FINAL
JANUARY 2013

Quality Assurance Surveillance Report for Contractor Geophysical System Verification Installation and Quality Assurance Blind Seed Installation

In Support of the Non-Time Critical Removal Action for Operable Unit B-2

Former Adak Naval Complex

Adak, Alaska

Department of the Navy
Naval Facilities Engineering Command
Northwest
1101 Tautog Circle
Silverdale, WA 98315

NAVFAC
Naval Facilities Engineering Command
NAVFAC NORTHWEST

LETTER OF TRANSMITTAL

Date: 1/30/13

To: Merry Maxwell
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From: Justin Peach
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Subject: Final QA Surveillance Report for Contractor GSV Installation and QA Blind Seed Installation, Non Time Critical Removal Action, OU B-2, Former Adak Naval Complex, Adak, Alaska

Transmitting:
__ Included
__ Under Separate Cover

The Following:
__ Correspondence
__ Report
__ CD/Disk
__ Survey
__ Work Plan
__ Assessment
__ Decision Document
__ Site Closure
__ Public Information
__ Memorandum
__ Graphic
__ Construction Drawing
__ Specification
__ Shop Drawing
__ Letter
__ Public Press Release
__ Comments/Response to Comments
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Merry-
Attached for your use is the Final QA Surveillance Report for Contractor GSV Installation and QA Blind Seed Installation, Non-Time Critical Removal Action, OU B-2, Former Adak Naval Complex, Adak, Alaska.

Please let me know if you have any questions or comments concerning the document.

Justin Peach

NAVFAC
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Tony-
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Please let me know if you have any questions or comments concerning the document.

Justin Peach

NAVFAC
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NAVFAC NORTHWEST

LETTER OF TRANSMITTAL

Date: 1/30/13

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Silverdale, WA, 98315

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Chris-
Attached for your use is the Final QA Surveillance Report for Contractor GSV Installation and QA Blind Seed Installation, Non-Time Critical Removal Action, OU B-2, Former Adak Naval Complex, Adak, Alaska.

Please let me know if you have any questions or comments concerning the document.

Justin Peach

NAVFAC
Naval Facilities Engineering Command
NAVFAC NORTHWEST

LETTER OF TRANSMITTAL

Date: 1/30/13

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Alaska Department of
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From: Justin Peach
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Silverdale, WA, 98315

Subject: Final QA Surveillance Report for Contractor GSV Installation and QA Blind Seed Installation, Non Time Critical Removal Action, OU B-2, Former Adak Naval Complex, Adak, Alaska

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Guy-
Attached for your use is the Final QA Surveillance Report for Contractor GSV Installation and QA Blind Seed Installation, Non-Time Critical Removal Action, OU B-2, Former Adak Naval Complex, Adak, Alaska.

Please let me know if you have any questions or comments concerning the document.

Justin Peach

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ACRONYMS AND ABBREVIATIONS

AAPP	Abbreviated Accident Prevention Plan
ATV	all-terrain vehicle
BSI	blind seed item
DGM	digital geophysical mapping
GPO	geophysical prove-out
GSV	geophysical systems verification
ISO	instrument standard object
IVS	instrument verification strip
MEC	munitions and explosives of concern
NTCRA	Non-Time Critical Removal Action
OB-OD	open burn-open detonation
OU	Operable Unit
PM	Project Manager
QA	quality assurance
QASP	quality assurance surveillance plan
QC	quality control
RAA	remedial action area
RLS	Registered Land Surveyor
RPM	Remedial Project Manager
RTK-DGPS	Real Time Kinematic-Differential Global Positioning Systems
SOP	Standard Operating Procedure
Std. Dev.	Standard Deviation
USA	USA Environmental, Inc.
UXO	unexploded ordnance

Section 1.0: INTRODUCTION

This document comprises the Battelle quality assurance (QA) surveillance report for the field activities conducted from September 20 through 27, 2012 on Adak Island, AK. The field activities were in support of the Non-Time Critical Removal Action (NTCRA) in Operable Unit (OU) B-2 scheduled for the 2013-2014 field seasons.

During this trip, USA Environmental (USA), the Navy production contractor, installed geophysical systems verification (GSV) components; instrument verification strips (IVS) and quality control (QC) blind seed items (BSIs). These components were installed in Remedial Action Areas (RAAs) -02, -03 and -04. USA installed the IVSs (one per RAA) during the September 20 through 27 timeframe and the BSIs during the September 20 to 30 timeframe. As part of the GSV plan, USA also acquired digital geophysical mapping (DGM) data over the installed IVS test strips. Note that USA is required to deliver a comprehensive GSV installation report to fully document its work.

QA conducted surveillances of USA GSV components installation, and also installed separate QA BSIs in the RAAs. In addition, Battelle provided an independent Alaska Registered Land Surveyor (RLS) to confirm USA survey control and coordinates of various survey points. This QA work was conducted in accordance with the document "Final Abbreviated Quality Assurance Surveillance Plan and Quality Assurance BSI Plan for Contractor Blind Seed Installation and Geophysical Systems Verification" dated September 2012.

Also during this field effort, the QA team accomplished other tasks not specifically related to the NTCRA including:

- QA began removal of GPO seed items utilized in a previous (OU B-1) removal action.
- QA installed BSI in RAA-01 (open burn-open detonation [OB-OD] 1 Area) in anticipation of future DGM surveys there.

During this field effort, QA adopted USA's Abbreviated Accident Prevention Plan (AAPP), GSV Plan, and Standard Operating Procedures (SOPs) 1 through 7 to accomplish the field work described in this document. Battelle fielded one QA Project Manager (PM), one QA Project Geophysicist and a two-person Alaska RLS team.

Table 1-1 provides a log of QA daily activities for this trip.

Table 1-1. Daily Log of QA Activities during September 20-27 Trip, OU B-2 NTCRA

QA Activity	Date(s)	Comments
Mobilization	Sept. 20	Participate in safety meeting with USA staff to discuss AAPP and related safety topics for upcoming work.
Field Work	Sept. 21	Participated in a coordination meeting with the USA PM, Geophysicist, Unexploded Ordnance (UXO) Safety Officer and BSI installation technical lead to discuss the requirements for installation of the IVSs. Performed maintenance on the three ARGO all-terrain vehicles (ATVs), which are in storage at the bunker. Performed maintenance and inventory on the other equipment stored in the bunker. Conducted an inspection of the OU B-1 Geophysical Prove-out (GPO) area in anticipation of removal of the GPO seed items next spring.
Field Work	Sept. 22	Surveillance of USA BSI Installation team (Scott Crandall-Surveyor, Rick Moyer-UXO Tech, Robert Shauger-UXO QC) with surveying and placement of QC BSIs in RAA-03. Surveillance of USA DGM team (Ric McNeil-Lead Geo, Ted Pate-UXO Tech, Charles Haggerty-Geo Crew member) to assemble DGM equipment and start of background DGM survey for establishing RAA-03 IVS. Went to OU-B1 GPO to relocate and remove targets, found the corners, removed several targets but decided it would be a better use of time to wait for the surveyors before continuing
Field Work	Sept. 23	Surveillance of USA BSI Installation team surveying and placement of QC BSIs in RAA-03. Surveillance of USA DGM team acquiring background DGM survey for RAA-03 IVS.
Field Work	Sept. 24	Surveillance of USA BSI Installation team surveying and placement of QC BSIs in RAA-03. QA Survey team (Kevin Eishens and Robert Boyce) established survey control in OU B-2, set new control in RAA-03, confirmed contractor control and QC BSI locations in RAA-03. QA Survey team measured end points of contractor IVS lanes in RAA-03. Installed QA BSIs in western portion of RAA-03 and all of RAA-01.
Field Work	Sept. 25	Surveillance of USA DGM team installing and running DGM on RAA-04 IVS. QA team installed QA BSIs in RAA-03 and RAA-04. QA Survey team established new control point (QAR4-1) near RAA-04. QA Survey team measured contractor IVS points for RAA-04 IVS.
Field Work	Sept. 26	Surveillance of USA DGM team installing and running DGM on RAA-02 IVS. QA survey team checked QC BSI installation in RAA-04. QA Team installed QA BSIs in RAA-02. QA Survey team established new control point (RAA2 CP-2) and checked IVS points. QA Survey team resurveyed QC BSIs in RAA-02.
Field Work and Demobilization	Sept. 27	Cleaned and returned all of the field and office equipment to the bunker. Surveyors located and marked all of the remaining seed items within the OU-B1 GPO using wooden stakes. Departed Adak on the afternoon flight.

Section 2.0: QA SURVEILLANCES OF USA GSV COMPONENTS: IVS AND BLIND SEED INSTALLATION

The primary surveillance points during the contractor IVS and BSI installation (per the Abbreviated QA Surveillance Plan [QASP]) are listed in Table 2-1. Also shown on this table are surveillance reports and daily production reports documenting the surveillance(s).

Table 2-1. QA Surveillance Points: BSI and IVS Installation

Contractor Activity	Description of Suggested QA Surveillance (per Abbreviated QASP)	Documentation	Comments
1. Preparatory phase training (personnel qualifications, SOP, plans, and equipment training)	Verify and document that all initial site, SOP and other training has been accomplished and properly documented.	Appendix A: Daily Production Reports No. 001 and 002.	Training accomplished, awaiting final documentation from QC.
2. Installation of IVSs	Minimum of one surveillance of each IVS installation. Installation metrics specified in GSV Plan will be verified.	RAA-03: Appendix B: QA Surveillance Reports 2012-002, -003 and -004. RAA-04: Appendix B: QA Surveillance Report 2012-004. RAA-02: QA Surveillance Reports 2012-005.	RAA-03: QA surveillance of IVS background surveys accomplished. RAA-04: QA surveillance of IVS installation accomplished. RAA-02: QA surveillance of IVS installation accomplished.
3. Geophysical data collection over IVSs	Minimum of one surveillance of contractor DGM teams running each IVS. DGM mapping metrics specified in SOP 2 will be verified.	RAA-03: Appendix B: QA Surveillance Reports 2012-002, -003 and -004. RAA-04: Appendix B: QA Surveillance Report 2012-004. RAA-02: QA Surveillance Reports 2012-005.	RAA-03: QA surveillance of IVS background DGM surveys accomplished. RAA-04: QA surveillance of IVS DGM surveys accomplished. RAA-02: QA surveillance of IVS DGM surveys accomplished.
4. Installation of QC BSIs	Minimum of one surveillance of each BSI installation team. Installation metrics specified in GSV Plan will be verified.	RAA-03: Appendix B: QA Surveillance Reports 2012-002 and -003. RAA-04: Appendix B: QA Surveillance Report 2012-005. RAA-02: QA Surveillance Reports 2012-005.	RAA-03: QA surveillance of USA BSIs accomplished. RAA-04: QA surveillance of USA BSIs accomplished. RAA-02: QA surveillance of USA BSIs accomplished.

Table 2-1 shows that QA surveillances of Activities 1 and 4 were accomplished per the Abbreviated QASP without any deviations. Also, Activities 2 and 3 were accomplished per the Plan without deviations for RAAs -04 and -02. In RAA-03, QA was not able to directly observe the IVS installation or DGM surveys over the final IVS location. Only background DGM surveys were observed by QA. The general location of this IVS was contaminated by significant cultural debris, and the IVS installation team spent several days finding a suitable IVS location. Due to this problem, QA was not able to coordinate a surveillance of the IVS installation or DGM surveys over the final IVS. QA does not view this omission as a critical factor as the RAA-03 IVS metrics are based on running averages of DGM data on the IVS, and the other IVS installations were properly installed and run with DGM (indicating proper adherence to plans).

Figure 2-1 shows an example of the USA BSI team in RAA-03, and Figure 2-2 shows an example of the USA DGM team running the IVS in RAA-02.

Figure 2-1. USA BSI Team in RAA-03

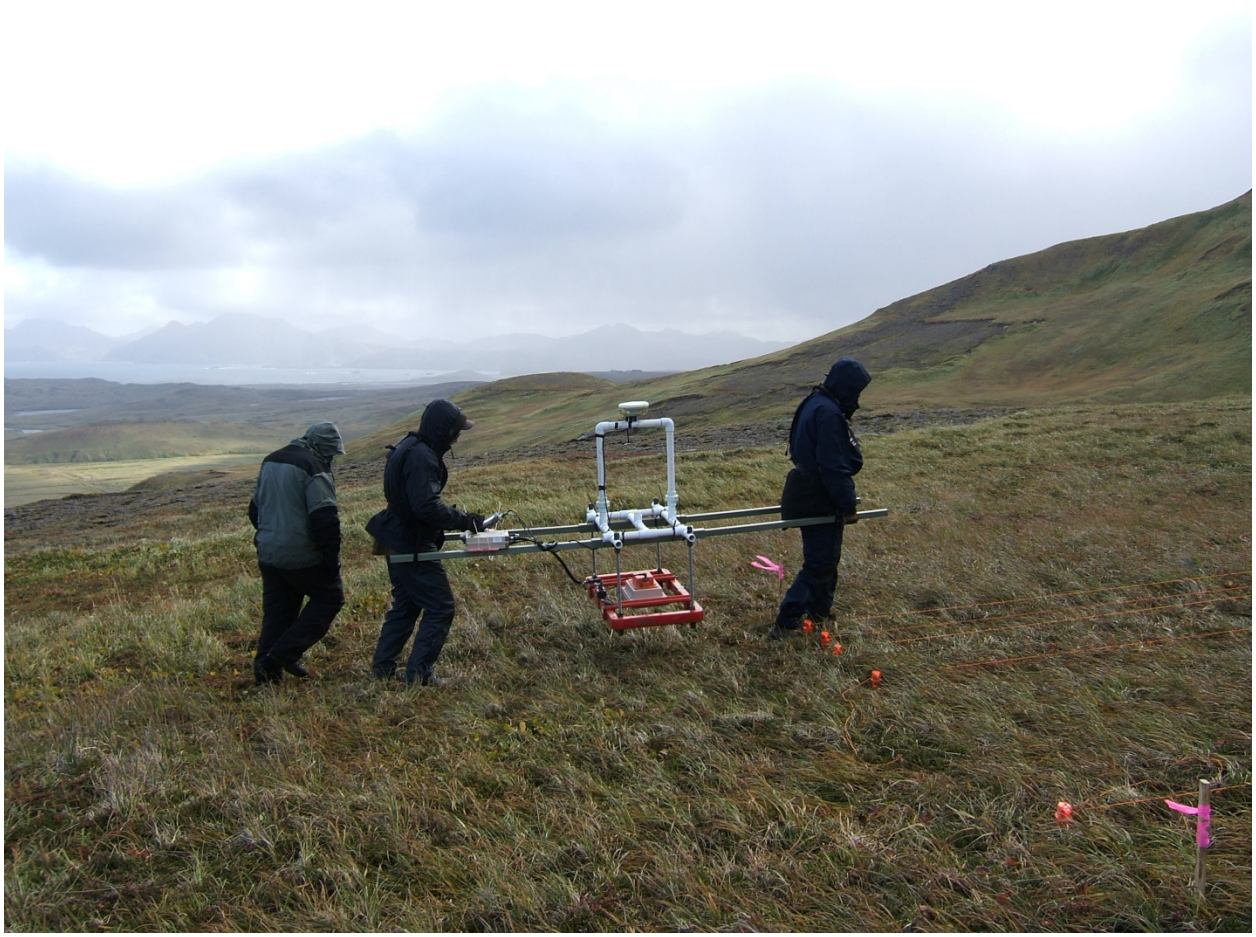

Figure 2-2. USA DGM Team Running IVS in RAA-02

Section 3.0: INDEPENDENT QA LAND SURVEY CONFIRMATION

3.1 Introduction

QA fielded a two-person Alaska state RSL team to establish independent survey control for future work in the RAAs and to support installation of the QA BSIs. While this team was on island, they also confirmed survey control and coordinates of various contractor survey points. Table 3-1 provides a listing of contractor survey points that were recommended to be confirmed per the Abbreviated QASP. Metrics for land surveying accuracies are also listed in Table 3-1.

Table 3-1. Independent (QA) Confirmation of Contractor Land Survey Points

Contractor Survey Points	Frequency	Metric
Survey control points to be used for GPS base stations	All	Not provided in plans.
IVS end points and instrument standard objects (ISOs)	All IVS end points. Minimum of two ISOs per IVS.	+/- 5 cm (1.97 inch) per GSV Plan.
QC BSIs	Minimum of five BSIs per RAA	+/- 5 cm (1.97 inch) per GSV Plan.

3.1.1 Confirmation of Survey Control Points. The QA survey team and USA survey team both utilized Real Time Kinematic-Differential Global Positioning Systems (RTK-DGPS) for surveying on this project. Both teams utilized established, published (National Geodetic Survey) survey control points near the city of Adak to confirm proper operation of the RTK-DGPS and establish local (to OU B-2) control. The local control was then used as a base to survey GSV components (i.e., IVSs and BSIs) in the RAAs. The QA survey team independently confirmed published survey control points, and established (and utilized) independent local control points for all QA surveying and checking of USA points.

The common published survey control points used by both QA and USA survey teams were Bench Mark 18 (BM18) and BR6. Note that other published survey control points were utilized by QA and USA survey teams. Appendix C provides a listing of all published (and established) survey control utilized by the QA survey team. Table 3-2 lists the coordinate information for the two common control points. QA confirmed that the USA survey team utilized the exact same coordinates.

Table 3-2. Common Published (NGS) Survey Control Points Used by Both QA and USA Land Survey Teams

Name	Northing	Easting	Elevation	WGS84 Latitude	WGS84 Longitude	Height
BM18	315129.185	3135925.289	32.174	51°51'41.15190"N	176°38'28.15450"W	38.96
BR6	318792.886	3128679.075	398	51°52'16.62850"N	176°40'24.11511"W	404.672

(NAD 83 Alaska State Plane Zone 10, US Survey Feet)

The USA survey team established two control points (“RAA03 Base” in the RAA-03 area and “ARA Base” in the RAA-04 area) for establishing GSV components in the three RAAs. The control point in the vicinity of RAA-04 was also utilized for establishing GSV components in RAA-02. The USA survey team also established “Back Check” points near each of the control points so that another check could be made of the survey control. These survey control points will likely be the primary control

for future NTCRA activities in these RAAs. Table 3-3 provides the USA survey coordinates for these two control points (and Back Check points) compared to the independent survey coordinates derived by the QA survey team.

Table 3-3. New USA Control Points Established for Surveying of GSV Components in RAAs-02, -03 and -04

	USA Survey Team		QA Survey Team					
Control Point	**Easting**	**Northing**	**Easting**	**Northing**	**Delta East (US ft)**	**Delta North (US ft)**	**Offset**	
							US ft	**Inches**
RAA03 Base	3132871.712	340487.023	Not Surveyed	Not Surveyed	N/A	N/A	N/A	N/A
RAA03 Back Check	3132885.270	340474.075	3132885.151	340474.058	0.119	0.017	0.120	1.44
ARA Base	3142011.549	345457.498	3142011.508	345457.474	0.041	0.024	0.048	0.57
ARA Back Check	3142015.412	345429.809	3142015.383	345429.700	0.029	0.109	0.113	1.35
							Average	1.12
							Std Dev.	0.48

(NAD 83 Alaska State Plane Zone 10, US Survey Feet(US ft))

This table shows that the QA survey team did not survey the USA RAA-03 base (RAA03 Base). This point could not be surveyed by QA as it was often occupied by the USA survey team. The RAA-03 Back Check, ARA Base and ARA Back Check were all checked by the QA survey team and the maximum computed offset is 1.44 inches. The average offset is 1.12 inches, with a standard deviation (Std. Dev.) of 0.48 inches. This offset is minimal and is within typical practical survey errors expected for Adak.

The QA survey team also established separate control points near all three RAAs. Table 3-4 provides the coordinates for these QA control points.

Table 3-4. New QA Control Points Established in the Vicinity of RAAs -02, -03 and -04

Control Point	Easting	Northing	Elevation	Comments
OBOD1	3130270.405	339216.061	130.119	SET Rebar
QA R4-1	3142991.731	349076.501	233.448	SET Rebar
RAA2 CP-2	3127638.813	345800.46	806.864	SET Stake

(NAD 83 Alaska State Plane Zone 10, US Survey Feet)

Figure 3-1 shows the locations of the USA and QA survey control points established during this field effort.

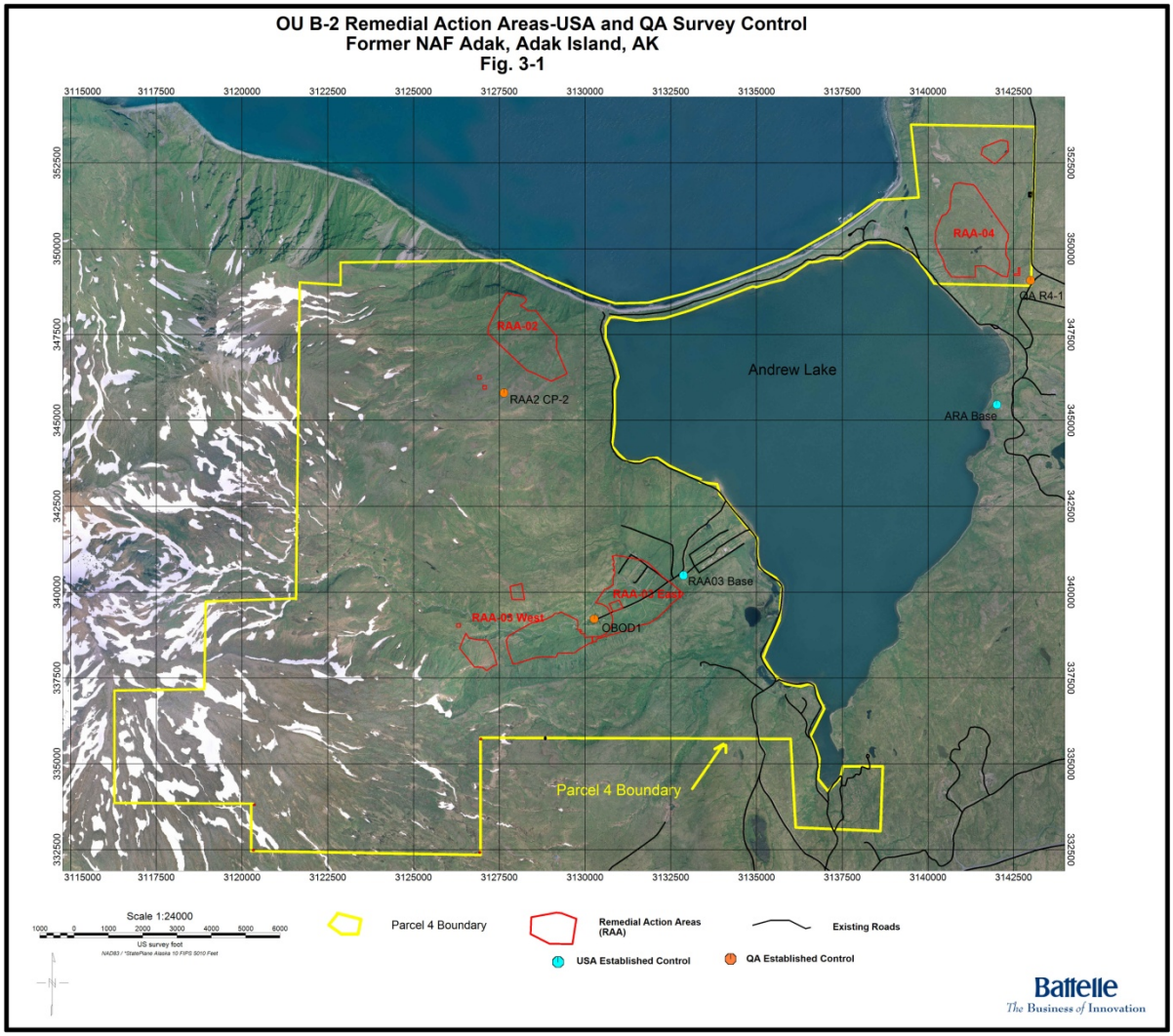

Figure 3-1. OU B-2 Remedial Action Areas-USA and QA Survey Control Former NAF Adak, Adak Island, AK

Figures 3-2 through 3-4 show photographs of QA survey control points being established at RAAs -03, -04 and -02 (respectively).

Figure 3-2. Photograph of QA Survey Control Point (OBOD1) at RAA-03 (Point is about 50 ft west of end of road into OB-OD)

Figure 3-3. Photograph of QA Survey Control Point (QA R4-1) at RAA-04 (Point is about 20 ft. off of road junction accessing RAA-04)

Figure 3-4. Photograph of QA Survey Control Point (RAA2 CP-2) at RAA-02 (Point is about 250 ft. north of IVS, on hill near big rock)

3.1.2 Confirmation of IVS End Points and Instrument Standard Objects. The QA survey team checked (re-surveyed) the end points of the IVSs (DGM survey lane markers). The QA survey team also intended to check the locations of ISOs in the IVSs while they were visible (open hole); however, the QA team could not coordinate this work with the USA IVS teams. Instead the QA survey team surveyed surface pin-flags marking the locations of the ISOs. The proposed metric for this confirmation surveying is 1.97 inches (+/- 5 cm).

Tables 3-5 through 3-7 show the comparison of QA and USA survey coordinates for end points and pin-flags marking the locations of the ISOs for the IVSs in RAA-02, -03, -04, respectively.

Table 3-5. Comparison of QA and USA Survey Coordinates for End Points and ISO Pin-flags at RAA-02 IVS

USA Information				*QA Information*					
Point Name	**Description**	**Easting**	**Northing**	**QA Easting**	**QA Northing**	**Delta East (US ft)**	**Delta North (US ft)**	**Offset**	
								US ft	**Inches**
raa02 ivs05	ISO 5 (Pin flag)	3127731.93	345575.32	3127731.92	345575.55	0.01	-0.23	0.23	2.81
raa02 ivs04	ISO 4 (Pin flag)	3127745.82	345580.81	3127746.02	345580.86	-0.20	-0.05	0.20	2.45
raa02 ivs03	ISO 3 (Pin flag)	3127759.80	345586.40	3127759.76	345586.38	0.04	0.02	0.04	0.50
raa02 ivs02	ISO 2 (Pin flag)	3127773.62	345591.86	3127773.71	345591.52	-0.09	0.34	0.35	4.23
raa02 ivs01	ISO 1 (Pin flag)	3127787.60	345597.49	3127787.51	345597.34	0.09	0.15	0.18	2.14
raa02 -2.5 East	East End Points	3127797.60	345598.95	3127797.61	345598.85	0.00	0.10	0.10	1.21
raa02 -1.25 East	East End Points	3127797.15	345600.15	3127797.13	345600.04	0.02	0.11	0.11	1.33
raa02 0 East	East End Points	3127796.77	345601.18	3127796.76	345601.07	0.02	0.11	0.11	1.29
raa02 2.5 East	East End Points	3127795.99	345603.46	3127795.81	345603.42	0.18	0.04	0.18	2.17
raa02 10 East	East End Points	3127793.43	345610.58	3127793.37	345610.54	0.07	0.04	0.08	0.96
raa02 10 West	West End Points	3127718.86	345580.59	3127718.89	345580.63	-0.02	-0.04	0.05	0.55
raa02 2.5 West	West End Points	3127721.81	345573.77	3127721.83	345573.77	-0.01	-0.01	0.01	0.18
raa02 0 West	West End Points	3127722.77	345571.55	3127722.91	345571.57	-0.13	-0.02	0.13	1.60
raa02-1.25 West	West End Points	3127723.20	345570.44	3127723.35	345570.44	-0.15	0.00	0.15	1.85
raa02-2.5 West	West End Points	3127723.62	345569.25	3127723.67	345569.29	-0.05	-0.05	0.07	0.82

ISO Pin flags	Average	2.43
	Std. Dev.	1.34
End Points	Average	1.20
	Std. Dev.	0.60

Exceeds metric of 1.97 inches

(NAD 83 Alaska State Plane Zone 10, US Survey Feet (US ft))

Table 3-6. Comparison of QA and USA Survey Coordinates for End Points and ISO Pin-Flags at RAA-03 IVS

USA Information				*QA Information*					
Point Name	**Description**	**Easting**	**Northing**	**QA Easting**	**QA Northing**	**Delta East (US ft)**	**Delta North (US ft)**	**Offset**	
								US ft	**Inches**
raa03 ivs01	ISO 1 (Pin flag)	3132944.19	340461.66	3132944.24	340461.63	-0.05	0.03	0.06	0.69
raa03 ivs02	ISO 2 (Pin flag)	3132939.33	340449.32	3132939.26	340449.41	0.07	-0.08	0.11	1.33
raa03 ivs03	ISO 3 (Pin flag)	3132931.52	340429.65	3132931.40	340429.65	0.12	0.00	0.12	1.40
raa03 ivs04	ISO 4 (Pin flag)	3132927.38	340419.41	3132927.33	340419.50	0.06	-0.09	0.11	1.32
raa03 ivs05	ISO 5 (Pin flag)	3132920.54	340402.40	3132920.48	340402.47	0.05	-0.08	0.09	1.10
raa03 -2.5 South	South End Points	3132914.42	340394.32	3132914.49	340394.41	-0.08	-0.09	0.12	1.41
raa03 0 South	South End Points	3132916.81	340393.39	3132916.83	340393.49	-0.03	-0.09	0.09	1.14
raa03 1.25 South	South End Points	3132917.97	340392.88	3132918.01	340392.99	-0.03	-0.11	0.12	1.38
raa03 2.5 South	South End Points	3132919.03	340392.45	3132919.08	340392.53	-0.05	-0.07	0.09	1.08
raa03 9 South	South End Points	3132924.98	340389.79	3132924.97	340389.91	0.01	-0.11	0.12	1.38
raa03 9 North	North End Points	3132955.01	340464.73	3132954.90	340464.73	0.12	0.00	0.12	1.39
raa03 2.5 North	North End Points	3132948.87	340466.91	3132948.77	340466.87	0.10	0.04	0.10	1.26
raa03 1.25 North	North End Points	3132947.75	340467.44	3132947.70	340467.33	0.06	0.10	0.12	1.40
raa03 0 North	North End Points	3132946.59	340467.87	3132946.54	340467.77	0.04	0.10	0.11	1.32
raa03 -2.5 North	North End Points	3132944.49	340468.88	3132944.46	340468.91	0.03	-0.02	0.04	0.46

ISO Pin Flags	Average	1.17
	Std. Dev.	0.29
End Points	Average	1.22
	Std. Dev.	0.29

Exceeds metric of 1.97 inches

(NAD 83 Alaska State Plane Zone 10, US Survey Feet (US ft))

Table 3-7. Comparison of QA and USA Survey Coordinates for End Points and ISO Pin-Flags at RAA-04 IVS

USA Information				*QA Information*					
Point Name	**Description**	**Easting**	**Northing**	**QA Easting**	**QA Northing**	**Delta East (US ft)**	**Delta North (US ft)**	**Offset**	
								US ft	**Inches**
raaa04 ivs01	ISO 1	3143046.68	353374.10	3143046.49	353374.07	0.19	0.03	0.20	2.35
raaa04 ivs02	ISO 2	3143048.83	353389.12	3143048.58	353389.15	0.25	-0.03	0.25	2.97
raaa04 ivs03	ISO 3	3143050.79	353403.83	3143050.57	353403.67	0.22	0.16	0.27	3.26
raa04 ivs04	ISO 4	3143052.94	353418.94	3143052.86	353418.67	0.08	0.27	0.28	3.33
raa04 ivs05	ISO 5	3143054.97	353433.45	3143054.98	353433.27	-0.01	0.17	0.18	2.10
raa04 -2.5 South	South End Points	3143042.93	353364.61	3143042.84	353364.68	0.09	-0.07	0.11	1.38
raa04 -1.25 South	South End Points	3143044.16	353364.49	3143044.13	353364.58	0.03	-0.09	0.09	1.13
raa04 0 South	South End Points	3143045.32	353364.28	3143045.30	353364.26	0.02	0.02	0.03	0.31
raa04 2.5 South	South End Points	3143047.75	353363.94	3143047.73	353364.03	0.01	-0.08	0.08	1.02
raa04 10 South	South End Points	3143055.27	353363.41	3143055.18	353363.45	0.09	-0.04	0.10	1.14
raa04 10 North	North End Points	3143066.01	353442.74	3143066.08	353442.61	-0.07	0.13	0.15	1.81
raa04 2.5 North	North End Points	3143058.70	353443.40	3143058.67	353443.27	0.04	0.13	0.13	1.56
raa04 0 North	North End Points	3143056.26	353443.78	3143056.30	353443.60	-0.03	0.18	0.18	2.20
raa04 1.25 North	North End Points	3143055.12	353443.96	3143055.13	353443.66	-0.01	0.30	0.30	3.55
raa04 -2.5 North	North End Points	3143053.84	353444.05	3143053.88	353443.97	-0.05	0.07	0.09	1.05

ISO Ping Flags	Average	2.80
	Std. Dev.	0.55
End Points	Average	1.52
	Std. Dev.	0.88

Exceeds metric of 1.97 inches

(NAD 83 Alaska State Plane Zone 10, US Survey Feet (US ft))

Table 3-5 (RAA-02) shows that offsets in measuring the ISO pin flags range from 0.50 to 2.81 inches with an average of 2.43 inches (Std. Dev. of 1.34 inches). Offsets in measuring the IVS end points range from 0.18 to 2.17 inches with an average of 1.20 inches (Std. Dev. of 0.60 inches). The higher offsets in the ISO pin flags are expected as the pin flags may not have been placed exactly over the ISOs. One of the IVS end points (raa02 2.5 East) slightly exceeds the metric (1.97 inches) with an offset of 2.17 inches (exceeds metric by 0.20 inches). This slight exceedance is not considered significant as all other end points are within the metric.

Table 3-6 (RAA-03) shows that offsets in measuring the ISO pin flags range from 0.69 to 1.40 inches with an average of 1.17 inches (Std. Dev. of 0.29 inches). Offsets in measuring the IVS end points range from 0.46 to 1.40 inches with an average of 1.22 inches (Std. Dev. of 0.29 inches). All of the points (pin flags and end points) are well below the metric.

Table 3-7 (RAA-04) shows that offsets in measuring the ISO pin flags range from 2.10 to 3.33 inches with an average of 2.80 inches (Std. Dev. of 0.55 inches). Offsets in measuring the IVS end points range from 0.31 to 3.55 inches with an average of 1.52 inches (Std. Dev. of 0.88 inches). All of the offsets in the ISO pin flags exceed the metric. This is expected to be caused by differences in the pin flag placement compared to the actual ISO location. Two of the IVS end points (raa04 0 North and raa04 1.25 North) exceed the metric. Point “raa04 0 North” only exceeds the metric by 0.23 inches and is not considered significant due to this very small difference. Point “raa04 1.25 North” exceeds the metric by 1.58 inches. This exceedance is significant. The cause of this exceedance is not known. Since the remainder of the points are at or below the metric (including the primary points used for used for future IVS measurements: “0” and “10” line points), this one significant exceedance is most likely an outlier and will not be critical to future work at this IVS.

3.1.3 Confirmation of location of USA QC BSIs. The QA survey team checked (re-surveyed) the coordinates of several QC BSIs installed by USA in each of the three RAAs.

Table 3-8 shows the comparison of QA and USA survey coordinates for these confirmation checks. The actual survey coordinates are not shown on this table as this information is confidential.

Table 3-8. Comparison of QA and USA Survey Coordinates for QC BSIs

USA Information			*QA Information*				
						Offset	
QC Seed ID	**RAA**	**Grid ID**	**Easting**	**Delta North (US ft)**	**Delta East (US ft)**	**US ft**	**Inches**
167	RAA03	L30		-0.04	0.09	0.10	1.23
28	RAA03	L31		0.02	-0.03	0.04	0.45
88	RAA03	L29		-0.08	0.01	0.08	0.96
50	RAA03	M31		-0.18	0.04	0.18	2.21
6	RAA03	C12		-0.10	-0.06	0.12	1.43
84	RAA04	M08		0.01	0.03	0.03	0.36
321	RAA04	M07		-0.12	0.08	0.14	1.72
82	RAA04	L07		0.07	0.04	0.08	0.97
38	RAA04	L06		0.11	0.11	0.16	1.87
90	RAA04	M06		0.04	0.04	0.06	0.68
303	RAA02	E09		-0.09	-0.18	0.20	2.40
284	RAA02	E10		-0.10	0.03	0.10	1.23
279	RAA02	D10		-0.03	0.07	0.07	0.85
310	RAA02	D09		-0.10	0.07	0.12	1.43
266	RAA02	E08		0.05	0.16	0.17	2.05
						Average	1.32
						Std. Dev.	0.63

Exceeds Metric of 1.97 inches

This Table shows that offsets range from 0.45 to 2.40 inches with an average of 1.32 inches (Std. Dev. of 0.63 inches). Three of the checks slightly exceeded the metric (RAA-03/Grid M31 by 0.24 inches, RAA-02/Grid E09 by 0.43 inches and RAA-02/Grid E08 by 0.08 inches). Two of these exceedances occurred in RAA-02 in very high wind conditions where it was difficult to hold the GPS antenna steady over the seed.

Section 4.0: QA BLIND SEED INSTALLATION

QA installed 10 BSIs in each of the three RAAs associated with this NTCRA (RAAs -01, -02 and -03). QA also installed five BSIs in RAA-001 (OB OD-1) for use in potential future DGM surveys there. These seeds were installed randomly (both location and depth) in each of the RAAs. All seeds were comprised of the small ISO (1 × 4 inch nominal, ASTM Specification A53/A773) as used in the USA IVS and BSI work. Each QA BSI was labeled with a large plastic numbered tag, secured by plastic tie wraps. Figure 4-1 shows an example of a QA BSI in an open excavation.

Figure 4-1. Photograph of Example (#14) QA BSI

A listing of these QA BSIs is included in the spreadsheet attached to this report. This spreadsheet is password protected and intended for Navy and QA use only.

Section 5.0: OU B-1 GPO SEED REMOVAL EFFORT

During this field effort, QA personnel began removal of BSIs in the OU B-1 GPO grids. A total of 12 seeds were removed from the OU B-1 calibration grid, and all of the remaining seeds (calibration, east and west grids) were surveyed and staked for future removal. Appendix D provides a listing of the status of seeds in these GPO grids. Figure 5-1 shows a photograph of the staking done in the vicinity of the OU B-1 East GPO Grid.

Figure 5-1. Photograph of OU B-1 East GPO Staked Seed Locations

Section 6.0: SUMMARY

Battelle QA conducted surveillances of USA GSV components (IVS and BSI) installation, and also provided an independent Alaska RLS to confirm USA survey control and coordinates of various survey points. This QA work was conducted in support of the NTCRA for OU B-2, in RAAs -02, -03 and -04. The QA work was conducted in accordance with the document "Final Abbreviated Quality Assurance Surveillance Plan and Quality Assurance BSI Plan for Contractor Blind Seed Installation and Geophysical Systems Verification" dated September 2012. The results of the QA work for the NTCRA can be summarized as follows:

- **QA Surveillances**: Surveillances of USA preparatory phase inspections and installation of QC BSIs were accomplished according to the plan without any deviations or deficiencies. Surveillances of USA IVS installations and DGM data collection over the IVS in RAAs -02 and -04 were accomplished according to the plan without any deviations or deficiencies. In RAA-03, QA was not able to directly observe the IVS installation or DGM surveys over the final IVS location. Only background DGM surveys were observed by QA. The general location of this IVS was contaminated by significant cultural debris, and the IVS installation team spent several days finding a suitable IVS location. Due to this problem, QA was unable to coordinate a surveillance of the IVS installation or DGM surveys over the final IVS. QA does not view this omission as a critical factor as the RAA-03 IVS metrics are based on running averages of DGM data on the IVS, and the other IVS installations were properly installed and run with DGM (indicating proper adherence to plans).
- **Independent QA Land Survey Confirmation**: Independent QA surveying of USA control points (and GPS base stations) confirmed that these (USA) points were less than 1.44 inches, which is within the typical practical survey error expected for Adak. Independent surveying of USA IVS end points (DGM survey lane markers) showed that average offsets in measuring IVS end points in all three RAAs are about 1.50 inches or less, with a typical Std. Dev. of 0.6 or less. This average offset, plus the Std. Dev. (1.50 + 0.6 = 2.1 inches) indicates that the survey metrics provided in the GSV (1.97 inches) might have been too stringent. In RAA-02, one of the IVS end points slightly exceeded the metric by 0.20 inches. In RAA-03 none of the IVS end points exceed the metric. In RAA-04 two of the IVS end points exceeded the metric: one by a slight amount (0.23 inches), and another by a significant amount (1.58 inches). This latter exceedance is by far the largest in any of the three IVSs and the cause is unknown. Since the remainder of the points are at or below the metric (including the primary points used for used for future IVS measurements), this one significant exceedance is most likely an outlier and will not be critical to future work at this IVS. Independent surveying of ISOs while exposed (open hole) in the IVSs was not possible, because the QA and USA IVS teams could not coordinate this activity. Nonetheless, QA surveying of pin flags, which marked the approximate location of the buried ISOs, was accomplished. This comparison showed offsets in RAA-02 average 2.43 inches, offsets in RAA-03 average 1.17 inches, and offsets in RAA-04 average 2.8 inches. The relative poor comparisons in RAAs -02 and -04 could be due to several factors: the pin flags may not have been placed accurately over the ISO, or the extremely windy conditions which occurred during the surveying made it difficult to hold the GPS antenna steady over the flag. It should be noted that slight offsets in surveyed locations of the ISOs will not affect the utility of the IVSs, as the metrics here are DGM repeat amplitudes (over Line 0), and interpreted position of the

anomalies. Independent surveying of 15 QC BSIs in the three RAAs showed an average offset between QA and USA survey coordinates of 1.32 inches, which is below the metric. Three of the individual checks slightly exceeded the metric. Two of these exceedances occurred in RAA-02 in very high wind conditions where it was difficult to hold the GPS antenna steady over the seed. None of these exceedances will affect the utility of the BSIs, as the positional metric for these BSIs is detection within 30 inches (2.5 ft).

Appendix A

QA Daily Production Reports

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	20/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	001
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMPO
AM WEATHER	N/A
PM WEATHER	N/A
MAX TEMP (F)	N/A
MIN TEMP (F)	N/A

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	Mobilization and Set-up	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO

TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	20
CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	20
TOTAL WORK HOURS FROM START OF CONSTRUCTION	20

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED ☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Meeting conducted with project staff to review the Accident Prevention Plan (APP) and specific safety precautions for the project. Additional safety instructions given by flight crew prior to aircraft departure from Anchorage, AK.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Participated in the safety meeting with the USA staff to discuss the APP and related safety topics for the upcoming work.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	21/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	002
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMPO
AM WEATHER	Partly Sunny
PM WEATHER	Partly Sunny
MAX TEMP (F)	48
MIN TEMP (F)	41

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	Coordination Meeting, Equipment Check-out, ARGO maintenance, field inspection	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	20
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	40
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO		
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION	40

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED	☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.	

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Attended the morning safety briefing which was conducted by the USA UXOSO. Participated in a coordination meeting with the USA PM, Geophysicist, UXOSO and blind seed installation technical lead to discuss the requirements for installation of the Instrument Verification Strips (IVS) and the installation of blind seeds (e.g., how and where measurements were to be made, agreement on definitions of terms used in the GSV Plan, coordination of activities between QA and USA, etc.).
	Performed maintenance on the 3 ARGO ATVs which are in storage at the bunker. Performed maintenance and inventory on the other equipment stored in the bunker. Conducted an inspection of the OU-B1 GPO area in anticipation of removal of the GPO seed items next spring.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	22/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	003
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMPO
AM WEATHER	Partly Sunny
PM WEATHER	Partly Sunny
MAX TEMP (F)	53
MIN TEMP (F)	41

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	Coordination Meeting, Equipment Check-out, ARGO maintenance, field inspection	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	20
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	60
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO		
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION	60

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED	☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.	

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Attended the morning safety briefing which was conducted by the USA UXOSO. Conducted QA Surveillance of the QC Survey Team planting blind seeds in RAA-03. Observed the contractor DGM crew installing the RAA-03 IVS.
	Went to OU-B1 GPO to relocate and remove targets, found the corners, removed several targets but decided it would be a better use of our time to wait for the surveyors before continuing.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	23/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	004
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMP
AM WEATHER	Partly Sunny
PM WEATHER	Partly Sunny
MAX TEMP (F)	53
MIN TEMP (F)	41

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	Coordination Meeting, Equipment Check-out, ARGO maintenance, field inspection	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	20
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	60
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO		
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION	60

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED	☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.	

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Attended the morning safety briefing which was conducted by the USA UXOSO. Conducted QA Surveillance of the QC Survey Team planting blind seeds in RAA-03. Observed the contractor DGM crew installing the RAA-03 IVS.
	Went to OU-B1 GPO to relocate and remove targets, found the corners, removed several targets but decided it would be a better use of our time to wait for the surveyors before continuing.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	24/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	005
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMP
AM WEATHER	Rainy, Windy
PM WEATHER	Rainy, Windy
MAX TEMP (F)	53
MIN TEMP (F)	41

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	QA Inspection of IVS/Blind Seed Installation	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10
		Umiaq	2	Surveyors	20

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS: 40
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT: 120
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO	
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION: 120

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED	☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.	

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Surveyors established/verified survey control, set survey control at RAA-03, checked the contractor survey control at RAA-03, surveyed points in the RAA-03 IVS, surveyed contractor blind seed locations (5) and supported installation of QA blind seeds in RAA-03 and RAA-01.
	QA installed blind seeds in RAA-03 and RAA-01.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	25/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	006
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMP
AM WEATHER	Rainy, Windy
PM WEATHER	Rainy, Windy
MAX TEMP (F)	53
MIN TEMP (F)	41

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	QA Inspection of IVS/Blind Seed Installation	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10
		Umiaq	2	Surveyors	20

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO

TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	40
CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	160
TOTAL WORK HOURS FROM START OF CONSTRUCTION	160

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.

☒ SAFETY REQUIREMENTS HAVE BEEN MET.

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Completed installation of QA blind seeds in RAA-03. Established survey control in RAA-04; checked the contractor survey control in RAA-04; surveyed the IVS in RAA-04; installed all of the QA blind seeds in RAA-04.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	26/09/2012	
CONTRACT NO	N62743-07-D-4013 TO 023	
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK	
REPORT NO	007	
CONTRACTOR	Battelle Memorial Institute	
SUPERINTENDENT	Les Clarke, PMP	
AM WEATHER	Rainy, Cloudy, High Winds	
PM WEATHER	Rainy, Cloudy, High Winds	
MAX TEMP (F)	53	
MIN TEMP (F)	41	

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	QA Inspection of IVS/Blind Seed Installation	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10
		Umiaq	2	Surveyors	20

JOB SAFETY

WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	40
WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	200
WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO		
WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION	200

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDUCTED	☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.	

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Completed installation of QA blind seeds in RAA-02. Established survey control in RAA-02; checked the contractor survey control in RAA-02; surveyed the IVS in RAA-02; installed all of the QA blind seeds in RAA-02.

CONTRACTOR/SUPERINTENDENT DATE

CONTRACTOR PRODUCTION REPORT

(ATTACH ADDITIONAL SHEETS IF NECESSARY)

DATE	27/09/2012
CONTRACT NO	N62743-07-D-4013 TO 023
TITLE AND LOCATION	Munitions Quality Assurance, Former Naval Air Facility Adak, Adak Island, AK
REPORT NO	008
CONTRACTOR	Battelle Memorial Institute
SUPERINTENDENT	Les Clarke, PMP
AM WEATHER	Rainy, Cloudy, High Winds
PM WEATHER	Rainy, Cloudy, High Winds
MAX TEMP (F)	53
MIN TEMP (F)	41

WORK PERFORMED TODAY

Schedule Activity No.	WORK LOCATION AND DESCRIPTION	EMPLOYER	NUMBER	TRADE	HRS
	QA Inspection of IVS/Blind Seed Installation	Battelle	1	Project Manager	10
		Blohm Consulting	1	Geophysicist	10
		Umiaq	2	Surveyors	20

JOB SAFETY					
	WAS A JOB SAFETY MEETING HELD THIS DATE? (If YES attach copy of the meeting minutes)	☒ YES	☐ NO	TOTAL WORK HOURS ON JOB SITE, THIS DATE, INCL CON'T SHEETS	40
	WERE THERE ANY LOST TIME ACCIDENTS THIS DATE? (If YES attach copy of completed OSHA report)	☐ YES	☒ NO	CUMULATIVE TOTAL OF WORK HOURS FROM PREVIOUS REPORT	240
	WAS CRANE/MANLIFT/TRENCHING/SCAFFOLD/HV ELEC/HIGH WORK/ HAZMAT WORK DONE? (If YES attach statement or checklist showing inspection performed.)	☐ YES	☒ NO		
	WAS HAZARDOUS MATERIAL/WASTE RELEASED INTO THE ENVIRONMENT? (If YES attach description of incident and proposed action.)	☐ YES	☒ NO	TOTAL WORK HOURS FROM START OF CONSTRUCTION	240

Schedule Activity No.	LIST SAFETY ACTIONS TAKEN TODAY/SAFETY INSPECTIONS CONDJCTED	☒ SAFETY REQUIREMENTS HAVE BEEN MET.
	Morning safety briefing was conducted by the USA UXO Safety Officer. Records of attendance are maintained by USA.	

EQUIPMENT/MATERIAL RECEIVED TODAY TO BE INCORPORATED IN JOB (INDICATE SCHEDULE ACTIVITY NUMBER)

Schedule Activity No.	Submittal #	Description of Equipment/Material Received

CONSTRUCTION AND PLANT EQUIPMENT ON JOB SITE TODAY. INDICATE HOURS USED AND SCHEDULE ACTIVITY NUMBER.

Schedule Activity No.	Owner	Description of Construction Equipment Used Today (incl Make and Model)	Hours Used

Schedule Activity No.	REMARKS
	Retrieved the ARGO from RAA 04 and returned it to the Battelle bunker. Cleaned and returned all of the field and office equipment to the bunker. Cleaned out the bunker where all of the Tetra Tech/Bering Sea Ecotech sampling supplies were located and took the trash to the dump and burned it. Stacked all of the empty 55gal drums against the bulkheads and the only thing remaining in the bunker is two sections of plastic sheeting. Surveyors located and marked all of the seed items within the OU-B1 GPO using wooden stakes. Departed Adak on the afternoon flight.

CONTRACTOR/SUPERINTENDENT DATE

Appendix B

QA Surveillance Reports

QA Surveillance Report
Adak Project 2012 (Page 1 of 2)

Location : Adak, OU B-2 **Report #** QA_2012_001 **Contract #**

1 - Definable Feature of Work

☐ DGM Investigation ☐ Grid Survey ☐ Vegetation Removal ☐ UXO Surface Sweep ☐ DGM Investigation

☐ Anomaly Reacquisition ☐ Intrusive Investigation ☐ MPPEH/MD/RRD/CD Inspection

☒ Other (Describe: Contractor (USAE) Blind Seed Installation and GSV (IVS) Installation-RAA-03

2 – Frequency/Type

☐ Daily ☐ Weekly Summary ☐ Monthly ☒ Other

3 – References

Draft Final GSV Plan 9-14-12.docx.

4 - Observed Condition/Activities:

Observed USAE Blind Seed Installation team (Scott Crandall-Surveyor, Rick Moyer-UXO Tech, Robert Shauger-UXO QC with surveying and placement of QC Blind Seeds in RAA-03. Observe placement of QC Seeds #231 and #191.
Observed USAE Digital Geophysical Mapping (DGM) team (Ric McNeil-Lead Geo, Ted Pate-UXO Tech, Charles Haggerty-Geo Crew member) assemble DGM equipment and start of background DGM survey for establishing RAA-03 IVS.

5 - Comments:

Seed #231 was placed at a depth of 3X Diameter (~4 inches) below mineral surface. Tundra thickness of about 3-1/2 inches at this location. This excavation filled with water immediately. Seed #191 was placed at a depth of 5X diameter (~8.1 inches). Tundra thickness was about 2 inches at this location. Pictures Adak_092212 004.jpg and Adak_092212 006.jpg shows emplacement of Seed #191. Picture Adak_092212 008.jpg shows testing of DGM equipment near RAA-03 IVS.

6 - Results of Surveillance

☒ Acceptable	☐ Unacceptable	DN #: N/A NCR #: N/a

Conducted By: Mark Blohm	Signature: Mark Blohm Digitally signed by Mark Blohm DN: cn=Mark Blohm, o=Blohm Consulting, ou, email=mblohm@wispertel.net, c=US Date: 2012.09.22 23:41:51 -08'00'	Date: 9/22/2012

QA Surveillance Report
Adak Project 2012 (Page 2 of 2)

Location : Adak, OU B-2	**Report #** QA_2012_005	**Contract #**
7- Comments:		
Contractor IVS installation was in conformance with GSV plan.		
8 - QA Field Lead Review		
■ Concur ☐ Non-Concur	Signature:	Date 9-28-2012
9 - Quality Assurance Certification Statement		
"I certify that the above report is complete and correct and that I, or my authorized representatives, have inspected the work performed this day by USA Environmental (and each subcontractor) and have determined that all materials, equipment, and workmanship are in strict conformance with the plans and specifications except as noted above."		
10 - Navy Technical Representative (NTR) Review		
Reviewed By: None at Site.	Signature:	Date: N/A

QA Surveillance Report
Adak Project 2012 (Page 1 of 2)

Location : Adak, OU B-2 **Report #** QA_2012_005 **Contract #**

1 - Definable Feature of Work

☐ DGM Investigation ☐ Grid Survey ☐ Vegetation Removal ☐ UXO Surface Sweep ☐ DGM Investigation

☐ Anomaly Reacquisition ☐ Intrusive Investigation ☐ MPPEH/MD/RRD/CD Inspection

☒ Other (Describe: Contractor (USAE) Blind Seed Installation RAA-03

2 – Frequency/Type

☐ Daily ☐ Weekly Summary ☐ Monthly ☒ Other

3 – References

Draft Final GSV Plan 9-14-12.docx.

4 - Observed Condition/Activities:

Observed USAE DGM team (Ric McNeill-lead Geo, Ted Pate-UXO Tech, Charles Haggerty-Geo Tech) installing and running DGM on RAA-02 IVS. This site is located on top of the bluff, just west of the sea wall of Andrew Lake. Presently a long, difficult Argo ride.

5 - Comments:

QA survey team checks QC Blind Seed installation in RAA-04. QA Team installs QA Blind seeds in RAA-02. QA Survey team establishes control point (RAA2 CP-2) about 200 north of RAA-02 IVS and checks IVS points. Note: ISO's were already installed by contractor.QA Survey team resurveys 5 QC Blind Seeds in RAA-02. Note: ISO's were already installed by contractor.

6 - Results of Surveillance

☒ Acceptable	☐ Unacceptable	DN #: N/A NCR #: N/a

Conducted By: Mark Blohm	Signature: Mark Blohm Digitally signed by Mark Blohm DN: cn=Mark Blohm, o=Blohm Consulting, ou, email=mblohm@wispertel.net, c=US Date: 2012.09.27 17:04:17 -08'00'	Date: 9/26/2012

QA Surveillance Report
Adak Project 2012 (Page 2 of 2)

Location : Adak, OU B-2	**Report #** QA_2012_004	**Contract #**
7- Comments:		
Contractor IVS installation was in conformance with GSV plan.		
8 - QA Field Lead Review		
■ Concur ☐ Non-Concur	Signature:	Date 9-26-2012
9 - Quality Assurance Certification Statement		
"I certify that the above report is complete and correct and that I, or my authorized representatives, have inspected the work performed this day by USA Environmental (and each subcontractor) and have determined that all materials, equipment, and workmanship are in strict conformance with the plans and specifications except as noted above."		
10 - Navy Technical Representative (NTR) Review		
Reviewed By: None at Site.	Signature:	Date: N/A

QA Surveillance Report
Adak Project 2012 (Page 1 of 2)

Location : Adak, OU B-2 **Report #** QA_2012_004 **Contract #**

1 - Definable Feature of Work

☐ DGM Investigation ☐ Grid Survey ☐ Vegetation Removal ☐ UXO Surface Sweep ☐ DGM Investigation

☐ Anomaly Reacquisition ☐ Intrusive Investigation ☐ MPPEH/MD/RRD/CD Inspection

☒ Other (Describe: Contractor (USAE) Blind Seed Installation RAA-03

2 – Frequency/Type

☐ Daily ☐ Weekly Summary ☐ Monthly ☒ Other

3 – References

Draft Final GSV Plan 9-14-12.docx.

4 - Observed Condition/Activities:

Observed USAE DGM team (Ric McNeill-lead Geo, Ted Pate-UXO Tech, Charles Haggerty-Geo Tech) installing and running DGM on RAA-04 IVS. This site is located near (about 50ft west) of main access road, and about 50-100 North of gate to this RAA/AOC.

5 - Comments:

QA team checks installs QA Blind seeds in RAA-03 and RAA-04. QA Survey team establishes control point (QAR4-1) near RAA-04. This point is located outside of the AOC, about 100-200 ft south of the intersection of the E-W and N-S main access roads to the area. QA Survey team measures contractor IVS points for RAA-04 IVS. Note: ISO's were already installed by contractor.

6 - Results of Surveillance

☒ Acceptable	☐ Unacceptable	DN #: N/A NCR #: N/a

Conducted By: Mark Blohm	Signature: Mark Blohm Digitally signed by Mark Blohm DN: cn=Mark Blohm, o=Blohm Consulting, ou, email=mblohm@wispertel.net, c=US Date: 2012.09.26 11:21:02 -08'00'	Date: 9/25/2012

QA Surveillance Report
Adak Project 2012 (Page 2 of 2)

Location : Adak, OU B-2	**Report #** QA_2012_003	**Contract #**
7- Comments:		
Contractor Blind Seed installation was in conformance with GSV plan.		
8 - QA Field Lead Review		
■ Concur ☐ Non-Concur	Signature:	Date 9/26/2012
9 - Quality Assurance Certification Statement		
"I certify that the above report is complete and correct and that I, or my authorized representatives, have inspected the work performed this day by USA Environmental (and each subcontractor) and have determined that all materials, equipment, and workmanship are in strict conformance with the plans and specifications except as noted above."		
10 - Navy Technical Representative (NTR) Review		
Reviewed By: None at Site.	Signature:	Date: N/A

QA Surveillance Report
Adak Project 2012 (Page 1 of 2)

Location : Adak, OU B-2 **Report #** QA_2012_003 **Contract #**

1 - Definable Feature of Work

☐ DGM Investigation ☐ Grid Survey ☐ Vegetation Removal ☐ UXO Surface Sweep ☐ DGM Investigation

☐ Anomaly Reacquisition ☐ Intrusive Investigation ☐ MPPEH/MD/RRD/CD Inspection

☒ Other (Describe: Contractor (USAE) Blind Seed Installation RAA-03

2 – Frequency/Type

☐ Daily ☐ Weekly Summary ☐ Monthly ☒ Other

3 – References

Draft Final GSV Plan 9-14-12.docx.

4 - Observed Condition/Activities:

Observed USAE Blind Seed Installation team (Scott Crandall-Surveyor, Rick Moyer-UXO Tech, Robert Shauger-UXO QC with surveying and placement of QC Blind Seeds in RAA-03. QA Survey Team (Kevin Eishens and Robert Boyce) confirm 5 QC Blind seed locations. QA Survey Team and QC Survey Team perform comparison measurements on QA Base location (OBOD-1) located near center of OBOD. Approximate error is between systems is small (estimated at about 0.1 inch), and very acceptable. QA Survey teams measures survey end points of contractor IVS lanes in RAA-03 and Contractor control (RA3-BC) point. Approximate locations of ISO's (Pin flags) are measured by QA Survey team (ISO's have been buried).

5 - Comments:

QA Survey team checks several more QC BSI seed locations in RAA-03 and installs QA Blind seeds in western portion of RAA-03 and all of RAA-01.

6 - Results of Surveillance

☒ Acceptable	☐ Unacceptable	DN #: N/A NCR #: N/a

Conducted By: Mark Blohm	Signature: Mark Blohm Digitally signed by Mark Blohm DN: cn=Mark Blohm, o=Blohm Consulting, ou, email=mblohm@wispertel.net, c=US Date: 2012.09.24 22:42:37 -08'00'	Date: 9/24/2012

QA Surveillance Report
Adak Project 2012 (Page 2 of 2)

Location : Adak, OU B-2	**Report #** QA_2012_002	**Contract #**
7- Comments:		
Contractor Blind Seed installation was in conformance with GSV plan. Contractor selection of IVS location and installation of ISO's was in conformance with GSV plan.		
8 - QA Field Lead Review		
■ Concur ☐ Non-Concur	Signature:	Date 9/24/2012
9 - Quality Assurance Certification Statement		
"I certify that the above report is complete and correct and that I, or my authorized representatives, have inspected the work performed this day by USA Environmental (and each subcontractor) and have determined that all materials, equipment, and workmanship are in strict conformance with the plans and specifications except as noted above."		
10 - Navy Technical Representative (NTR) Review		
Reviewed By: None at Site.	Signature:	Date: N/A

QA Surveillance Report
Adak Project 2012 (Page 1 of 2)

Location : Adak, OU B-2 **Report #** QA_2012_002 **Contract #**

1 - Definable Feature of Work

☐ DGM Investigation ☐ Grid Survey ☐ Vegetation Removal ☐ UXO Surface Sweep ☐ DGM Investigation

☐ Anomaly Reacquisition ☐ Intrusive Investigation ☐ MPPEH/MD/RRD/CD Inspection

☒ Other (Describe: Contractor (USAE) Blind Seed Installation and GSV (IVS) Installation-RAA-03

2 – Frequency/Type

☐ Daily ☐ Weekly Summary ☐ Monthly ☒ Other

3 – References

Draft Final GSV Plan 9-14-12.docx.

4 - Observed Condition/Activities:

Observed USAE Blind Seed Installation team (Scott Crandall-Surveyor, Rick Moyer-UXO Tech, Robert Shauger-UXO QC with surveying and placement of QC Blind Seeds in RAA-03. Observe placement of QC Seeds #253 and 194.
Observed USAE Digital Geophysical Mapping (DGM) team (Ric McNeil-Lead Geo, Ted Pate-UXO Tech, Charles Haggerty-Geo Crew member) acquiring background DGM survey for RAA-03 IVS.

5 - Comments:

Review background DGM data of RAA-03 IVS with Ric McNeil. This area is relative noisey due to cultural items. A better location can likely not be found. A relative clean portion of this area was selected for the ISO's and offset lines. DGM crew installed ISO's and ran DGM over the IVS later in day.

6 - Results of Surveillance

☒ Acceptable	☐ Unacceptable	DN #: N/A NCR #: N/a

Conducted By: Mark Blohm	Signature: Mark Blohm Digitally signed by Mark Blohm DN: cn=Mark Blohm, o=Blohm Consulting, ou, email=mblohm@wispertel.net, c=US Date: 2012.09.24 22:33:54 -08'00'	Date: 9/23/2012

QA Surveillance Report
Adak Project 2012 (Page 2 of 2)

Location : Adak, OU B-2	**Report #** QA_2012_001	**Contract #**
7- Comments:		
Contractor Blind Seed installation was in conformance with GSV plan.		
8 - QA Field Lead Review		
■ Concur ☐ Non-Concur	Signature:	Date 20120922
9 - Quality Assurance Certification Statement		
"I certify that the above report is complete and correct and that I, or my authorized representatives, have inspected the work performed this day by USA Environmental (and each subcontractor) and have determined that all materials, equipment, and workmanship are in strict conformance with the plans and specifications except as noted above."		
10 - Navy Technical Representative (NTR) Review		
Reviewed By: None at Site.	Signature:	Date: N/A

Appendix C

QA RLS Survey Control

QA RLS FIELD POINTS & CONTROL							
NAME	AK SP Z-10 NORTHING	AK SP Z-10 EASTING	ELEVATION	WGS84 LATITUDE	WGS84 LONGITUDE	HEIGHT	DESCRIPTION
BUNKER ALPHA	324632.88	3135540.17	88.30	51°53'14.83967"N	176°38'35.64288"W	95.19	FND BC
BR-1	321161.60	3135814.11	77.04	51°52'40.63145"N	176°38'30.78310"W	83.90	
BM18	315129.19	3135925.29	32.17	51°51'41.15190"N	176°38'28.15450"W	38.96	FND BC
BR6	318792.89	3128679.08	398.00	51°52'16.62850"N	176°40'24.11511"W	404.67	FND AL CAP
BR1	321167.55	3135810.20	76.87	51°52'40.68973"N	176°38'30.84633"W	83.73	FND BC
VW	343825.90	3131113.38	30.79	51°56'23.71757"N	176°39'49.01529"W	37.46	FND SPK
OBOD	341774.72	3134728.35	35.30	51°56'03.81464"N	176°38'51.04106"W	42.09	FND WOOD STAKE
OBOD1	339216.13	3130270.41	130.10	51°55'38.18070"N	176°40'01.78287"W	136.89	SET RBR
SKI	329204.94	3125592.85	817.95	51°53'59.01971"N	176°41'14.86781"W	824.71	SET STEEL ROD
DAM	333111.85	3127044.79	851.64	51°54'37.68436"N	176°40'52.31226"W	858.45	FND1.5" STEEL PIPE
DAM1	333098.48	3127048.75	849.04	51°54'37.55289"N	176°40'52.24712"W	855.85	SET STEEL ROD
STATE PLANE COORDINATES ARE IN US SURVEY FEET							

Appendix D

OU B-1 GPO Seed Status

Grid	EM61 Ch 1 (mV)	GPO Target #	Easting	Northing	GPO Target Type	Target Depth (inches)	Target Orientation (Dip)	Status (as of 9/27/2012)
CAL	8.3	128	3126787.6	333108.5	105mm Projectile	46	0	REMAINING
CAL	9.1	129	3126746.3	333099.1	105mm Projectile	30	0	REMAINING
CAL	11.3	130	3126769.1	333093.1	120mm Projectile	36	0	REMAINING
CAL	8.9	131	3126726.9	333103.6	155mm Projectile	48	0	REMAINING
CAL	9.8	132	3126805.2	333084.7	155mm Projectile	48	0	REMAINING
CAL	22.4	133	3126781.9	333100.7	2.75' Rocket W/H	30	90	REMAINING
CAL	21.3	134	3126792.7	333096.5	20mm Full	12	90	Removed
CAL	34.9	135	3126766.1	333108.9	20mm Full	6	90	Removed
CAL	4.6	136	3126757.2	333111.6	20mm Projectile	8	90	REMAINING
CAL	7	137	3126761.9	333120.3	20mm Projectile	4	90	REMAINING
CAL	8.3	138	3126800.5	333108.8	60mm Mortar	26	90	REMAINING
CAL	51.1	139	3126777.7	333087.9	60mm Mortar	12	45	Removed
CAL	12	140	3126757.8	333090.3	75mm Projectile	32	90	REMAINING
CAL	55.3	141	3126762.8	333101.5	75mm Projectile	12	45	Removed
CAL	1.6	142	3126789.1	333085.4	81mm Mortar	35	90	REMAINING
CAL	96.7	143	3126738.5	333094.7	81mm Mortar	12	45	Removed
CAL	2.3	144	3126747.1	333122.1	90mm Mortar	38	90	REMAINING
CAL	43.9	145	3126809.2	333101.9	90mm Mortar	24	45	REMAINING
CAL	4.3	146	3126748.7	333112.6	Hand Grenade M-69	12	90	REMAINING
CAL	6.3	147	3126729.8	333115.6	60mm Mortar	24	90	REMAINING
CAL	34.5	148	3126739.9	333103.9	60mm Mortar	12	45	Removed
CAL	20	149	3126800.4	333095.1	Frag	0	0	Removed
CAL	122.6	150	3126753.8	333104.9	Frag	0	0	Removed
CAL	18	151	3126739.7	333123.2	Seed/Nail	0	90	Removed
CAL	19.2	152	3126741.0	333110.0	Seed/Nail	0	90	Removed
CAL	10.9	153	3126728.1	333124.4	37mm Sim	12	0	Removed
CAL	13.4	154	3126774.9	333112.6	37mm Sim	12	90	Removed
EAST	Not Available	1	3126555.2	333300.8	37mm Sim	16	90	REMAINING
EAST	Not Available	2	3126512.4	333334.9	37mm Sim	12	90	REMAINING

Grid	EM61 Ch 1 (mV)	GPO Target #	Easting	Northing	GPO Target Type	Target Depth (inches)	Target Orientation (Dip)	Status (as of 9/27/2012)
EAST	Not Available	3	3126540.3	333326.0	37mm Sim	6	0	REMAINING
EAST	Not Available	4	3126617.0	333267.1	105mm Projectile	40	0	REMAINING
EAST	Not Available	6	3126541.8	333318.8	37mm Sim	6	0	REMAINING
EAST	Not Available	7	3126544.7	333299.3	105mm Ejection	36	0	REMAINING
EAST	Not Available	10	3126506.6	333301.3	37mm Sim	12	90	REMAINING
EAST	Not Available	11	3126522.6	333300.0	37mm Sim	6	0	REMAINING
EAST	Not Available	12	3126533.5	333305.6	37mm Sim	8	0	REMAINING
EAST	Not Available	13	3126546.5	333334.1	37mm Sim	12	0	REMAINING
EAST	Not Available	14	3126549.0	333325.0	37mm Sim	6	0	REMAINING
EAST	Not Available	15	3126540.1	333285.7	37mm Sim	16	90	REMAINING
EAST	Not Available	16	3126501.5	333342.9	120mm Projectile	36	0	REMAINING
EAST	Not Available	17	3126610.9	333330.1	120mm Projectile	36	0	REMAINING
EAST	Not Available	20	3126501.6	333322.9	37mm Sim	16	90	REMAINING
EAST	Not Available	21	3126523.6	333339.5	37mm Sim	12	90	REMAINING
EAST	Not Available	22	3126531.7	333282.3	37mm Sim	6	0	REMAINING
EAST	Not Available	23	3126562.5	333271.6	155mm Projectile	42	0	REMAINING
EAST	Not Available	24	3126515.7	333306.7	37mm Sim	12	0	REMAINING
EAST	Not Available	25	3126526.2	333330.6	37mm Sim	6	0	REMAINING
EAST	Not Available	26	3126497.6	333302.0	155mm Projectile	36	0	REMAINING
EAST	Not Available	29	3126534.3	333334.7	2.75 Rocket W/H	30	90	REMAINING
EAST	Not Available	30	3126575.7	333334.1	2.75 Rocket W/H	30	33	REMAINING
EAST	Not Available	31	3126573.0	333289.8	2.75 Rocket W/H	30	0	REMAINING
EAST	Not Available	32	3126531.2	333292.5	2.75 Rocket W/H	21	90	REMAINING
EAST	Not Available	33	3126577.6	333311.5	2.75 Rocket W/H	21	45	REMAINING
EAST	Not Available	34	3126557.2	333322.2	2.75 Rocket W/H	21	0	REMAINING
EAST	Not Available	35	3126523.5	333312.3	2.75 Rocket W/H	12	90	REMAINING
EAST	Not Available	36	3126561.3	333292.0	2.75 Rocket W/H	12	45	REMAINING
EAST	Not Available	39	3126565.2	333325.8	20mm Full	12	90	REMAINING
EAST	Not Available	40	3126507.4	333292.5	20mm Full	12	45	REMAINING
EAST	Not Available	48	3126579.5	333325.4	20mm Projectile	4	90	REMAINING
EAST	Not Available	49	3126558.0	333316.1	20mm Projectile	8	90	REMAINING

Grid	EM61 Ch 1 (mV)	GPO Target #	Easting	Northing	GPO Target Type	Target Depth (inches)	Target Orientation (Dip)	Status (as of 9/27/2012)
EAST	Not Available	63	3126541.3	333278.7	37mm Sim	6	0	REMAINING
EAST	Not Available	64	3126581.3	333319.8	37mm Sim	16	90	REMAINING
EAST	Not Available	65	3126550.7	333311.3	37mm Sim	12	90	REMAINING
EAST	Not Available	66	3126587.5	333305.0	60mm Mortar	26	90	REMAINING
EAST	Not Available	67	3126583.6	333287.2	60mm Mortar	26	45	REMAINING
EAST	Not Available	68	3126574.5	333277.5	60mm Mortar	26	0	REMAINING
EAST	Not Available	69	3126561.9	333309.0	60mm Mortar	24	90	REMAINING
EAST	Not Available	70	3126593.9	333326.4	60mm Mortar	24	45	REMAINING
EAST	Not Available	71	3126557.9	333287.0	60mm Mortar	24	0	REMAINING
EAST	Not Available	72	3126509.1	333313.2	60mm Mortar	15	90	REMAINING
EAST	Not Available	73	3126585.5	333333.0	60mm Mortar Illum	15	45	REMAINING
EAST	Not Available	74	3126595.0	333309.8	60mm Mortar	15	0	REMAINING
EAST	Not Available	84	3126601.8	333316.6	81mm Mortar	32	0	REMAINING
EAST	Not Available	85	3126498.0	333281.9	105mm Ejection	36	45	REMAINING
EAST	Not Available	86	3126591.0	333296.5	81mm Mortar	32	0	REMAINING
EAST	Not Available	87	3126514.2	333289.0	75mm projo Sim	22	90	REMAINING
EAST	Not Available	88	3126571.0	333303.4	75mm projectile	22	45	REMAINING
EAST	Not Available	89	3126591.5	333319.2	81mm Mortar	22	0	REMAINING
EAST	Not Available	93	3126570.4	333318.6	81mm Mortar	35	90	REMAINING
EAST	Not Available	94	3126519.5	333323.9	81mm Mortar	35	45	REMAINING
EAST	Not Available	95	3126558.2	333335.1	81mm Mortar	35	0	REMAINING
EAST	Not Available	96	3126495.9	333334.4	81mm Mortar	18	90	REMAINING
EAST	Not Available	97	3126582.7	333271.8	81mm Mortar	18	45	REMAINING
EAST	Not Available	98	3126590.5	333278.1	81mm Mortar	18	0	REMAINING
EAST	Not Available	102	3126622.8	333324.4	37mm Sim	6	0	REMAINING
EAST	Not Available	103	3126602.7	333289.4	37mm Sim	16	90	REMAINING
EAST	Not Available	104	3126601.7	333298.8	37mm Sim	12	90	REMAINING
EAST	Not Available	105	3126599.7	333281.8	90mm Projectile	25	90	REMAINING
EAST	Not Available	106	3126516.2	333277.0	90mm Projectile	25	45	REMAINING
EAST	Not Available	107	3126614.7	333319.4	37mm Sim	12	0	REMAINING
EAST	Not Available	119	3126602.5	333304.3	Frag	0	N/A	REMAINING

Grid	EM61 Ch 1 (mV)	GPO Target #	Easting	Northing	GPO Target Type	Target Depth (inches)	Target Orientation (Dip)	Status (as of 9/27/2012)
EAST	Not Available	120	3126616.7	333286.9	Frag	0	N/A	REMAINING
EAST	Not Available	123	3126620.8	333333.5	Seed/Nail	4	90	REMAINING
EAST	Not Available	124	3126609.2	333309.4	Seed/Nail	0	90	REMAINING
WEST	3.1	9	3126088.2	333009.9	37mm Sim	6	0	REMAINING
WEST	4.9	46	3126279.5	333041.0	37mm Sim	6	0	REMAINING
WEST	5.2	110	3126071.6	332999.6	37mm Sim	12	0	REMAINING
WEST	6.9	8	3126201.4	332957.2	37mm Sim	12	0	REMAINING
WEST	7	27	3126180.9	332965.0	37mm Sim	12	0	REMAINING
WEST	8.6	47	3126118.6	333019.7	37mm Sim	16	90	REMAINING
WEST	8.7	121	3126145.1	333025.6	Grenade M69	12	N/A	REMAINING
WEST	8.8	61	3126184.3	332951.7	37mm Sim	12	0	REMAINING
WEST	9.1	59	3126286.1	333049.9	37mm Sim	16	90	REMAINING
WEST	10	77	3126272.2	333028.9	60mm Mortar	20	0	REMAINING
WEST	10.1	45	3126152.9	333036.2	37mm Sim	12	0	REMAINING
WEST	11.9	125	3126303.4	332986.4	Seed/Nail	4	90	REMAINING
WEST	12.5	51	3126165.9	332973.1	37mm Sim	6	0	REMAINING
WEST	12.8	54	3126287.7	333032.3	37mm Sim	12	90	REMAINING
WEST	13.3	18	3126216.6	332959.0	37mm Sim	16	90	REMAINING
WEST	14.3	75	3126254.5	333018.2	60mm Mortar	26	90	REMAINING
WEST	16.3	126	3126082.0	332987.5	Seed/Nail	4	90	REMAINING
WEST	16.5	56	3126297.9	332994.7	37mm Sim	8	45	REMAINING
WEST	16.5	43	3126243.9	333030.4	37mm Sim	12	0	REMAINING
WEST	17.5	53	3126277.7	333062.9	37mm Sim	16	90	REMAINING
WEST	20.4	41	3126249.1	333054.9	37mm Sim	12	0	REMAINING
WEST	21	122	3126280.6	332981.7	Grenade M69	3	0	REMAINING
WEST	21.9	50	3126267.5	332974.3	37mm Sim	12	45	REMAINING
WEST	22	19	3126114.8	333000.7	37mm Sim	12	90	REMAINING
WEST	25.2	55	3126095.4	332980.8	37mm Sim	8	45	REMAINING
WEST	26.7	60	3126151.2	333008.5	37mm Sim	12	90	REMAINING
WEST	27.4	52	3126202.3	332969.3	37mm Sim	6	0	REMAINING
WEST	28	42	3126271.5	333013.8	37mm Sim	12	90	REMAINING

Grid	EM61 Ch 1 (mV)	GPO Target #	Easting	Northing	GPO Target Type	Target Depth (inches)	Target Orientation (Dip)	Status (as of 9/27/2012)
WEST	29.5	127	3126085.5	332944.2	Seed/Nail	0	90	REMAINING
WEST	29.8	28	3126150.1	332962.6	37mm Sim	6	0	REMAINING
WEST	31	118	3126242.0	333060.5	Frag	1	N/A	REMAINING
WEST	32.1	57	3126279.9	333015.8	37mm Sim	8	45	REMAINING
WEST	32.4	76	3126227.4	333021.5	60mm Mortar	18	45	REMAINING
WEST	32.9	116	3126074.8	332981.3	Frag	1	N/A	REMAINING
WEST	37.1	90	3126219.3	333041.0	81mm Mortar	32	90	REMAINING
WEST	40	44	3126193.8	332986.3	37mm Sim	6	0	REMAINING
WEST	41.6	99	3126263.9	333067.2	81mm Mortar	12	0	REMAINING
WEST	47	58	3126066.7	332953.3	37mm Sim	6	0	REMAINING
WEST	50.9	108	3126286.2	333000.3	90mm Projectile	20	90	REMAINING
WEST	62.3	78	3126261.0	333052.3	60mm Mortar	6	90	REMAINING
WEST	62.6	83	3126115.0	332954.2	60mm Mortar	6	0	REMAINING
WEST	64	81	3126050.1	332992.6	81mm Mortar	14	0	REMAINING
WEST	68.1	80	3126109.8	332935.3	60mm Mortar	6	0	REMAINING
WEST	70.8	37	3126114.0	332980.4	2.75 Rocket W/H	12	0	REMAINING
WEST	72.9	101	3126270.1	333002.4	81mm Mortar	20	90	REMAINING
WEST	86	91	3126250.8	333001.0	81mm Mortar	20	45	REMAINING
WEST	91.2	79	3126165.1	333020.4	60mm Mortar	6	45	REMAINING
WEST	107.3	109	3126254.8	333040.5	90mm Projectile	20	45	REMAINING
WEST	139.7	82	3126093.7	332957.4	60mm Mortar	6	45	REMAINING
WEST	152.6	92	3126053.9	332971.0	81mm Mortar	12	0	REMAINING
WEST	191.8	100	3126141.4	332945.7	81mm Mortar	12	45	REMAINING
WEST	210.1	38	3126069.6	333013.8	2.75 Rocket W/H	12	45	REMAINING