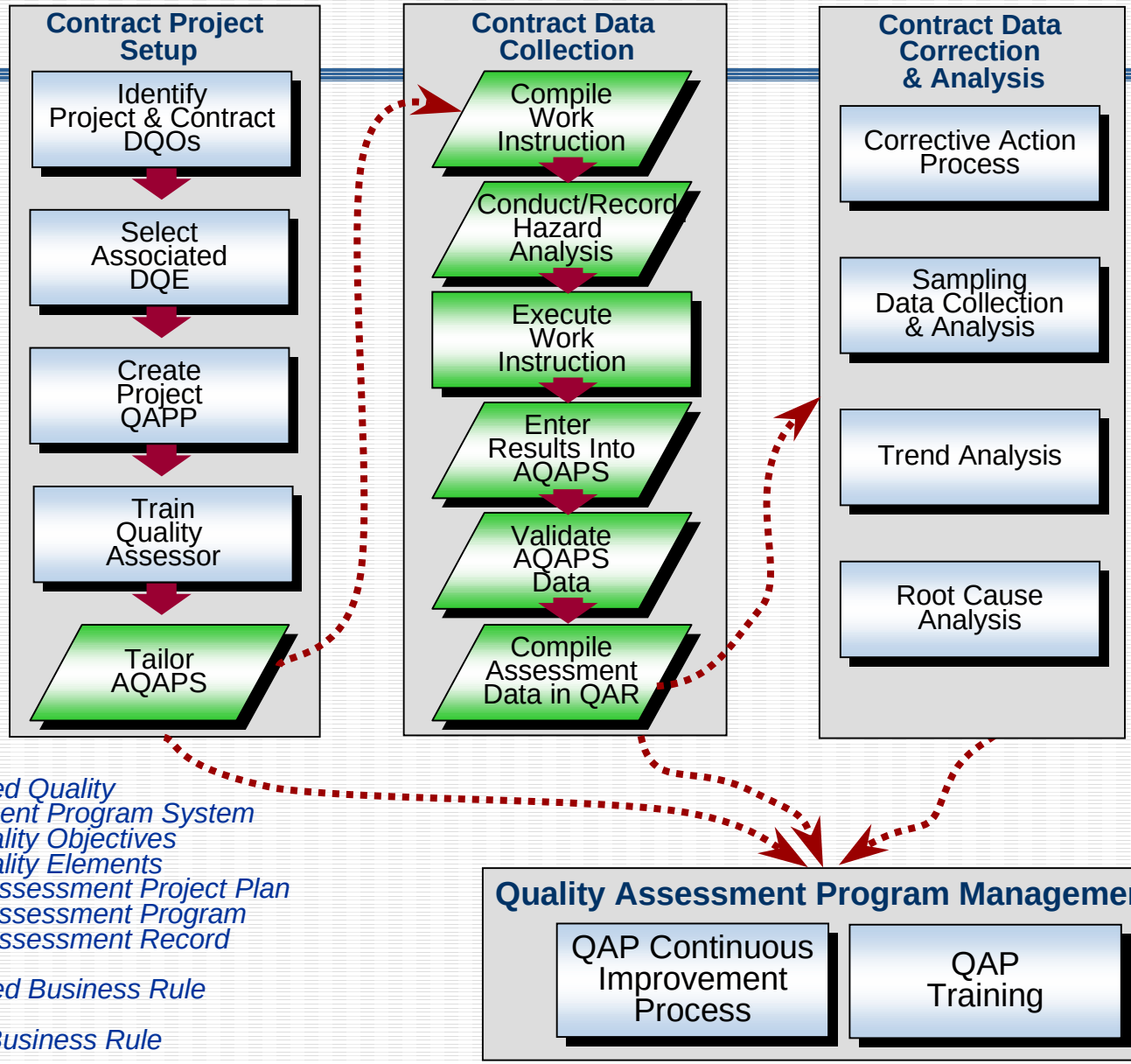


Business Rules



AQAPS *Automated Quality Assessment Program System*
DQO *Data Quality Objectives*
DQE *Data Quality Elements*
QAPP *Quality Assessment Project Plan*
QAP *Quality Assessment Program*
QAR *Quality Assessment Record*

Automated Business Rule

Manual Business Rule

Tomorrow Overview

- Fully develop UXO QA elements for all facets of UXO activities
- Expand to include all phases of CERCLA including Closeout
- Integrate into UXO Remediation contracting process
- Enable NAVFAC/Navy to rollout
  - Automated UXO Quality Assessment Process
  - RPM & ROICC Training
  - Contractor Guide
  - Implementation on Navy UXO contracts
- Make available to contractors for their use

OE Desk Guide

Purpose:

- To provide a baseline of information to construction project managers, environmental/remedial project managers, construction inspectors, and others required to manage ordnance projects at active and closing naval facilities

Intent:

- To provide standard contract language, references, resources, and assistance for developing scopes of work and cost estimates, for reviewing ordnance work documents and overseeing ordnance fieldwork

OE Desk Guide (cont.)

Ordnance Skills Hierarchy

- Outlines the required skill hierarchy appropriate to those individuals performing UXO remediation
  - UXO Sweep Personnel
  - UXO Technician I
  - UXO Technician II
  - UXO Technician III
  - Senior UXO Supervisor
  - UXO Quality Control Specialist
  - UXO Safety Officer

OE Desk Guide (cont.)

Regulatory Requirements

- CERCLA
- NCP
- NAVSEA OP 5 (Ammunition and Explosives Ashore Safety Regulations For Handling)
- DDESB 6055.9, Chapter 12 (Removal Depth for Real Property Contaminated with Ammunition, Explosives, or Chemical Agents)

CECOS Training

- Definition and description of UXO/OE
- Safety and environmental hazards associated with UXO/OE
- Regulations
- Integration of UXO/OE cleanup and environmental cleanup
- Site characterization
- Risk assessment
- Response selection
- UXO technologies

and

- Site closeout

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Summary

- Become familiar with the Regulatory Roles
- Keep current on technology and techniques
- If you have questions, contact your UXO POC
- Visit the UXO Workgroup Web Pages
- Make all pertinent decisions **WITH** your stakeholders
- Plan on good Government QA
- Don't reinvent the wheel!
  - Use standard contract language, QA, etc.

References

- 10 USC 172, Ammunition Storage Board
- NAVSEA OP 5
- NAVFACINST 11010.44
- DoD Directive 6055.9, DoD Explosives Safety Board (DDESB) and DoD Component Explosive Safety Board Responsibilities, July 19, 1996
- DoD Explosives Safety Board, Decision Memorandum, Subj: 315th Board Meeting, January 21, 1998
- DoDI 6055.14, Unexploded Ordnance (MILITARY MUNITIONS, INCLUDING UXO) Safety on Ranges, January 23, 1998

References (cont.)

- DoD 6055.9-STD, DoD Ammunition and Explosives Safety, August 11, 1997 establishes uniform safety requirements applicable to ammunition and explosives and to associated and unrelated personnel and property exposed to the potential damaging effects of an accident involving ammunition and explosives during their development, manufacturing, testing, transportation, handling, storage, utilization, maintenance, demilitarization, and disposal.

References (cont.)

- OPNAVINST 8020.14
- The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. section 9601 et seq.)
- ISO 9000
- Mil-Std-1916
- The Department of Defense and the United States Environmental Protection Agency, Unexploded Ordnance (UXO) Management Principles, March 7, 2000

References (cont.)

- Office of the Undersecretary of Defense Memorandum, Interim Policy on Land Use Controls Associated with Environmental Restoration Activities, August 31, 2000
- Department of the Navy Chief of Naval Operations Memorandum, Department of the Navy Environmental Policy Memorandum 99-02; Land Use Controls, May 25, 1999
- Draft Underwater OE/UXO Policy Document, dated 1 Nov 00 (Update when published)
- UXO Skills Hierarchy

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