2012 INDUSTRY DAY

Society of American Military Engineers - Omaha Post

Omaha District Corps of Engineers
Military Munitions Design Center (MMDC)

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WARNING
UNEXPLDED ORDINANCE AREA
KEEP OUT
Omaha District Military Munitions Design Center
- In-house capabilities
- Doing business with Omaha MMDC
  - Challenges
  - Suggestions
  - Ongoing contractor challenges
- Featured Project
MMDC IN-HOUSE CAPABILITIES

- Program/project managers
  - 13 dedicated to MMRP

- OE Safety Specialists (OESS)
  - 10 former military EOD personnel
  - Major responsibilities
    - ESS/ESP preparation, MEC work plan review
    - Field safety oversight, MEC clearance QA, and MPPEH certification

- Geophysicists

- Chemists

- Risk Assessors
DOING BUSINESS WITH OMAHA MMDC
Challenges

- Programmatic
  - Risk based approach – address risk munitions pose, not munitions themselves
  - No MEC - no MC
  - Inexperienced regulators (with unrealistic requirements)
  - Technology limitations
  - Funding
DOING BUSINESS WITH OMAHA MMDC
Challenges (con’t)

- Project management and technical competency
  - Experienced PM’s and technical staff
  - PM’s and technical staff that truly understand methodologies and technologies and how to apply them correctly considering the project phase and dynamics

- Investigations
  - PA
  - SI
  - EECA
  - RI

- Removal/Remedial Actions
  - TCRA
  - NTCRA
  - Remedial action

- Project dynamics
  - Customer requirements
  - Regulatory requirements
  - Cultural and natural resources
  - Funding
  - Schedule
  - Location
  - Site specific conditions
  - Future land use

- Technical Approach (s)
  - Visual surveys
  - Geophysical mapping
  - Wide Area Assessment
  - XRF
  - MC sampling
  - Anomaly avoidance
  - Construction support
  - ESS/ESP
  - Surface clearance
  - Intrusive removals
Experienced PM’s – get them in the field more often
Get to know, understand and embrace the MMDC philosophies/approaches and apply them to our projects
Get to know and understand the MMDC PM you are working for – what are their needs and management style - accommodate them
Get to know the technical support people, their expertise, strengths and work with them
DOING BUSINESS WITH OMAHA MMDC
Ongoing Contractor Challenges

- Limited experienced project managers
- Limited experienced technical staff
- Poor QA of documents, reports, etc.
  - Cut and paste errors
    - Reference to wrong installation/site
    - Maps to wrong hospitals (different states)
  - No overall document QA review resulting in disjointed/confusing reports
- Non-authorized communications with customers, regulators, etc.
- Taking direction from other than USACE POC
- Not thinking for yourself
- Reactive, instead of proactive – think ahead
Utilizing cookie cutter technical approaches – every site is different
Technical approaches that focus on minimizing fieldwork in lieu of leveraging sunk costs and maximizing fieldwork efforts
Fully understanding explosive safety requirements
Utilizing correct terminology in documents (i.e. dailies, weeklies, work plans, after action reports, etc.) – i.e. “MEC/DMM”, “potential MEC”, etc.
Understanding emergency response procedures – procedures are typically similar, but POC’s can vary significantly
Documenting all field efforts
“Tell the story”
Seattle Naval Supply Depot
2012 Remedial Investigation Summary
Technical Approach Overview

- Performed surface debris removal over transect areas
- Performed digital geophysical mapping (DGM) over these areas
- Performed reacquisition and dig (map and dig) of anomalies, or mag and dig (swim and dig) as appropriate
- Collected sediment samples.

Approach was consistent with a RI approach on a terrestrial site

Dive boats between piers 90 and 91, 2010.
Investigation Transects

- Transect locations were based primarily on:
  - Current and anticipated future land use
  - Historical operations
  - Past munitions finds from RI and TCRA
- Secondary considerations:
  - Working environment
  - Available technologies
  - Schedule & costs
  - Port operations
**Transect Installation & ROV Pre-Survey**

- 10 transects were installed
  - 4m wide, delineated by sinking line down center of transect
  - Divided into 100m “segments” marked by sandbags
  - Line marked every 5m with tab defining specific location on transect

- ROV pre-survey over transects:
  - Confirmed transects were appropriately installed
  - Obtained video of existing conditions
    - Evaluated validity of site planning model based on previously collected data (sonar, DGM, etc.)
    - Quantified level of difficulty to clear debris and identified potential obstructions to geophysical platform
    - Noted obstructions/observations

[Images of transect installation, marked lines, 100m sandbags, and ROV pre-survey]
Debris clearance completed over selected transect segments
- 59% by diver
- 41% by ROUMRS

Debris Clearance:
- Removed metallic debris
- Noted large metallic objects
- Obtained GPS on obstructions to geophysical platform

Digital Geophysical Mapping

- Identified >120 anomalies for map and dig
- Flown at 1.5m AGL
- Selected anomalies down to the noise floor and refined anomaly lists based on:
  - Acoustic anomalies
  - Unmovable debris locations
  - Dipole modeling and classification based on 5" Projectile

SkyDiver geophysics wing towed behind MAKO SKY marine research vessel.

DGM before and after debris clearance.
Digital geophysical mapping was used to select subsurface anomaly 411 for further investigation following site characterization. A remotely operated vehicle (ROV) placed a marker-buoy on the seafloor at the anomaly's GPS coordinates. The marker (shown at left) was reacquired 14 meters below the surface by a former Navy EOD diver equipped with an underwater metal detector, video camera and excavation tools.

To compensate for the ROV’s potential USBL positioning offset, the diver conducted a 2m radius circle search around the marker-buoy. The diver used the underwater metal detector to locate the point of peak response and conducted an intrusive investigation. Subsurface anomaly 411 was determined to be a section of metal pipe buried 6” beneath the seafloor. The munitions item modeled was a 5 inch projectile.
Swim and Dig

- Investigated areas not suitable for geophysical mapping (red areas represent swim and dig)
- Diver with all-metals detector
- Divers deployed over site IVS to familiarize themselves with the tone of known munitions
- Excavated ~18 anomalies per 100m, most in top 1’
- ~500 excavations
MC Sediment Sampling

- Assumed low risk associated with MC
- Technical Project Planning Team approach
- 12 sediment samples collected
- Sampled DMM/MPPEH 20mm and larger
- Samples collected by divers using hand held corer
- Samples sent to local lab capable of processing using desired EPA Methods for explosives, etc.
- Results pending

Sediment corer developed for RI.

Diver with sample SE-011, collected on 5Mar12 at T04/D10 below an excavated 20mm.

Samples shipped to laboratory.
## Military Munitions Found

<table>
<thead>
<tr>
<th>TYPE</th>
<th>MD</th>
<th>DMM</th>
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<tr>
<td>Small Arms</td>
<td>41</td>
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<tr>
<td>20mm</td>
<td>51</td>
<td>11</td>
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<tr>
<td>20mm loaded shipping container</td>
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<td>40mm casing</td>
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<td>5” shipping cap</td>
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<tr>
<td>5” projectile</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>109</td>
<td>13</td>
</tr>
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</table>

Majority of items found near-surface

*First surface inspection of munitions, 20mm loaded container at upper left.*
The Contained Detonation Chamber (CDC) was the method for disposal of MEC found during the RI activities.
MEC/MD were stored underwater on the seabed until disposal operations could commence.
CDC operations lasted three days and occurred at night to minimize interruptions to port operations.
Exclusion zones were enforced during time donor charges were delivered through conclusion of operations.
Arrived week of April 2nd, operational following week, departed week of April 16th.
T30 CDC MEC Disposal

Map of T30 placement at T91.

Day Box (left), T30 CDC setup (right).
T30 CDC MEC Disposal

5” projectile on seafloor.

5” projectile, cleaned prior to disposal.

Scraps collected after safe detonations of numerous munitions.
The Terrorists have won the toss and have elected to receive!