



DEPARTMENT OF THE NAVY  
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC  
6506 HAMPTON BLVD  
NORFOLK VA 23508-1278

IN REPLY REFER TO:

5090

Ser EV31KRC/00237

25 JUL 2013

Mr. Daniel Rodriguez  
U.S. Environmental Protection Agency  
Vieques Office Park  
Carr. 200, Km 0.4  
Vieques, PR 00765-1537

Dear Mr. Rodriguez:

The Navy is pleased to submit for your review: enclosure (1) Field Change Request No. 2 for the Work Plan for Munitions and Explosives of Concern Subsurface Interim Removal Action Beaches and Selected Roadways at the Former Vieques Naval Training Range (VNTR) and Former Naval Ammunition Support Detachment (NASD) Solid Waste Management Unit 4 Vieques, Puerto Rico and enclosure (2) the revised Standard Operating Procedure for Subsurface Anomaly Removal. Please review and approve, or provide comments, within the next 30 days.

Should you have any questions, please contact Mr. Kevin Cloe, Vieques Remedial Project Manager at (757) 322-4736 or e-mail: kevin.cloe@navy.mil.

Sincerely,

*Cherryl F. Barnett*  
CHERRYL F. BARNETT  
Environmental Business Line Manager  
By direction of the Commander

Enclosures: 1. Field Change Request.  
2. Standard Operating Procedure.

Copy to: (w/encl)  
Puerto Rico Environmental Quality Board (Ms. Wilmarie Rivera)  
U.S. Fish and Wildlife Service (Mr. Richard Henry)

CH2M HILL (Mr. Brett Doerr, Ms. Monica Marrow)

Copy to: (w/o encl)  
U.S. Environmental Protection Agency, Region 2 (Mr. Jose Font, Ms. Angela Carpenter)  
Puerto Rico Environmental Quality Board (Ms. Laura Vélez Vélez)

**Form 10-12**

<b>Field Change Request (FCR)</b>		<b>Field Change Request No.:</b> 2	
<b>Project Name:</b> Munitions and Explosives of Concern Subsurface Interim Removal Action Beaches and Selected Roadways		<b>Contract No.:</b> CTO 11 N62470-11-D-8012	
<b>Client:</b> NAVFAC Atlantic		<b>Location:</b> Former VNTR <b>Date:</b> 5/17/2013 <b>Activity Manager:</b> Brett Doerr	

**Responsible Contractor/Company:**  
CH2M HILL

**Reference/Specification/DWG. No.:** N/A

**Description of Change (attach extra sheets as needed):**  
 RE: Work Plan for Munitions and Explosives of Concern (MEC) Subsurface Interim Removal Action Beaches and Selected Roadways (CH2MILL, October 2008). Replace Section 2.4.4 Subsection Excavation to read: If an intrusive investigation was conducted, the UXO Team leader or his designate will enter the results of the intrusive investigation into the field collection device and then check the investigation location with the same instrument used to initially acquire the anomaly, normally an EM 61 MK 2, to ensure that the anomaly source has been resolved. If the mV reading is below the threshold level (2.5 mV in low anomaly density areas, 8 mV in high anomaly density areas, the anomaly is considered removed. If the mV reading is above threshold, indicating the anomaly source may not have been entirely removed, the UXO team will either be reinvestigated or a comment will be entered in the MR database, along with the investigation result indicating the reason why the anomaly excavation has been discontinued. For example "Anomaly location consists of multiple small pieces of rusted barbed wire that cannot be completely removed without removing all soils from the location." This decision must be concurred upon by a UXO QC or UXO QA person. The UXO Team leader or his designate will enter the results of the excavation including the final amplitude and any comments. The subsurface anomaly excavation will be conducted in accordance with the Subsurface Anomaly Removal Standard Operating Procedure (Attached)

To provide guidance and procedures for determining when and anomaly is considered resolved.

<b>Name and Signature:</b> Tim Garretson	<b>Title and Company:</b> Sr MEC Consultant CH2M HILL	<b>Date:</b>
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**Disposition**

*Project Manager and QC Representative response required. If MEC safety related, Safety Representative response required*

**Comments:**

<b>QC Representative Name:</b>	<b>Signature:</b>	<b>Date:</b>	<b>Approve:</b> Y N
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**Comments:**

<b>Safety Representative Name:</b>	<b>Signature:</b>	<b>Date:</b>	<b>Approve:</b>
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Tim Garretson			Y <input type="checkbox"/> N
Comments:			
Site Manager Name:	Signature:	Date:	Approve: Y <input type="checkbox"/> N
Comments:			
NAVFAC Atlantic Project Manager Name: Daniel Hood	Signature:	Date:	Approve: Y <input type="checkbox"/> N
Comments:			
US EPA Project Manager Name: Daniel Rodriguez	Signature:	Date:	Approve: Y <input type="checkbox"/> N
Comments:			
PR EQB Project Manager Name: Wilmarie Rivera	Signature:	Date:	Approve: Y <input type="checkbox"/> N

# Subsurface Anomaly Removal

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## 1.1 Purpose and Scope

The purpose of this Standard Operating Procedure (SOP) is to identify the means and methods to be employed when removing subsurface anomalies that have been previously identified through digital geophysical mapping (DGM) surveys

## 1.2 Equipment and Materials

- EM61-MK2, or equivalent
- RTK-GPS
- Magnetometer
- Data collection device
- Hand tools – shovel, pick ax, breaker bar, etc
- Back hoe (optional)

## 1.3 Procedures and Guidelines

### 1.3.1 General

- Prior to conducting the excavation and removal of anomalies, the munitions response (MR) contractor(s) will generate a list of anomalies to be investigated that have been identified through DGM. The list of anomalies must include, at a minimum, a unique identification (ID) for the anomalies, the coordinates for the anomalies, and the millivolt (mV) reading for the anomaly as determined by the DGM.
- The mV reading for the anomalies must be equal to or greater than the action threshold set forth for the anomaly source identification; 2.5 mV has been established as the minimum threshold for anomaly identification; 8 mV has been established as the minimal threshold in high anomaly density areas. Anomaly inspection will be conducted to various depths depending on the area of removal and the anticipated land use activities. The removal depth will be determined by the Navy and regulatory agencies and will be specified in the site-specific identified in the site-specific work plan for the MR contractor performing the anomaly excavation.
- Any factors that limit the investigation of an anomaly to the specified will be recorded for the specific locations.
- Due to site conditions that may limit excavation and the limits on the inspection depths, all anomalies may not be removed. Anomalies that are not removed will be recorded with the site conditions, geographic coordinates, and anomaly ID. This information will be evaluated to assess the need for additional MR action(s) at that location.
- All materials potentially presenting an explosive hazard (MPPEH) identified through the anomaly source inspection will be treated as described in the MPPEH/MD Collection and Inspection SOP.

### 1.3.2 Anomaly Excavation and Removal

1. Two UXO Technicians will perform the anomaly reacquisition and marking (as described in the Anomaly Reacquisition SOP).
2. The UXO team, consisting of at least two UXO Technicians (at least one being a UXO Technician II or higher), will excavate anomalies using mechanical and hand digging methods as appropriate. Teams will periodically check the location of the anomaly with a handheld magnetometer to assist in the recovery of the item and to

ensure the source of the anomaly has not already been removed from the anomaly location. If mechanical digging methods are used, once excavation is estimated to be within 1 ft of the anomaly all digging will be performed by hand.

3. Unless the source of the anomaly is identified as UXO that is unsafe to move, personnel will place the recovered source(s) of the anomaly near the investigation location at a distance that the item will not produce a reading from the EM61-MK2 or the hand held magnetometer. If the magnetometer did not indicate that a ferrous anomaly source was present, no intrusive action will take place until after the anomaly location is checked with an EM61-MK2. If no anomaly source is located, the results of the investigation will be recorded in the field data collection device for that target ID. **The UXO Technician will have undertaken training on operation of an EM61-MK2 and pass a test as described in the standard operating procedure (SOP) for EM61-MK2 Skills Determination Prior to Use.**
4. If an intrusive investigation was conducted, the UXO Team leader or his designate will enter the results of the intrusive investigation into the field data collection device and then check the investigation location with the same instrument used to initially acquire the anomaly, normally an EM 61 MK 2. If the mV reading is below the threshold level (2.5 mV in low anomaly density areas, 8 mV in high anomaly density areas), the anomaly is considered removed. If the mV reading is above the threshold, indicating the anomaly source may not have been entirely removed, the location will either be reinvestigated or a comment will be entered in the MR database, along with the investigation result, indicating the reason why the anomaly excavation has been discontinued. As an example: "Anomaly location consists of multiple small pieces of rusted barbed wire that cannot be completely removed without removing all soils from the location." This decision must be concurred upon by a UXO QC or UXO QA person. The UXO Team leader or his designate will enter the results of the excavation including the final amplitude and any comments into the field data collection device. For locations where the maximum investigation depth or water table is reached, the source of the anomaly may be left in place as a result.
5. If an intrusive action was **NOT** taken, the Team Leader and a UXO Technician will check the location with the EM61-MK2 and observe the maximum amplitude anomaly response (of the summed time gates). If the total is below the required action threshold, the anomaly will be considered a false positive. If the result higher than the action threshold, the location will be excavated to identify the source and Step 4 (above) will then be carried out.

## 1.4 Quality Control

At least one inert MEC item (or surrogate if necessary) will be seeded per 3 acres in areas are DGM surveyed with a towed array and 1 per acre person-portable instrument DGM survey areas in locations that are free of anomalies. The MR contractor must acquire, excavate, and recover the QC seeds.

## 1.5 Attachments

None