



Final
January 2013

Geophysical System Verification Report
Non-Time Critical Removal Action (NTCRA)
Operable Unit B-2 (OU B-2)
Various Remedial Action Areas

Former Naval Air Facility

Adak, Alaska

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



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**FINAL Geophysical System Verification Report
Non-Time Critical Removal Action at OU B-2, Adak, Alaska
January 2013**

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GEOPHYSICAL SYSTEM VERIFICATION (GSV) REPORT

**NON-TIME CRITICAL REMOVAL ACTION
OPERABLE UNIT B-2 (OU B-2) VARIOUS REMEDIAL ACTION AREAS**

**FORMER ADAK NAVAL AIR FACILITY
ADAK, ALASKA**



January 2013

Prepared For:

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

Prepared By:

USA Environmental, Inc.
720 Brooker Creek Boulevard
Suite 204
Oldsmar, FL 34677

Prepared Under:

**Adak OU B-2, NTCRA Munitions Clearance
Contract Number N44255-12-C-3003**

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LIST OF ACRONYMS

2x std. dev.	2 times the standard deviation
ARA	Adak Recreation Area
BSI	blind seed item
cm	centimeter
DGM	digital geophysical mapping
DGPS	Differential Global Positioning System
DQO	data quality objective
EM	electromagnetic
ft	foot, feet
GIS	Geographic Information System
GPS	global positioning system
GSV	Geophysical System Verification
in	inch, inches
ISO	industry standard object
IVS	instrument verification strip
m	meter
MEC	munitions and explosives of concern
mV	millivolt
NAF	Naval Air Facility
NRL	Naval Research Laboratory
NTCRA	Non-Time Critical Removal Action
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RAA	Remedial Action Area
RMS	root mean square
RTK DGPS	Real Time Kinematic Differential Global Positioning System
SOP	Standard Operating Procedure
USA	USA Environmental, Inc.
UXOQCS	UXO Quality Control Specialist
UXOTII	UXO Technician II

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1.0 INTRODUCTION

USA Environmental, Inc. (USA) conducted Geophysical System Verification (GSV) Installation activities in three Remedial Action Areas (RAAs) within Operable Unit B-2 at the former Naval Air Facility (NAF), Adak, Alaska, during the period of 21 September 2012 through 29 September 2012 in support of the non-time critical removal action (NTCRA) for munitions and explosives of concern (MEC). This work was performed in accordance with the final GSV Installation Plan [Munitions and Explosives of Concern Quality Assurance Project Plan (MEC QAPP), Appendix G].

The GSV installation consisted of two main components:

- Installation and testing of an instrument verification strip (IVS) in each of the three RAAs (RAA-02, RAA-03 and RAA-04) to verify that the digital geophysical mapping (DGM) instrumentation (sensors and positioning), instrument operators, data acquisition methodologies, and data processing and analysis procedures meet the specific data quality objectives (DQOs) established for the project. Each test strip consists of a center line with five small industry standard objects (ISOs) and an offset background noise line. Secondary lines were installed at 2.5-ft and 1.25-ft offsets to simulate data collection and to verify half line response amplitude for blind seed verification (see Figure 1-1).
- Installation of blind seed items (BSI) in the survey areas of each RAA as a quality control (QC) measure for geophysical data collection, target selection, and anomaly resolution.

USA deployed a total of eight personnel for the GSV installation. The project teams included:

- Management Team
 - Project Manager, Mr. Manok Synakorn
 - UXO Safety Officer, Mr. Frank Magner
 - UXO Quality Control Specialist (UXOQCS), Mr. Robert Shauger
- IVS Team
 - Site Geophysicist, Mr. Richard MacNeil
 - UXO Technician II (UXOTII), Mr. Charles Haggerty
 - Geophysical Instrument Operator, Mr. Ted Pate
- BSI Team
 - Field Engineer, Mr. Scott Crandall
 - UXOTII, Mr. Richard Moyer

For the IVS installation, USA deployed the following equipment:

- A Trimble 5800 Real Time Kinematic Differential Global Positioning System (RTK DGPS) base station and 5800 RTK DGPS rover
- A Geonics EM61-MK2A with the 1.0- x 0.5-m coil and a T6000 field data logger configured in the two-person stretcher mode with a rigidly mounted DGPS antenna mount centered over the middle of the bottom coil. (Figure 1-1).
- White's DFX300 all metals detector (White's DFX300)
- Trimble GeoXT DGPS
- A laptop computer with:
 - Geonics' sensor software for downloading and exporting electromagnetic (EM) data
 - Geosoft's Oasis Montaj software v7.5 for initial processing and field analysis

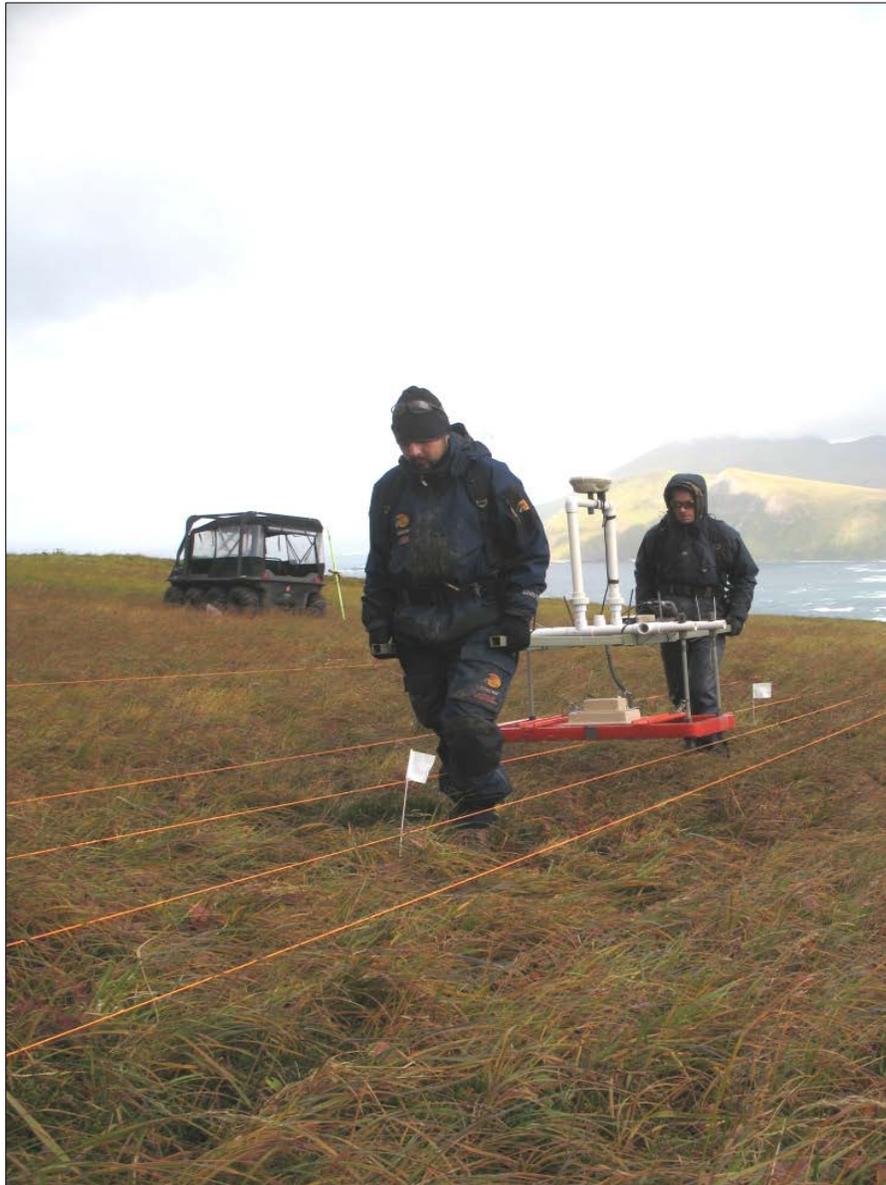


Figure 1-1: EM61-MK2A in Stretcher Mode with Rigid Global Positioning System (GPS) Mount

For the BSI installation, USA deployed the following equipment:

- A Trimble R8 GNSS RTK DGPS base station and rover
- White's DFX300
- Trimble GeoXT DGPS.

The project team utilized two base stations during GSV operations. One base station was located in RAA-03 (RAA03 Base), see Figure 1-2, and the other base station, Adak Recreation Area (ARA Base), was located on the Eastern edge of Andrew Lake, South of RAA-04. These points were located and established using Tidal Bench Mark 18 (PID UW7919) as the reference point and back-checked on historic Benchmark BR-6 near the radar domes. All data is reported in NAD83 Alaska State Plane (10), US Survey feet. A list of control monuments is provided in Table 1-1. Daily GPS checks all passed the performance metric of 0.164-ft and are provided in Table 1-2.

Table 1-1: USA Control Monuments

NAD83 Alaska State Plane Zone 10 US Survey Feet				
Monument	Easting (US ft)	Northing (US ft)	Elevation (US ft)	Comment
Bench Mark 18	3135925.289	315129.185	38.96	Control Point
BR-06	3128679.075	318792.887	404.673	Control Point
ADK-401	3135732.455	334516.414	285.936	Control Point
ADK-401 BC	3135732.995	334497.841	286.008	Back Check
RAA03 Base	3132871.712	340487.023	74.627	Control Point
RAA03 BC	3132885.27	340474.075	73.57	Back Check
ARA Base	3142011.549	345457.498	108.803	Control Point
ARA BC	3142015.412	345429.809	108.444	Back Check

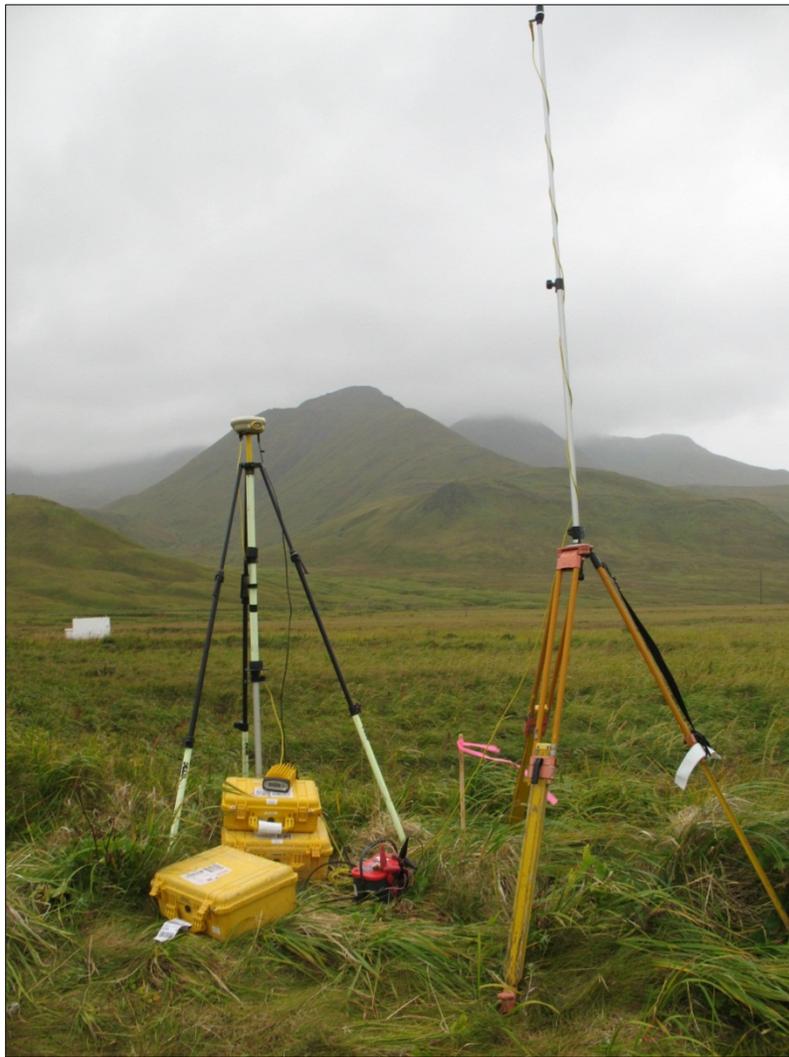


Figure 1-2: RAA-03 Base Station Setup

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Table 1-2: Daily RTK-DGPS Checks

GPS Checks	NAD83 Alaska State Plane, Zone 10, US Survey Feet									
	Date	Team	Check Point	Known Y	Known X	Measured Y	Measured X	Offset (ft)	Metric (ft)	Status
	9/21/2012	BSI	BR-06	318792.887	3128679.075	318792.902	3128679.062	0.0198	0.164	Pass
	9/22/2012	BSI	RAA03 BC	340474.075	3132885.27	340474.095	3132885.266	0.0204	0.164	Pass
	9/23/2012	BSI	RAA03 BC	340474.075	3132885.27	340474.064	3132885.244	0.0282	0.164	Pass
	9/24/2012	BSI	RAA03 BC	340474.075	3132885.27	340474.052	3132885.237	0.0402	0.164	Pass
	9/25/2012	BSI	RAA03 BC	340474.075	3132885.27	340474.025	3132885.279	0.0508	0.164	Pass
	9/26/2012	BSI	ARA BC	345429.809	3142015.412	345429.727	3142015.435	0.0852	0.164	Pass
	9/22/2101	DGM	RAA03 BC	340474.075	3132885.27	340473.997	3132885.247	0.0813	0.164	Pass
	9/23/2101	DGM	RAA03 BC	340474.075	3132885.27	340473.995	3132885.333	0.1018	0.164	Pass
	9/25/2012	DGM	ARA BC	345429.809	3142015.412	345429.777	3142015.375	0.0489	0.164	Pass
	9/26/2012	DGM	ARA BC	345429.809	3142015.412	345429.844	3142015.385	0.0442	0.164	Pass
	9/27/2012	BSI	ARA BC	345429.809	3142015.412	345429.858	3142015.396	0.0515	0.164	Pass

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2.0 RAA-02 IVS INSTALLATION

Installation and testing of the RAA-02 IVS was conducted during the period from 25-26 September 2012.

2.1 NARRATIVE OF INSTALLATION LOGISTICS

On 25 September 2012 the IVS team located the idealized area for the RAA-02 IVS using a Trimble GeoXT. The team then selected a section with similar terrain, vegetation, and geology as the investigation area and performed a background survey using a White's DFX300. The UXOTII confirmed that the site was sufficiently anomaly free. An area approximately 100-ft by 18-ft was then staked out and a background survey was performed using the EM61-MK2A in stretcher mode. The site geophysicist processed the background survey data on-site and confirmed that the area was suitable for the IVS installation to begin. An 80-ft center line was laid out using tape measures and then the offset and background noise lines were installed. Large non-metallic plastic stakes were installed at the ends of each line and high visibility rope was secured along each line between the plastic stakes. The team then installed the small ISOs at the pre-determined points along the center line as described in the GSV Plan. The small ISOs are standard 1-in pipe nipples, intended to simulate 37-mm projectiles. Each ISO was placed horizontal, worst-case inclination, and was oriented either along IVS centerline or across the IVS centerline. The height of the tundra overburden was measured and recorded at each IVS seed item location. Each seed item was emplaced at the approved depth in the mineral soil. The full distance from the tundra surface and mineral soil surface to the center of the IVS seed item was measured with a tape measure and recorded. Prior to burial, the ISOs were photographed (in-place) using the survey tape for orientation reference, and the ISO position (x, y, and depth to center) were measured with the RTK DGPS. A second RTK DGPS measurement was made over each IVS seed item at the walking surface height. The end points of all lines were also measured and recorded with the RTK DGPS.

On 26 September 2012 the IVS team returned to the RAA-02 IVS to conduct all five DGM surveys of the RAA-02 IVS. A morning static and response test was performed according to Standard Operating Procedure (SOP) 2 prior to survey activities and the coil height of the EM61-MK2A was confirmed to be 15-in above the walking surface. After instrument warm-up, five separate files were collected with the EM61-MK2A over the RAA-02 IVS. Data was down loaded and preliminary processing was done on-site by the site geophysicist. An end of the day static and response test was performed before leaving the site.

2.2 IVS AREA MAP AND COORDINATES [FROM GEOGRAPHIC INFORMATION SYSTEM (GIS)]

The RAA-02 IVS was installed inside the proposed IVS radius as described in the GSV plan. The RAA-02 IVS location has similar terrain, vegetation, and geology as the survey portion of the site. The RAA-02 IVS site location map and boundary and lane coordinates are provided in Figure 2-1.

2.3 BACKGROUND DGM AND DISCUSSION

A White's DFX300 was utilized to perform an initial assessment of the idealized IVS location. The UXOTII determined that the planned location was sufficiently free of anomalies and the IVS team laid out a 100-ft by 18-ft grid. The team then surveyed the IVS area using the EM61-MK2A in stretcher mode. The area was shown to be sufficiently clear to enable the installation of the IVS. Background root mean square (RMS) noise for the grid was 0.754-mV on time gate 1. A color shaded grid map of the EM61-MK2A leveled time gate 1 data is shown in Figure 2-2.

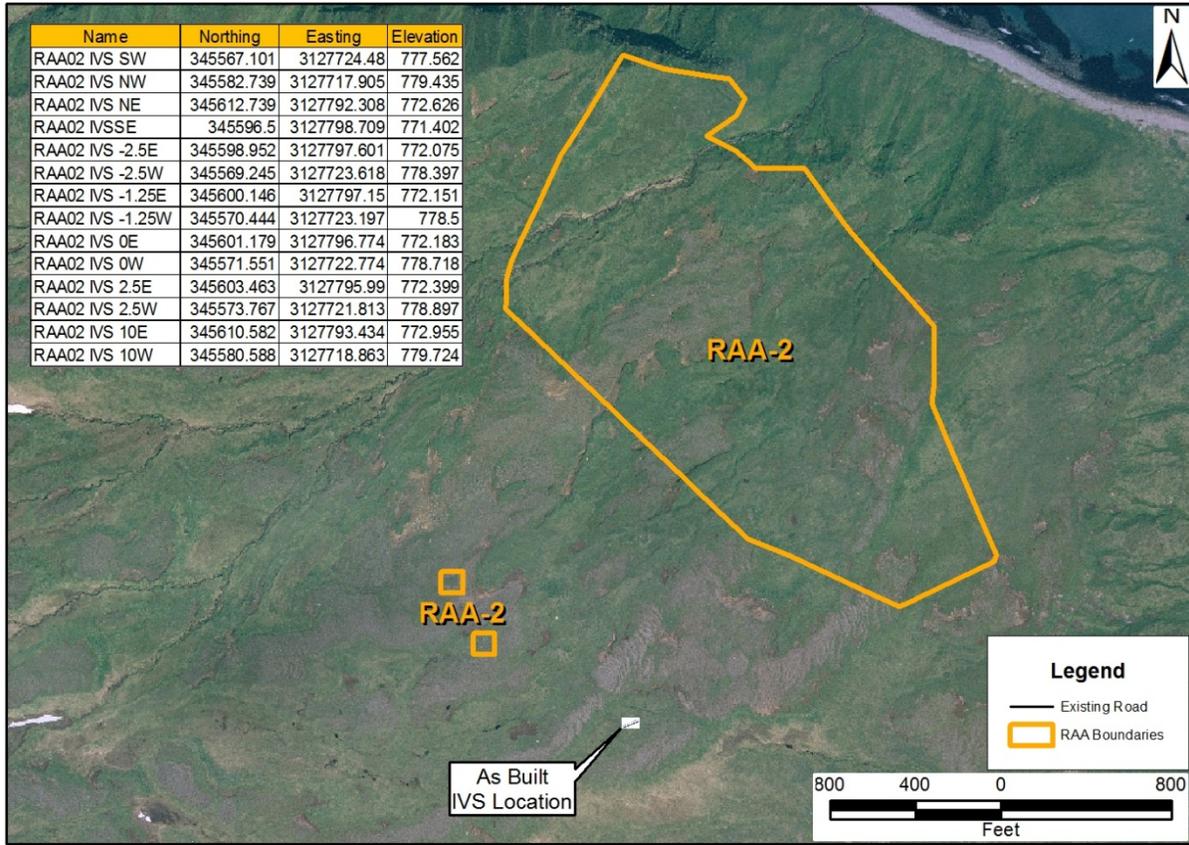


Figure 2-1: Location and "As Built" Coordinates for IVS Located in RAA-02

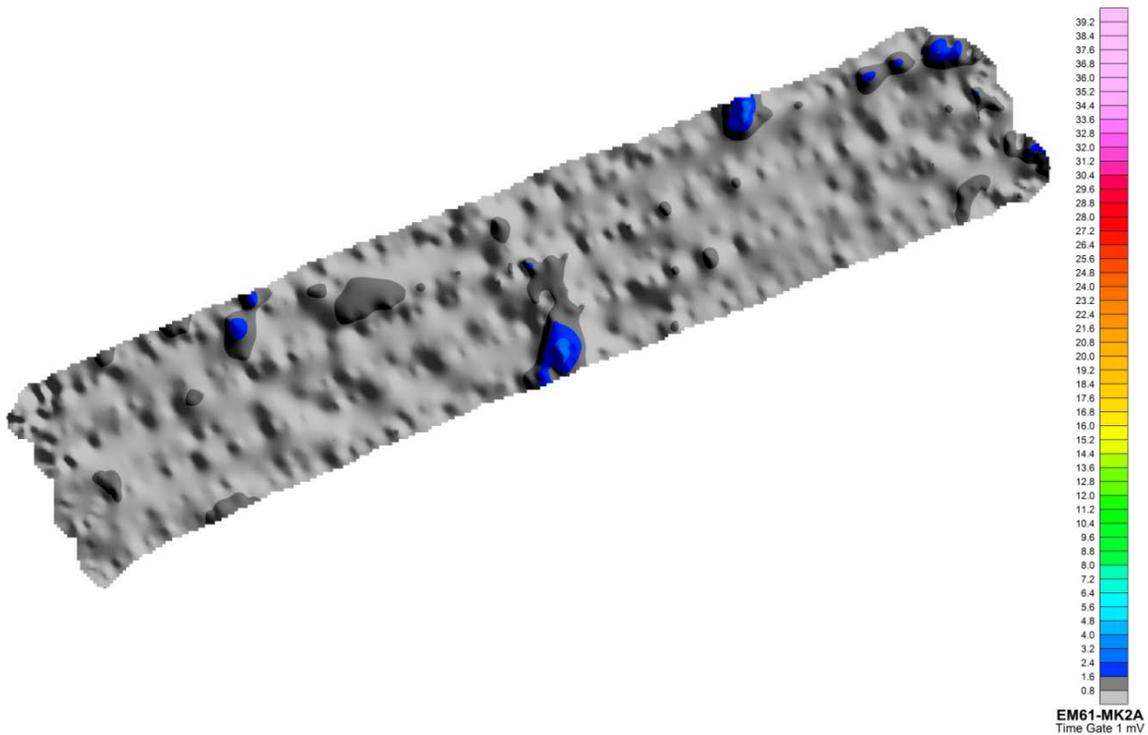


Figure 2-2: Background Survey Results for RAA-02 IVS Levelled Time Gate 1

2.4 PHOTOGRAPHS AND COORDINATES OF SEED ITEMS

After the background survey was approved by the site geophysicist, the IVS team installed the IVS seed items, as described in Section 2.1, above. Prior to burial, the ISOs were photographed, in-place, using the survey tape for orientation reference (see Figure 2-3), and the ISO positions (x, y, and depth to center) were measured with the RTK DGPS (see Table 2-1).

.A second RTK DGPS measurement was made over each IVS seed item at the walking surface height. These second depth measurements are provided in Table 2-2. Due to the lower accuracy on the Z component (elevation) of the RTK DGPS, the tape measured depth was utilized to document seed item burial depth. Photographs of all IVS seed items are found in Appendix A of this report.



Figure 2-3: Example Photograph of IVS Seed Item RAA-02 IVS_04 at 4-in Below Mineral Surface

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Table 2-1: RAA-02 IVS Seed Item Locations

IVS Seed Item	Item	X (ft)	Y (ft)	Inclination	Orientation	Depth to Center Mass below Mineral Surface (in) *	Depth to Center Mass below Walking Surface (in)	Easting (US ft)	Northing (US ft)
IVS_1	Small ISO	10	0	Horizontal	Across-Track	4.0	7.0	3127787.601	345597.492
IVS_2	Small ISO	25	0	Horizontal	Across-Track	9.2	12.2	3127773.620	345591.863
IVS_3	Small ISO	40	0	Horizontal	Across-Track	6.6	9.6	3127759.797	345586.399
IVS_4	Small ISO	55	0	Horizontal	Along-Track	4.0	6.0	3127745.822	345580.808
IVS_5	Small ISO	70	0	Horizontal	Along-Track	9.2	11.2	3127731.931	345575.320

* Installed depths in accordance with the Final GSV Installation Plan

Table 2-2: RAA-02 IVS Seed Item Walking Surface Depth Measurement Comparison

Seed Item	RTK DGPS Measurements				Tape Measured Depth (in)
	Mineral Surface Elevation (US ft)	Walking Surface Elevation (US ft)	Depth (ft)	Depth (in)	
IVS_1	771.921	772.443	0.522	6.264	7.0
IVS_2	772.781	773.758	0.977	11.724	12.2
IVS_3	775.252	775.966	0.714	8.568	9.6
IVS_4	776.32	776.813	0.493	5.916	6.0
IVS_5	776.641	777.54	0.899	10.788	11.2

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3.0 POST-INSTALLATION DGM SURVEY

Following IVS seed item installation and recording, the IVS team conducted five post-installation DGM surveys. The surveys were conducted along the lines/transects as described in Table 3-1, using SOP 2, Digital Geophysical Surveying, as guidance.

After the five surveys were completed, the data was downloaded by the site geophysicist for on-site review and editing. Proprietary software supplied by the instrument's manufacturer (DAT61) was used to convert the data files from binary to ASCII format.

After data file conversion, the data was uploaded to Geosoft's Oasis Montaj software. The local coordinates were converted to the project coordinate system and units. All data was leveled using a 30-point rolling de-median filter. A latency correction of 0.3-sec was applied to adjust the timing between EM61-MK2A data and the logged RTK DGPS data for all datasets. Data were then gridded, contoured, and displayed on a map using the minimum curvature gridding algorithm. Targets were selected manually for each IVS dataset, using the leveled Time Gate 1 channel of Line 2, the IVS centerline. For IVS seed items 1 through 3, oriented across-track, the single peak amplitude nearest response center was recorded. For IVS seed items 4 and 5, oriented along-track, the trough amplitude nearest response center between the seed items' twin peaks was recorded. The average recorded response values of all five IVS surveys was used to determine the response peak mean value for each IVS seed item (see Appendix E for the IVS data processing and seed item selection form).

Table 3-1: RAA-02 IVS Survey Line/Transect Direction

Line	Direction (ft)	Offset (ft)	Comment
Line 0	0 to 80	-2.5	Simulated grid
Line 1	80 to 0	-1.25	Half line spacing [Blind Seed Item (BSI) range]
Line 2	0 to 80	0	Simulated grid
Line 3	80 to 0	2.5	Simulated grid
Line 4	0 to 80	10	Dynamic background

3.1 DGM DATA OF ALL REPEATS ON ALL TRANSECTS

A post installation survey of RAA-02 IVS was conducted five times by the IVS team to validate the installation, and to build a basis for computing average peak response values (mV) for each seed item. Results from the five surveys and the response peak mean for each IVS seed item are provided in Table 3-2.

Table 3-2: RAA-02 IVS Post Installation Survey Results

File	Seed Item Leveled Time Gate 1 Response Peaks (mV)				
	IVS_01	IVS_02	IVS_03	IVS_04	IVS_05
RAA02_GSV_01	15.55	4.88	21.49	23.94	8.9
RAA02_GSV_02	19.36	5.19	24.79	22.33	10.35
RAA02_GSV_03	18.86	6.29	21.66	25.02	10.65
RAA02_GSV_04	23.79	8.65	25.75	27.69	9.96
RAA02_GSV_05	17.59	6.2	20.71	23.03	9.59
Mean	19.0	6.2	22.9	24.4	9.9

3.2 EXAMPLE MAPS/PROFILES OF DATA

All data sets were gridded using the minimum curvature gridding algorithm with cell spacing set to 0.3 ft and a 2.5 blanking distance. The map of RAA-02_GSV_01 seeded survey is shown in Figure 3-1 and a profile plot of the centerline is provided in Figure 3-2. Note that Z1_Lev is the leveled Time Gate 1 profile, Z2_Lev is the leveled Time Gate 2 profile, etc.

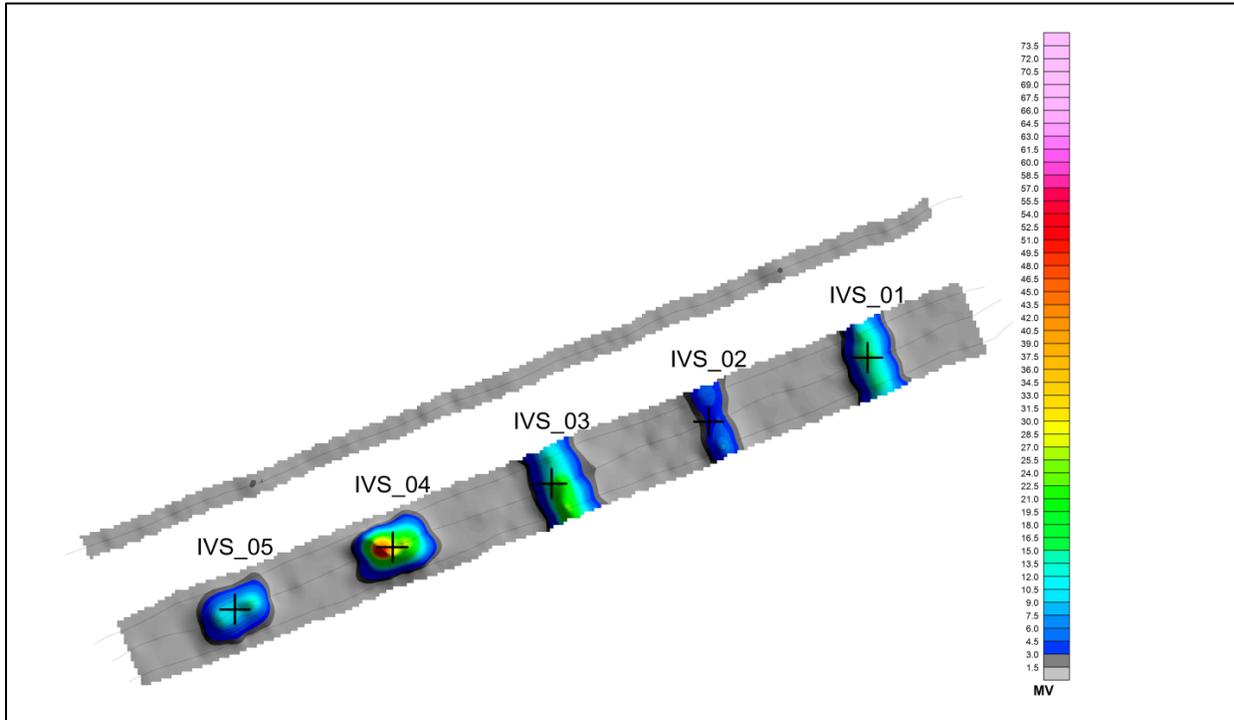


Figure 3-1: RAA-02_GSV_01 Installation Survey Map of Leveled Time Gate 1 (mV)

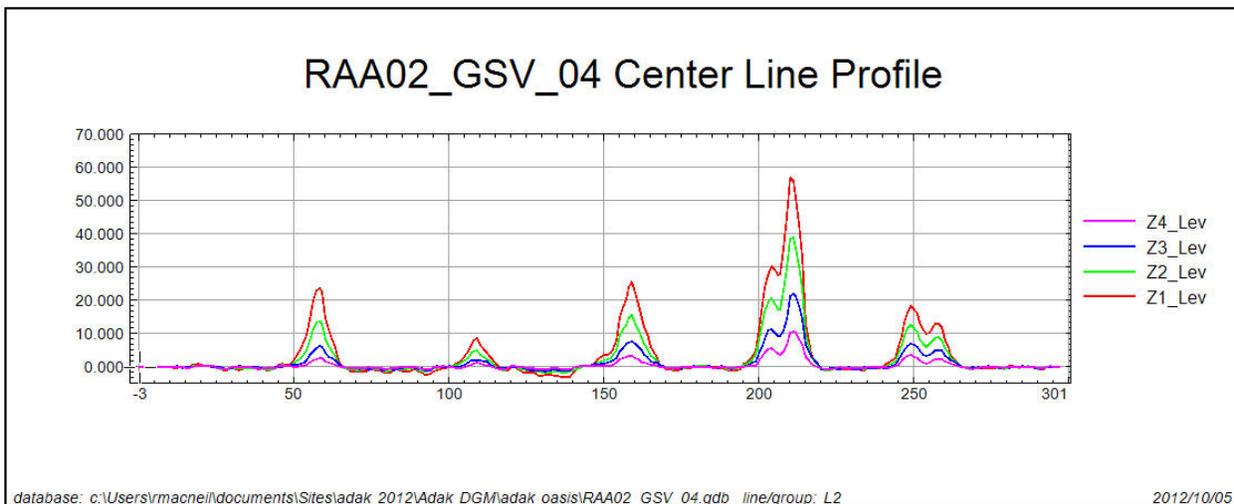


Figure 3-2: RAA-02_GSV_04 Centerline (Line 2) Profile Example

3.3 DISCUSSION OF LOGISTICS

RAA-02 IVS was located in a relatively flat, open space near the survey area. Mobilization to the RAA required approximately 45 minutes from the road near Andrew Lake in Area 4. Survey time for all five lines of the IVS is less than 5 minutes after instrument warm-up. Survey time for center line and background noise line only should be less than 2 minutes after instrument warm-up.

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4.0 DGM DATA ANALYSIS

Each IVS database was analyzed for data density along-track with the results documenting that 0% exceeded the designed along-track sample density of 0.6-ft (0.183-m). The performance metric of <5% sample separation exceeding 0.6-ft was achieved. An example along-track plot is provided in Figure 4-1.

DGM coverage of the RAAs is planned for 100% site coverage at 3.0-ft (0.9-m) line spacing except around known obstacles. To achieve this coverage metric, field teams are instructed to collect data on 2.5-ft line spacing. The IVS databases were analyzed for footprint coverage. Using the planned 2.5-ft line spacing to collect the IVS data, achieved 100% coverage at 3.0-ft (0.9-m) metric. An example across-track coverage plot is provided in Figure 4-2.

All datasets were reviewed for proper time gate response (e.g., gate 1 > gate 2 > gate 3 > gate 4) over anomaly peaks.

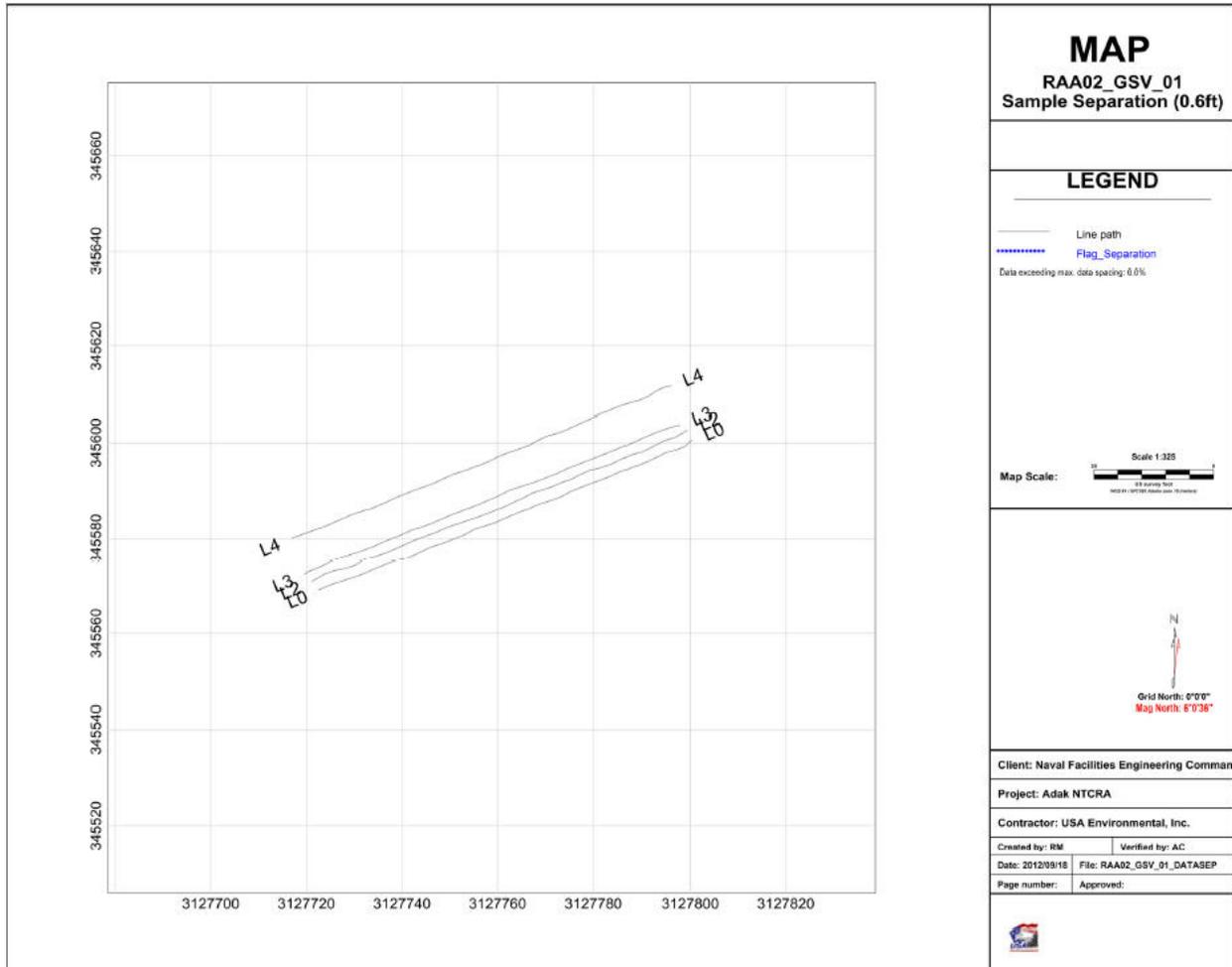


Figure 4-1: Data Separation QC Plot for RAA-02_GSV-01 Example

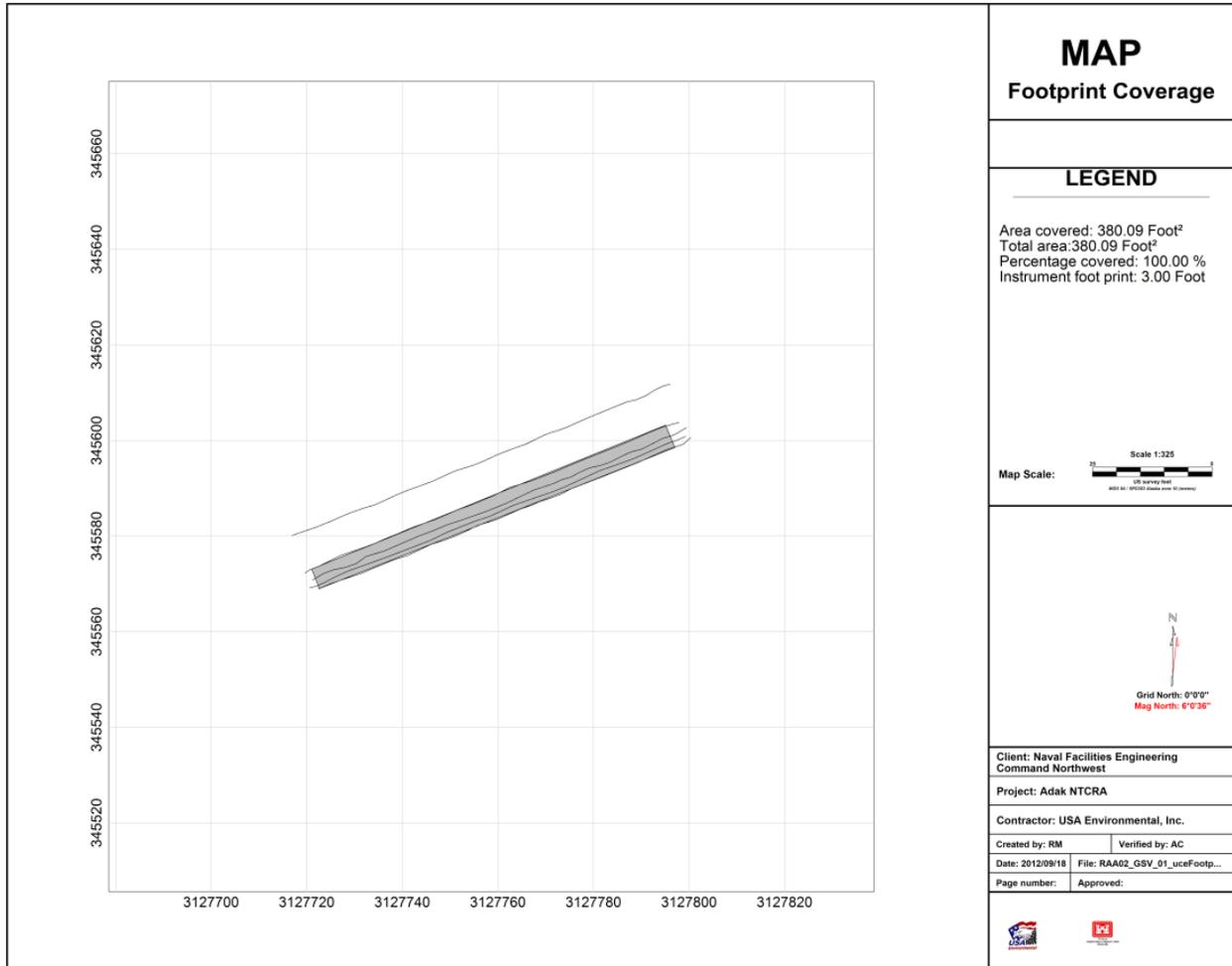


Figure 4-2: Footprint Coverage QC Plot for RAA-02_GSV_01

4.1 DISCUSSION AND QUANTIFIED RESULTS FOR LATENCY/LAG

All datasets were adjusted for latency corrections using a 0.3-sec correction to ensure no zig-zag features were present in the final gridded data.

4.2 EM61-MK2 RESPONSE OVER ISOs AND COMPARISON TO MODEL RESULTS

Each RAA-02 IVS seed item was evaluated to the published Naval Research Laboratory (NRL, 2008; NRL, 2009) ISO response tables for the adjusted depth to walking surface. All RAA-02 IVS seed items were within the published curves and repeatability was established during the five surveys of the RAA-02 IVS. Response values, averages, background noise statistics, and comparison charts are included in the RAA02 IVS Seed Response with Plots.xls spreadsheet that is included in Appendix B of this report. Horizontal error bars have been added for uncertainty in seed item burial depth (± 2 -in), and vertical error bars, computed as twice the noise value (± 2 -mV), have been added for uncertainty in signal to noise. An example comparison chart is provided in Figure 4-3.

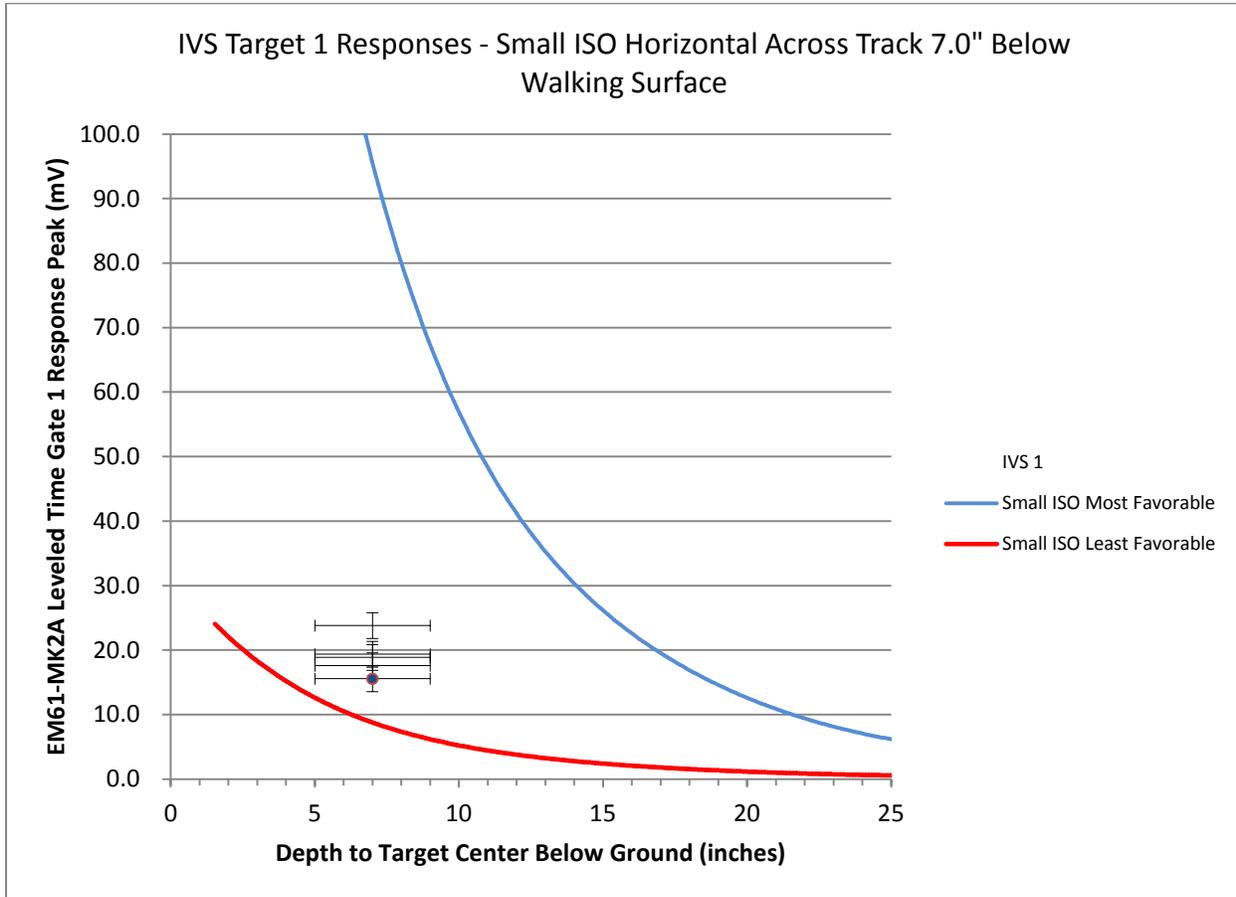


Figure 4-3: RAA-02 IVS Seed 1 EM61-MK2A Time Gate 1 Response Plots

Each IVS seed item peak response was also evaluated in a cumulative plot showing amplitude and failure criteria limits of $\pm 20\%$ (per the GSV Installation Plan) of the five-run average. An example plot for seed item #1 is shown in Figure 4-4. A second set of failure criteria lines have been added, based on \pm two times the standard deviation ($\pm 2x$ std. dev.) of the five-run seed item response amplitudes, which represents a 95% confidence interval. USA noted that not all RAA-02 IVS seed item responses met the $\pm 20\%$ failure criteria; however, all RAA-02 IVS seed item responses passed a metric based on the larger of $\pm 20\%$ or $\pm 2x$ std. dev. of the five-run average. Seed item 1, a small ISO buried 4-in below mineral surface, oriented across-track, response, on the 4th pass, exceeded the response limit (within 20% of the average of the first five passes) by 4.8-mV (25%) on Time Gate 1. This was caused, most likely, by a dip in coil height. Seed item 2, a small ISO buried 9.2-in below mineral surface, oriented across-track, failed to meet the 20% metric twice, on pass 1 and pass 4. On the first pass, the response was below the metric by -1.4-mV (-21.8%). The 4th pass response was 2.41-mV (38.6%) above the metric. The most likely cause for these failures was normal, minor lowering and raising in coil height. Because this is a relatively low-amplitude anomaly, the 20% failure limit appears to be too stringent to be reliably met for this seed item. All other seed items met the 20% response metric. Based on this evaluation, the more robust IVS seed item response metric based on the larger of $\pm 20\%$ or $\pm 2x$ std. dev. is recommended.

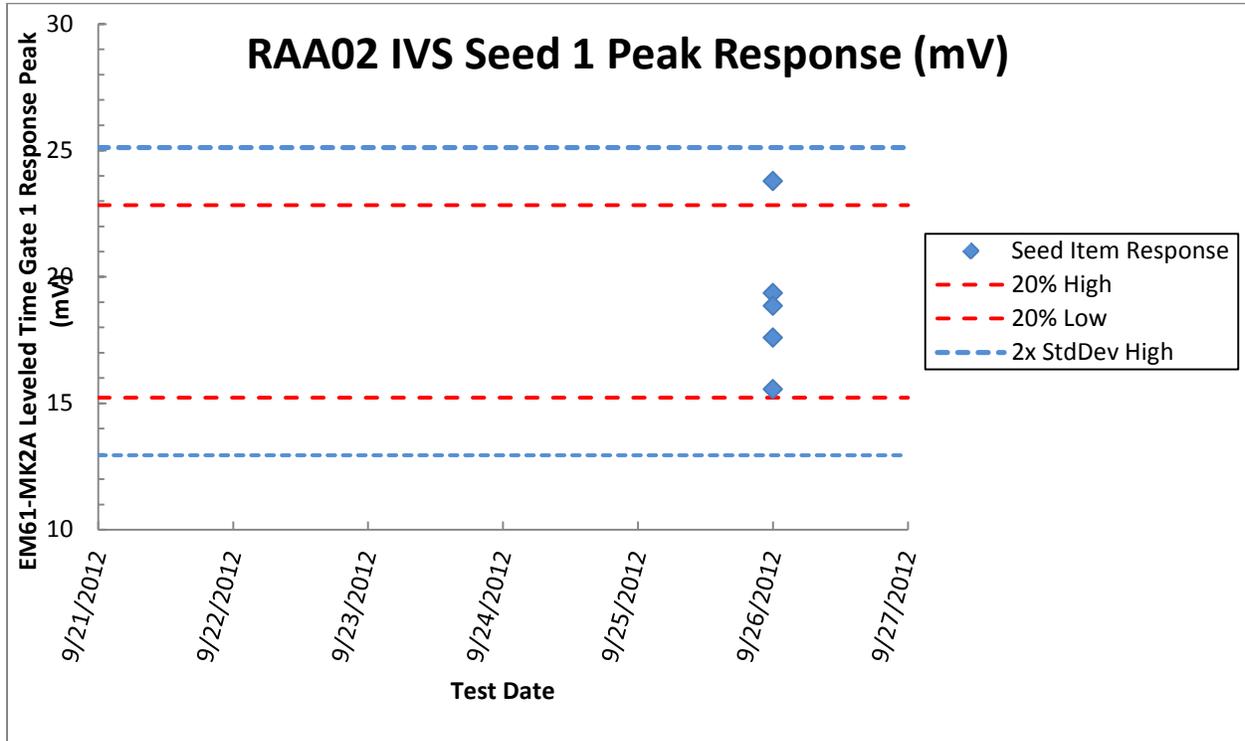


Figure 4-4: Cumulative Plot of IVS Seed Item Amplitudes with $\pm 20\%$ and $\pm 2x$ std. dev. Failure Criteria Limits

4.3 DGM ANOMALY LOCATION VS. KNOWN LOCATION OF ISOs

A spreadsheet showing positioning of ISOs from the DGM interpretation compared to the known positions, and cumulative plots of the variance with time (also showing failure criteria limits) was created for RAA-02 IVS data. Figure 4-5 shows a cumulative plot for RAA-02 IVS_01 seed item #1. All RAA-02 IVS seed items passed the location metric within 25-cm.

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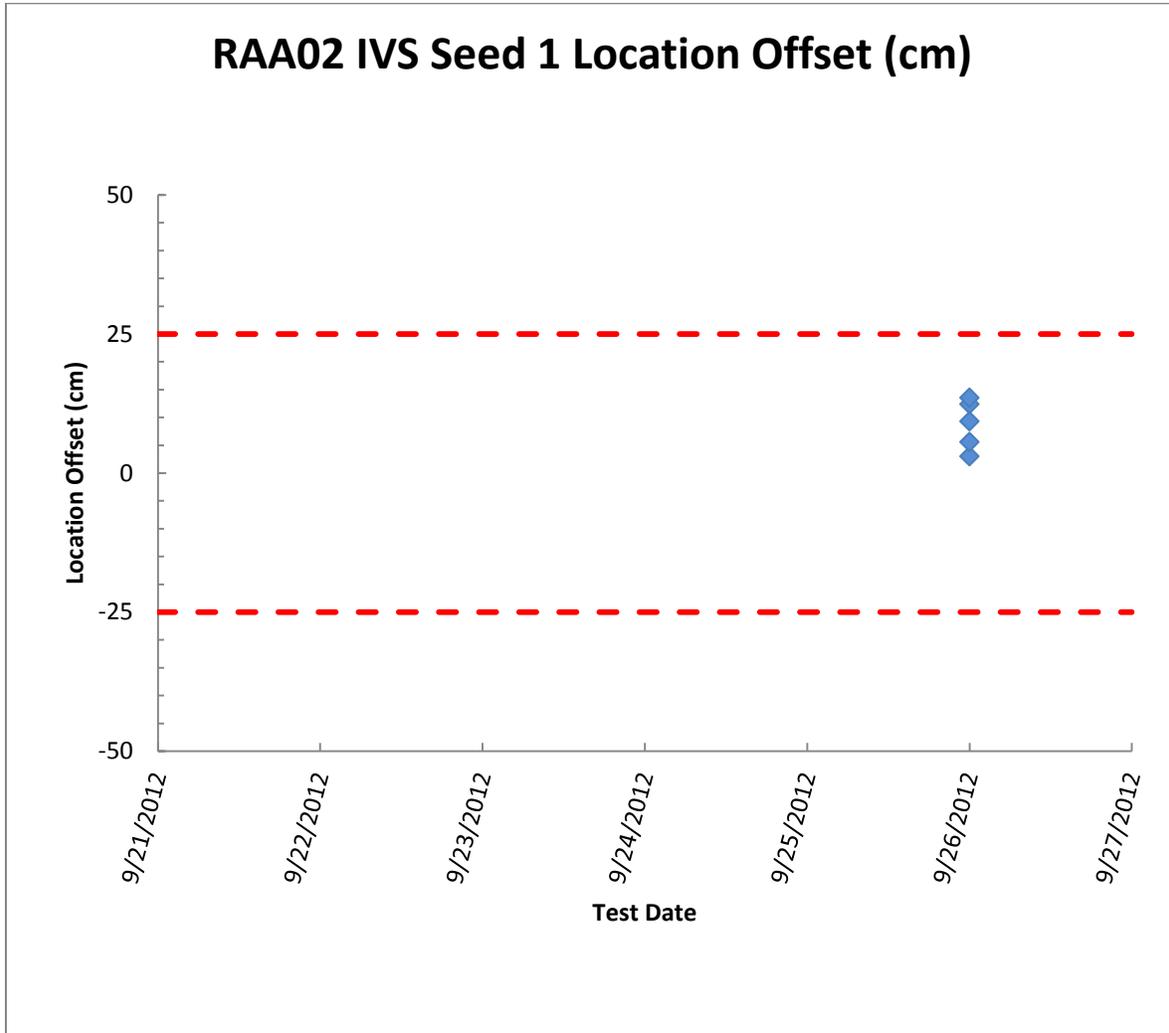


Figure 4-5: Cumulative Plot of Difference between Interpreted (DGM) and Known Surveyed ISO Position with ± 25 -cm Failure Criteria

4.4 BACKGROUND NOISE

A background noise line was installed 10-ft from the center line and data were collected five times. These results (± 0.6 -mV) are consistent with the other RAAs and previous DGM efforts on Adak. The results are shown in Table 4-1.

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**Table 4-1: RAA-02 Background Noise Line Statistics for
Leveled EM61-MK2 Time Gate 1 (Z1_Lev).**

Date	File Name	Leveled Time Gate 1 (std. dev.)
9/22/2012	RAA02_GSV_01	0.568
9/26/2012	RAA02_GSV_02	0.687
9/26/2012	RAA02_GSV_03	0.787
9/26/2012	RAA02_GSV_04	0.477
9/26/2012	RAA02_GSV_05	0.536
	Mean Background	0.611

4.5 EFFECT OF RAA-02 IVS LOCATION ON ISO AMPLITUDE

No effect on ISO amplitude was encountered at this RAA IVS due to geology or clutter. The low dynamic background noise indicates that good signal to noise can be expected at the RAA-02 IVS, and may extend to RAA-02.

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5.0 RAA-03 IVS INSTALLATION

Installation and testing of the RAA-03 IVS was conducted during the period of 22-23 September 2012 and 26 September 2012.

5.1 NARRATIVE OF INSTALLATION LOGISTICS

On 22 September 2012, the IVS team located the idealized area for the RAA-03 IVS using a Trimble GeoXT. Following an extensive search, due to a high cultural debris density, the team then selected a section with similar terrain, vegetation, and geology as the investigation area and performed a background survey using a White's DFX300. The UXOTII confirmed that the site was sufficiently anomaly free, although still cluttered. On 23 September 2012 the IVS team returned to RAA-03; an area approximately 125-ft by 25-ft was staked out and a background survey was performed using the EM61-MK2A in stretcher mode. The site geophysicist processed the background survey data on-site. Several anomalies were present along the survey edges and after consulting with the Quality Assurance (QA) geophysicist on site, a second background survey was performed to show repeatability. The site geophysicist processed the second background survey on-site and QA geophysicist approved the area as suitable for the IVS installation to begin, following anomaly avoidance procedures. Note that due to the avoidance of background anomalies, the noise line offset was decreased from 10-ft to 9-ft from the IVS centerline. RAA-03 IVS installation followed the procedures documented in Section 2.1, above. After installation was finalized, a morning static and response test was performed according to SOP 2 prior to survey activities and the coil height of the EM61-MK2A was confirmed to be 15-in above the walking surface. After instrument warm-up, one run of the IVS was collected with the EM61-MK2A over the RAA-03 IVS. Data was downloaded and preliminary processing was done on-site by the site geophysicist. An end-of-the-day static and response test was performed.

On the afternoon of 26 September 2012, the IVS team returned to the RAA-03 IVS to conduct additional DGM of the IVS. A morning static and response test was performed according to SOP 2 prior to survey activities and the coil height of the EM61-MK2A was confirmed to be 15-in above the walking surface. After instrument warm-up, four separate files were collected with the EM61-MK2A over the RAA-03 IVS. Data was downloaded and preliminary processing was done on-site by the site geophysicist. An end-of-the-day static and response test was performed.

5.2 IVS AREA MAP AND COORDINATES (FROM GIS)

The RAA-03 IVS was installed inside the proposed IVS radius as described in the GSV plan. The RAA-03 IVS location has similar terrain, vegetation, and geology as the survey portion of the site. The RAA-03 IVS site location map and boundary and lane coordinates are provided in Figure 5-1.

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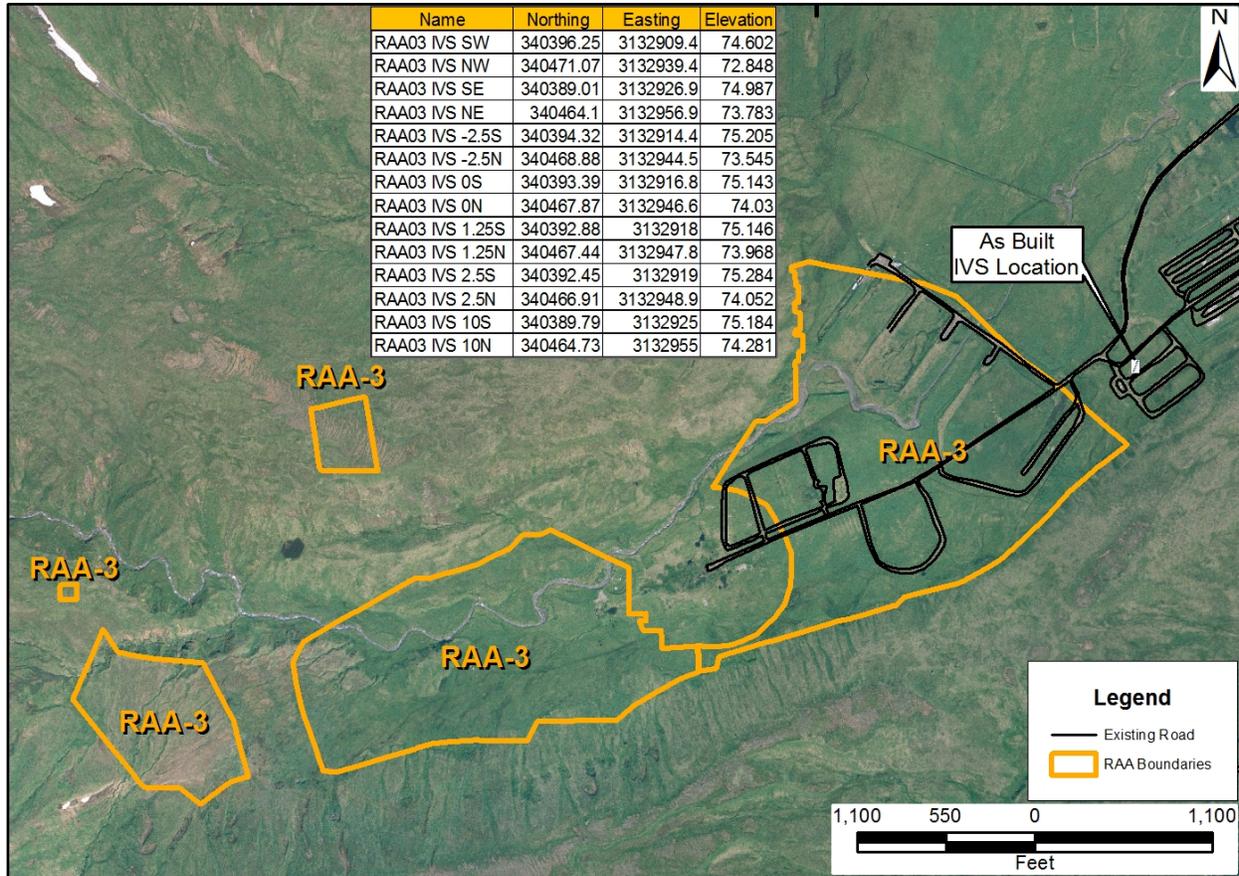


Figure 5-1: Location Map and "As Built" Coordinates for RAA-03 IVS

5.3 BACKGROUND DGM AND DISCUSSION

A White's DFX300 detector was utilized to perform an initial assessment of the idealized RAA-03 IVS location. The UXOTII determined that the planned location was sufficiently free of anomalies and the IVS team laid out a 125-ft by 25-ft grid. The team then surveyed the RAA-03 IVS area using the EM61-MK2A in stretcher mode. Several anomalies were present along the survey edges and after a second background survey was performed to show repeatability, the QA geophysicist approved the area as suitable for the IVS installation. Background RMS noise for the IVS portion of the grid was 0.849-mV on time gate 1. Color shaded grid maps of the leveled EM61-MK2A time gate 1 for both background surveys are shown in Figure 5-2.

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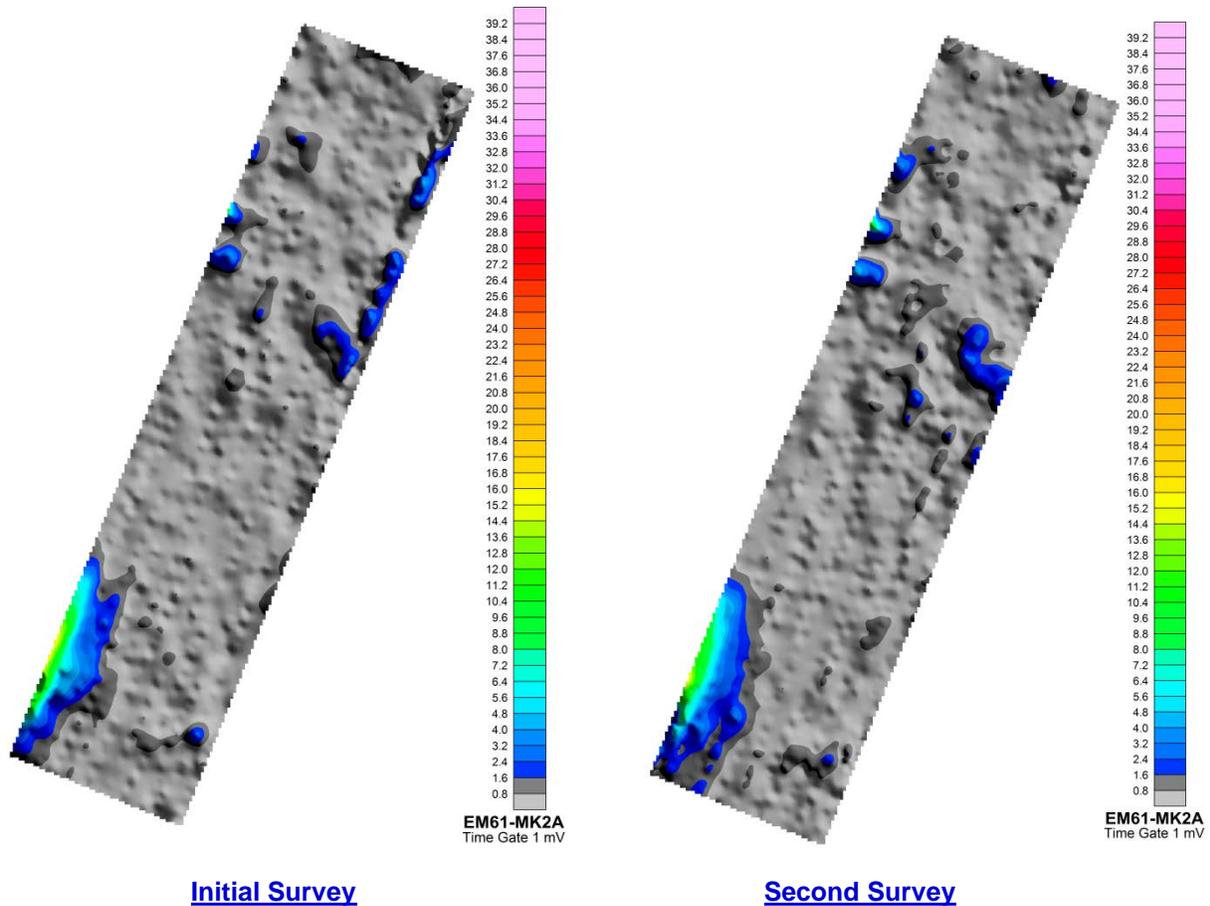


Figure 5-2: Background Survey Results for RAA-03 IVS Levelled Time Gate 1

5.4 PHOTOGRAPHS AND COORDINATES OF SEED ITEMS

After the background survey was approved by the site geophysicist, the IVS team installed the IVS seed items, as documented in Section 2.1, above. Prior to burial, the ISOs were photographed, in-place (see Figure 5-3), using the survey tape for orientation reference, and the ISO positions (x, y, and depth to center) were measured with the RTK DGPS (see Table 5-1).

A second RTK DGPS measurement was made over each IVS seed item at the walking surface height. These second depth measurements are provided in Table 5-2. Due to the lower accuracy on the Z component (elevation) of the RTK DGPS, the tape measured depth was utilized. Photographs of all IVS seed items are found in Appendix A of this report.

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Figure 5-3: Example Photograph of RAA-03 IVS Seed 01, 4-in Below Mineral Surface

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Table 5-1: RAA-03 IVS Seed Item Locations

IVS Seed Item	Item	X (ft)	Y (ft)	Inclination	Orientation	Depth to Center Mass below Mineral Surface (in) *	Depth to Center Mass below Walking Surface (in)	Easting (US ft)	Northing (US ft)
IVS_1	Small ISO	10	0	Horizontal	Across-Track	4.0	7.0	3132944.190	340461.662
IVS_2	Small ISO	25	0	Horizontal	Across-Track	9.2	12.2	3132939.331	340449.323
IVS_3	Small ISO	40	0	Horizontal	Across-Track	6.6	9.6	3132931.515	340429.650
IVS_4	Small ISO	55	0	Horizontal	Along-Track	4.0	7.0	3132927.382	340419.409
IVS_5	Small ISO	70	0	Horizontal	Along-Track	9.2	12.2	3132920.536	340402.398

* Installed depths IAW the Final GSV Installation Plan

Table 5-2: RAA-03 IVS Seed Item Walking Surface Depth Measurement Comparison

Seed Item	RTK-DGPS Measurements				Tape Measured Depth
	Mineral Surface Elevation (US ft)	Walking Surface Elevation (US ft)	Depth (ft)	Depth (in)	Depth (in)
IVS_01	73.168	73.637	0.469	5.628	7.0
IVS_02	72.985	73.928	0.943	11.316	12.2
IVS_03	73.721	74.358	0.637	7.644	9.6
IVS_04	73.683	74.279	0.596	7.152	7.0
IVS_05	73.859	74.906	1.047	12.564	12.2

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6.0 POST-INSTALLATION DGM SURVEY

Following IVS seed item installation and recording, the IVS team conducted five post-installation DGM surveys. The surveys were conducted along the lines/transects as described in Table 6-1, using SOP 2, Digital Geophysical Surveying, as guidance.

After all five surveys were completed over 2 days, the data was downloaded by the site geophysicist for on-site review and editing. Proprietary software supplied by the instrument's manufacturer (DAT61) was used to convert the data files from binary to ASCII format.

After data file conversion, the data was uploaded to Geosoft's Oasis Montaj software. The local coordinates were converted to the project coordinate system and units. All data was leveled using a 30 point rolling de-median filter. A latency correction of 0.3-sec was applied to adjust the timing between EM61-MK2A data and the logged RTK DGPS data for all datasets. Data were then gridded, contoured, and displayed on a map using the minimum curvature gridding algorithm. Targets were selected manually for each IVS dataset, as described in Section 3.0 above.

Table 6-1: RAA-03 IVS Survey Line/Transect Direction

Line	Direction (ft)	Offset (ft)	Comment
Line 0	0 to 80	-2.5	Simulated grid
Line 1	80 to 0	-1.25	Half line spacing [Blind Seed Item (BSI) range]
Line 2	0 to 80	0	Simulated grid
Line 3	80 to 0	2.5	Simulated grid
Line 4	0 to 80	-9	Dynamic background

6.1 DGM DATA OF ALL REPEATS ON ALL TRANSECTS

A post-installation survey of RAA-03 IVS was conducted five times by the IVS team to validate the installation, and to build a basis for computing average response values. Results from the five surveys and the response peak mean for each IVS seed item are provided in Table 6-2.

Table 6-2: RAA-03 IVS Post Installation Survey Results

File	Seed Item Leveled Time Gate 1 Response Peaks (mV)				
	IVS_01	IVS_02	IVS_03	IVS_04	IVS_05
RAA03_GSV_01	12.38	5.82	12.46	16.09	10.2
RAA03_GSV_02	13.77	6.45	15.8	20.48	11.36
RAA03_GSV_03	14.66	6.67	15.7	19.99	12.65
RAA03_GSV_04	15.29	7.68	16.18	20.15	12.58
RAA03_GSV_05	17.14	6.98	17.39	22.89	12.14
Average	14.65	6.72	15.51	19.92	11.79

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6.2 EXAMPLE MAPS/PROFILES OF DATA

All data sets were gridded using the minimum curvature gridding algorithm with cell spacing set to 0.3-ft and a 2.5 blanking distance. The map of RAA03_GSV_01 is shown in Figure 6-1 and a profile plot of the centerline is provided in Figure 6-2. Note that Z1_Lev is the leveled Time Gate 1 profile, Z2_Lev is the leveled Time Gate 2 profile, etc.

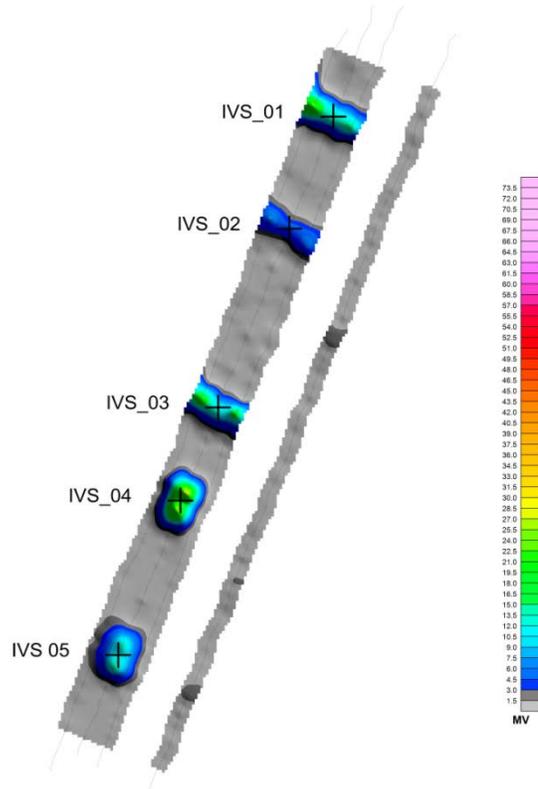


Figure 6-1: RAA-03 GSV_01 Post Installation Survey Map of Leveled Time Gate 1 (mV)

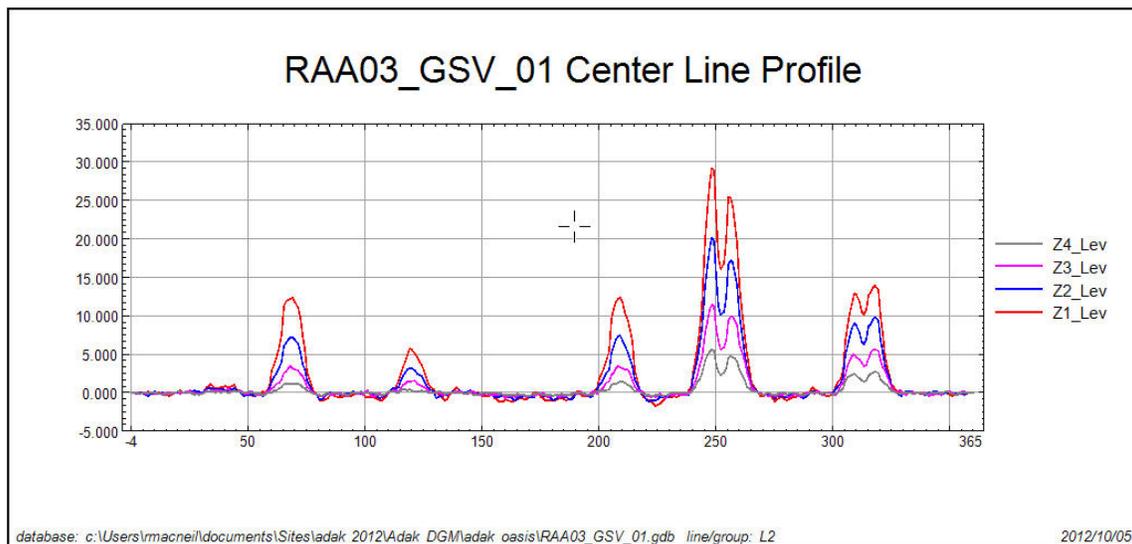


Figure 6-2: RAA-03 GSV_01 Centerline (Line 2) Profile

6.3 DISCUSSION OF LOGISTICS

RAA-03 IVS was located in a relatively flat, open space near the survey area. Mobilization to the RAA required approximately 20 minutes from the city of Adak. Survey time for all five lines of the IVS is less than 5 minutes after instrument warm-up. Survey time for center line and background line only should be less than 2 minutes after instrument warm-up.

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7.0 DGM DATA ANALYSIS

Each IVS database was analyzed for data density along-track with the results documenting that 0% exceeded the designed along-track sample density of 0.6-ft (0.183-m). Therefore, the planned performance metric of <5% sample separation exceeding 0.6-ft is recommended for production DGM. An example along-track plot is provided in Figure 7-1.

DGM coverage of the RAAs is planned for 100% site coverage at 3.0-ft (0.9-m) line spacing except around known obstacles. To achieve this coverage metric, field teams are instructed to collect data on 2.5-ft line spacing. The IVS databases were analyzed for footprint coverage. Using the planned 2.5-ft line spacing to collect the IVS data, achieved 99.99% coverage at 3.0-ft (0.9-m) metric. An example across-track coverage plot is provided in Figure 7-2.

All datasets were reviewed for proper time gate response (e.g., gate 1 > gate 2 > gate 3 > gate 4) over anomaly peaks.

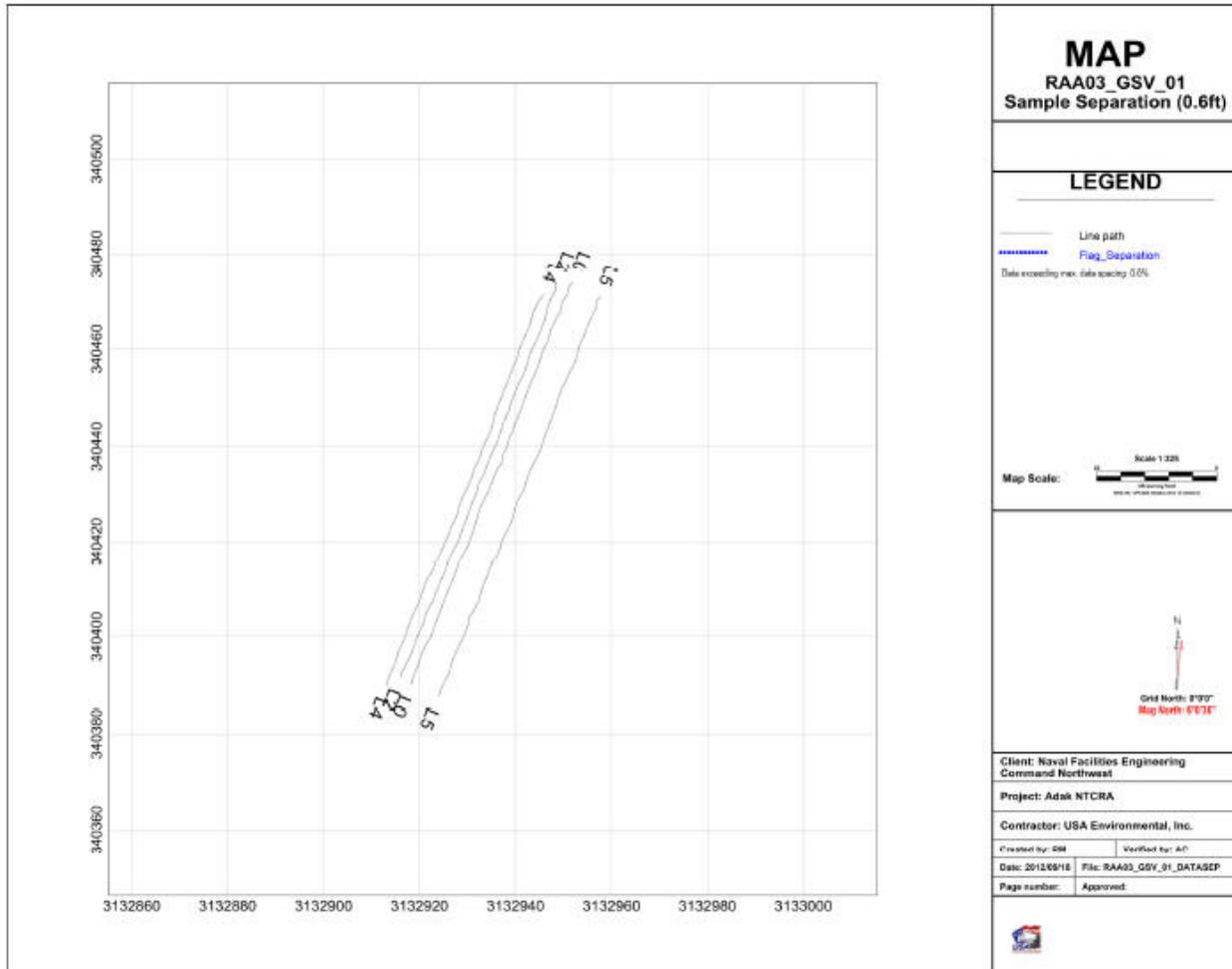


Figure 7-1: Data Separation QC Plot for RAA-03 GSV_01

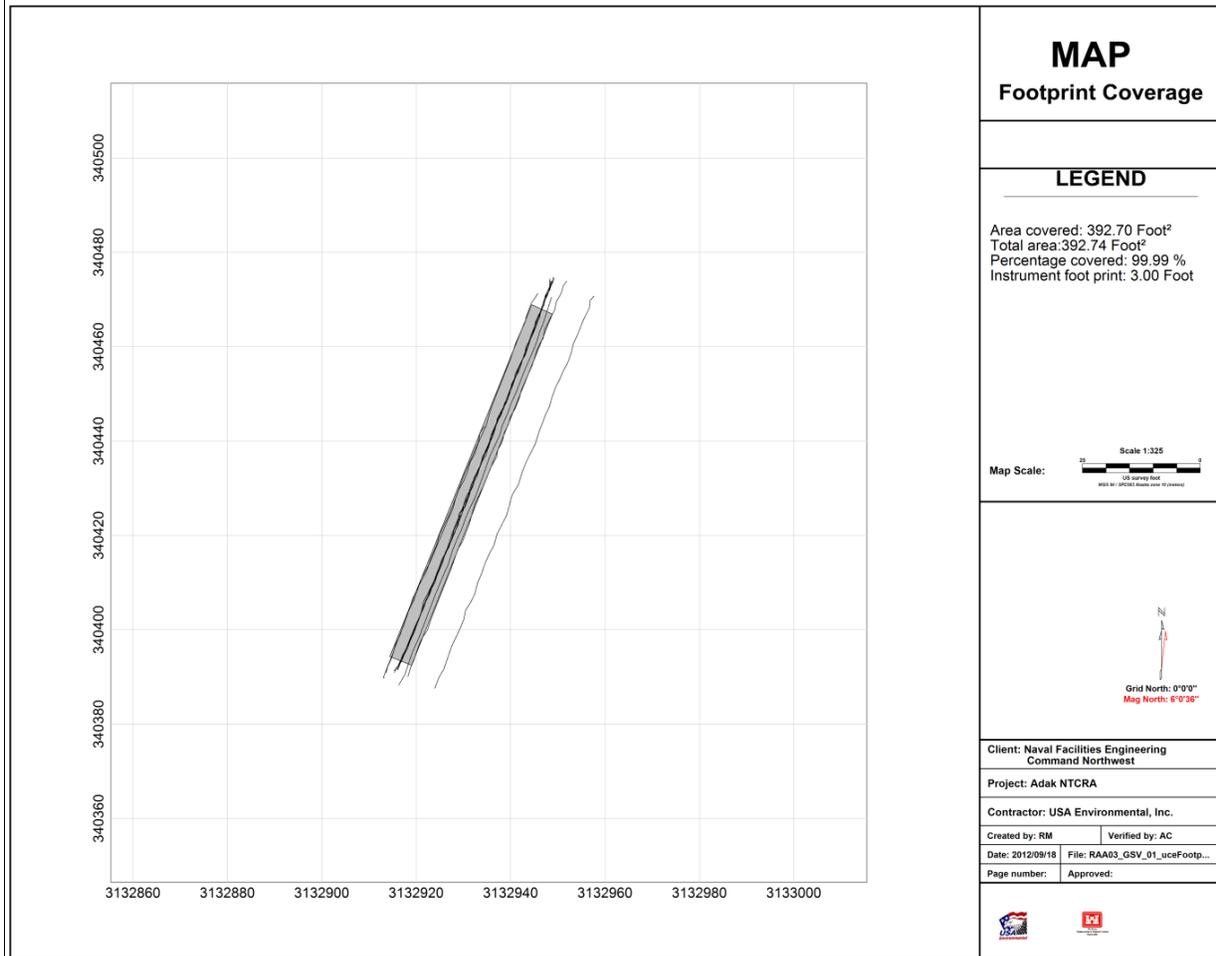


Figure 7-2: Footprint Coverage QC Plot for RAA-03 GSV_01

7.1 DISCUSSION AND QUANTIFIED RESULTS FOR LATENCY/LAG

All datasets were adjusted for latency corrections using a 0.3-sec correction to ensure no zig-zag features were present in the final gridded data.

7.2 EM61 MK2 RESPONSE OVER ISOs AND COMPARISON TO MODEL RESULTS

Each IVS seed item was evaluated to the published Naval Research Laboratory (NRL, 2008; NRL, 2009) ISO response tables for the adjusted depth to walking surface. All IVS seed items in RAA-03 were within the published curves and repeatability was established during the five surveys of the IVS. Response values, averages, background noise statistics and comparison charts are included in the RAA-03 IVS Seed Response with Plots.xls spreadsheet (see Appendix B). An example comparison chart is provided in Figure 7-3. All RA-03 IVS seed item response values fell within the published curves.

Each IVS seed item was also evaluated in a cumulative plot showing amplitude and failure criteria limits of $\pm 20\%$ of the five-run average. An example plot for seed item #1 is shown in Figure 7-4. Note that the $\pm 2x$ std. dev. failure criteria lines have also been added. All RAA-03 IVS seed items met the response metric within 20% of the initial five-run average.

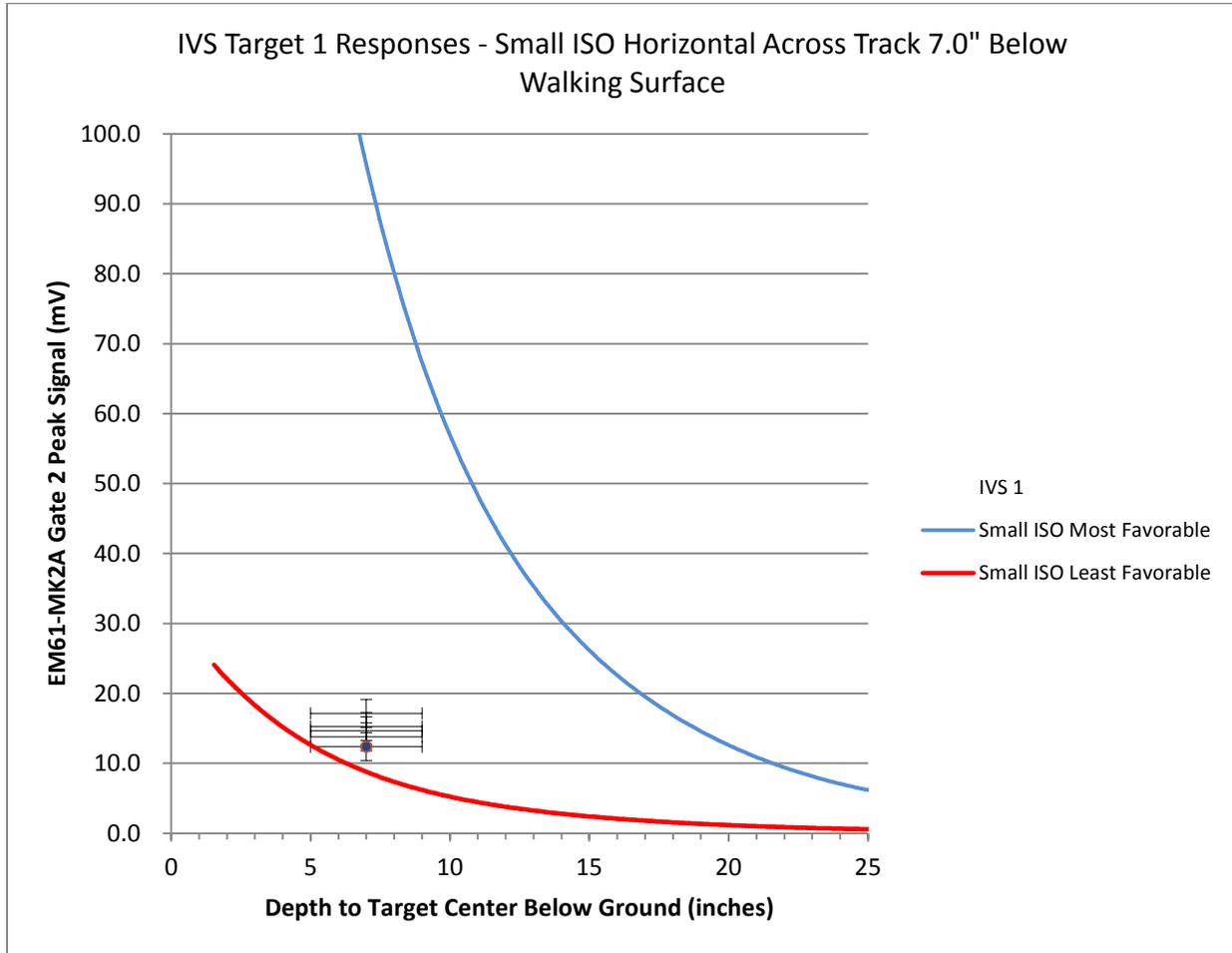


Figure 7-3: RAA-03 EM61-MK2A Time Gate 1 Response for IVS_01 Seed Item

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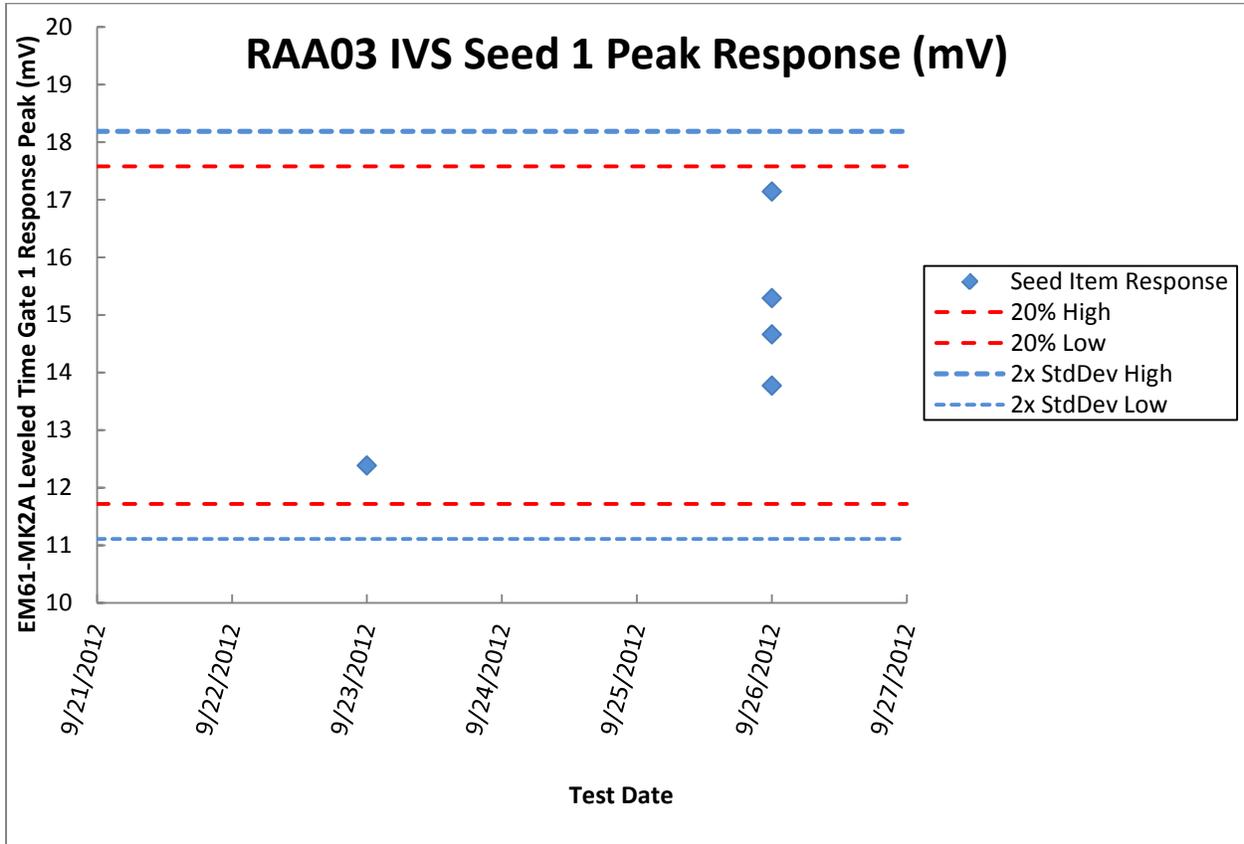


Figure 7-4: Cumulative Plot of RAA-03 IVS_01 Amplitudes with $\pm 20\%$ and $\pm 2x$ std. dev. Failure Criteria

7.3 ANOMALY LOCATION VS KNOWN LOCATION OF ISOs

A spreadsheet (see Appendix B) showing downline positioning of ISOs from the DGM interpretation compared to the known positions, and cumulative plots of the variance with time (also showing failure criteria limits) was created for RAA-03 IVS data. Figure 7-5 shows a cumulative plot for RAA-03 IVS_01 seed item #1. All RAA-03 IVS seed items passed the location metric within 25-cm.

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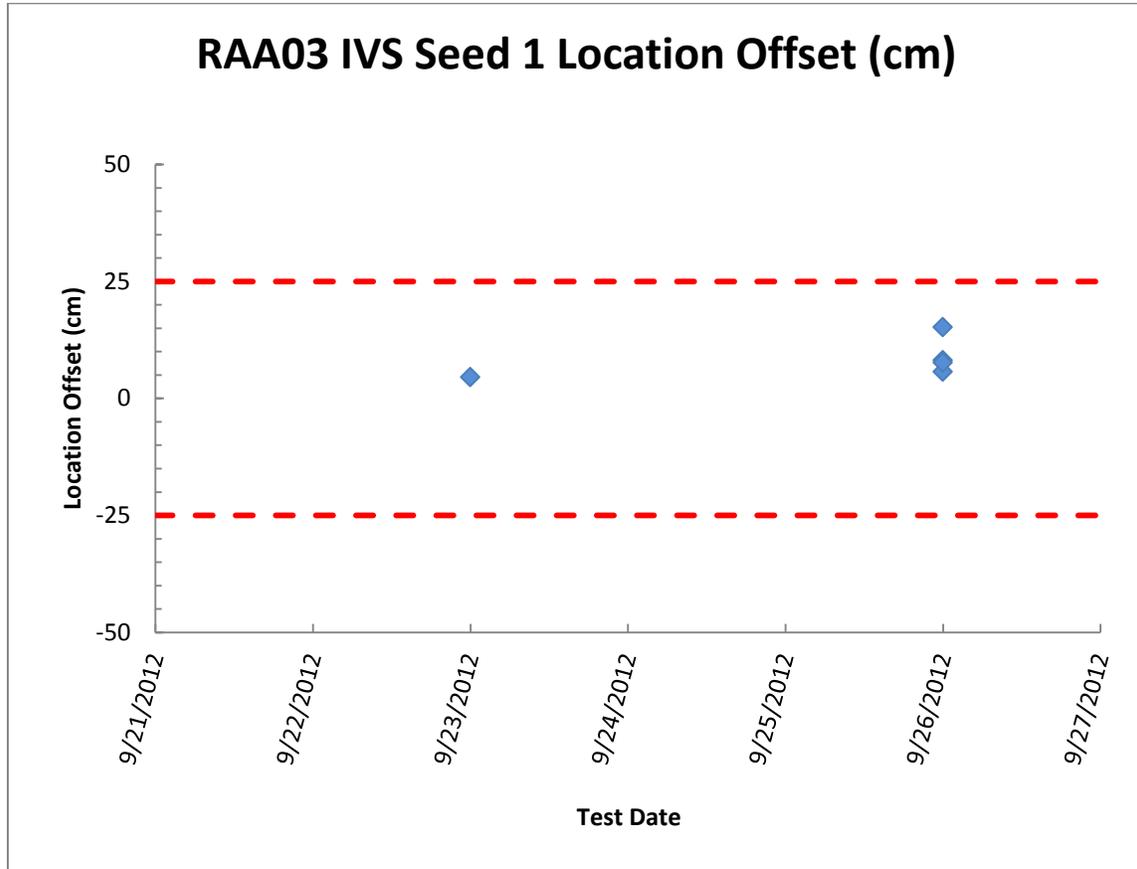


Figure 7-5: Cumulative Plot of Difference between Interpreted (DGM) and Known (Surveyed) Location, with Failure Criteria

7.4 BACKGROUND NOISE

A background noise line was installed 10-ft from the center line and data were collected five times. These results (± 0.65 -mV) are consistent with the other RAAs and previous DGM efforts on Adak. The results are shown in Table 7-1.

Table 7-1: RAA-03 Background Noise Line Statistics for Time Gate 1

Date	File Name	Leveled Time Gate 1 (std. dev.)
9/22/2012	RAA03_GSV_01	0.714
9/26/2012	RAA03_GSV_02	0.705
9/26/2012	RAA03_GSV_03	0.551
9/26/2012	RAA03_GSV_04	0.632
9/26/2012	RAA03_GSV_05	0.641
	Mean Background	0.6486

7.5 EFFECT OF RAA-03 IVS LOCATION ON ISO AMPLITUDE

No effect on ISO amplitude was encountered at this RAA IVS due to geology or clutter. The low dynamic background noise indicates that good signal to noise can be expected at the RAA-03 IVS, and may extend to RAA-03.

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8.0 RAA-04 IVS INSTALLATION

Installation and testing of the RAA-04 IVS was conducted during the period of 24-26 September 2012.

8.1 NARRATIVE OF INSTALLATION LOGISTICS

On 24 September 2012 the IVS team located the idealized area for the RAA-04 IVS using a Trimble GeoXT. The team then selected a section with similar terrain, vegetation, and geology as the investigation area just to the East of the idealized IVS boundary and performed a background survey using a White's DFX300. The UXOTII confirmed that the site was sufficiently anomaly free. An area approximately 115-ft by 21-ft was then staked out and a background survey was performed using the EM61-MK2A in stretcher mode.

Due to extremely high winds, the RTK DGPS base station for RAA-04 IVS was not set up the morning of 24 September. The first background survey was run using line/station/fiducials to characterize the site location. The site geophysicist processed the background survey data on-site and confirmed that the area was suitable for the IVS installation to begin. The RAA-04 IVS area was staked as documented in Section 2.1.

On 25 September the IVS team returned to the RAA-04 IVS after establishing the RTK DGPS base station at ARA base, South of RAA-04. The IVS team then performed a second background survey with the EM61-MK2A in stretcher mode with RTK data positioning. The site geophysicist processed the background survey data on-site and confirmed that the area was suitable for the IVS installation to resume. The same IVS seed item placement procedures, described in Section 2.1, were followed. Note that the water table at the RAA-04 IVS location was high. Seed item 2, a small ISO buried 9.2-in below mineral surface, was nearly covered with water. Seed Item 3, a small ISO buried 6.6-in below mineral surface, had water in the bottom of the hole. Seed item 4, a small ISO buried 4-in below mineral surface, had water in the bottom of the hole. Seed item 5, a small ISO buried 9.2-in below mineral surface, also had water in the bottom of the hole (see photographs in Appendix A). The RAA-04 IVS survey 01 was collected, along with the end-of-day static test.

On 26 September 2012, the IVS team returned to RAA-04 IVS to conduct four additional DGM surveys of the IVS. A morning static and response test was performed according to SOP 2 prior to survey activities and the coil height of the EM61-MK2A was confirmed to be 15-in above the walking surface. After instrument warm-up, four separate files were collected with the EM61-MK2A over the RAA-04 IVS. Data was downloaded and preliminary processing was done on-site by the site geophysicist. An end-of-the-day static and response test was performed.

8.2 IVS AREA MAP AND COORDINATES (FROM GIS)

The RAA-04 IVS was installed approximately 90-ft east of the proposed IVS radius boundary as described in the GSV Plan. The IVS location has similar terrain, vegetation, and geology as the survey portion of the site. The RAA-04 IVS site location map with boundary and lane coordinates is provided in Figure 8-1.

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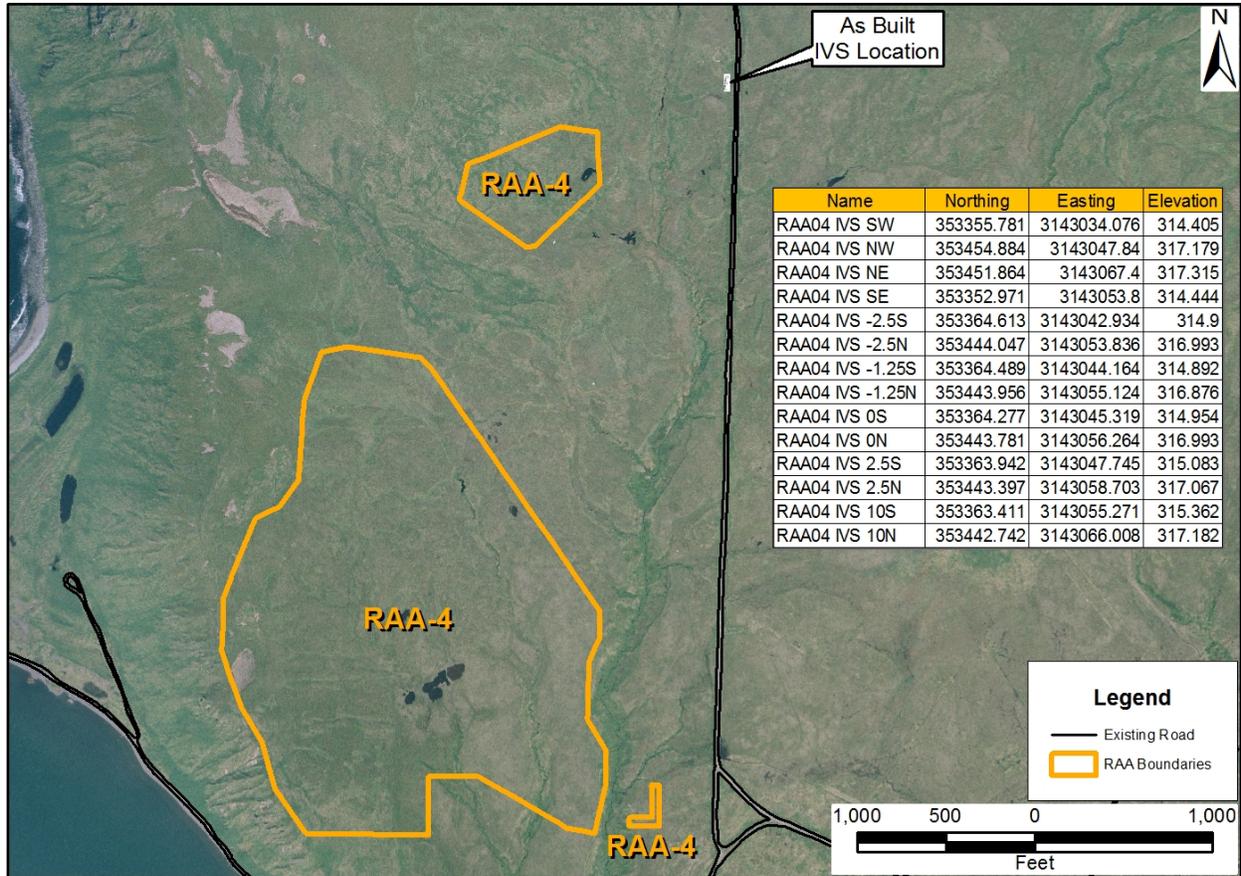


Figure 8-1: Location Map and "As Built" Coordinates for RAA-04 IVS

8.3 BACKGROUND DGM AND DISCUSSION

A White's DFX300 was utilized to perform an initial assessment of the idealized IVS location. The UXOTII determined that the planned location was sufficiently free of anomalies and the IVS team laid out a 115-ft by 21-ft grid. The team then surveyed the IVS area using the EM61-MK2A in stretcher mode. The area was shown to be sufficiently clear to enable the installation of the IVS. Background RMS noise for the grid was 1.212-mV on time gate 1. A color shaded grid map of the EM61-MK2A leveled time gate 1 data is shown in Figure 8-2.

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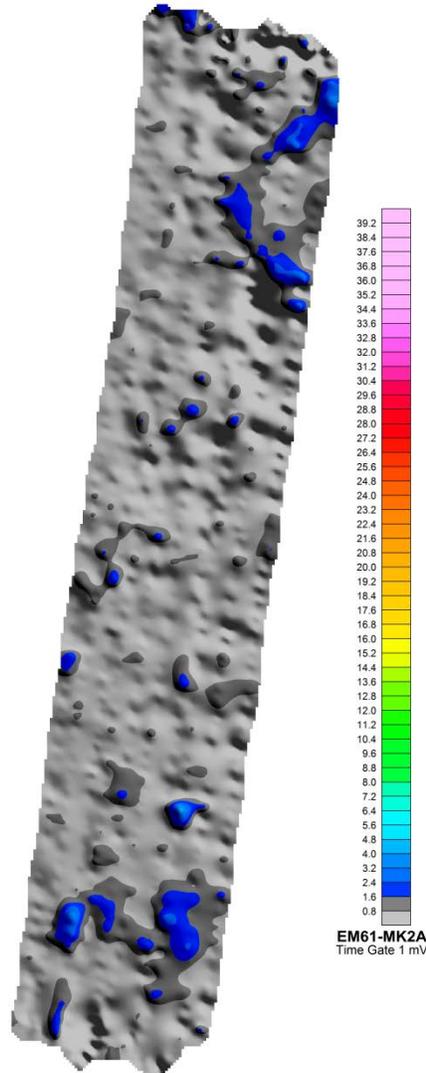


Figure 8-2: Background Survey Results for RAA-04 IVS

8.4 PHOTOGRAPHS AND COORDINATES OF SEED ITEMS

After background survey was approved by the site geophysicist, the IVS team installed the IVS seed items, as described in Section 2.1. Prior to burial, the ISOs were photographed, in place (Figure 8-3), using the survey tape for orientation reference, and the ISO positions (x, y, and depth to center) were measured with the RTK DGPS (see Table 8-1).

A second RTK DGPS measurement was made over each IVS seed item at the walking surface height. These second depth measurements are provided in Table 8-2. Due to the lower accuracy on the Z component (elevation) of the RTK DGPS, the tape measured depth was utilized.



Note: Water in the bottom of the hole.

Figure 8-3: Example Photograph of RAA-04 IVS Seed Item 04 at 4-in Below Mineral Soil Surface

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Table 8-1: RAA-04 IVS Seed Item Locations

IVS Seed Item	Item	X (ft)	Y (ft)	Inclination	Orientation	Depth to Center Mass below Mineral Surface (in) *	Depth to Center Mass below Walking Surface (in)	Easting (US ft)	Northing (US ft)
IVS_1	Small ISO	10	0	Horizontal	Across-Track	4.0	7.0	3143046.683	353374.104
IVS_2	Small ISO	25	0	Horizontal	Across-Track	9.2	12.2	3143048.829	353389.117
IVS_3	Small ISO	40	0	Horizontal	Across-Track	6.6	9.6	3143050.789	353403.826
IVS_4	Small ISO	55	0	Horizontal	Along-Track	4.0	7.0	3143052.939	353418.937
IVS_5	Small ISO	70	0	Horizontal	Along-Track	9.2	12.2	3143054.966	353433.446

* Installed depths IAW the Final GSV Installation Plan

Table 8-2: RAA-04 IVS Seed Item Walking Surface Depth Measurement Comparison

Seed Item	RTK DGPS Measurements				Tape Measured Depth (in)
	Mineral Surface Elevation (US ft)	Walking Surface Elevation (US ft)	Depth (ft)	Depth (in)	
IVS_01	314.541	315.089	0.548	6.576	7.0
IVS_02	314.452	315.169	0.717	8.604	12.2
IVS_03	315.253	315.927	0.674	8.088	9.6
IVS_04	315.665	316.21	0.545	6.54	7.0
IVS_05	315.408	316.419	1.011	12.132	12.2

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9.0 POST-INSTALLATION DGM SURVEY

Following IVS seed item installation and recording, the IVS team conducted five post-installation DGM surveys. The surveys were conducted along the lines/transects as described in Table 9-1, using SOP 2, Digital Geophysical Surveying as guidance.

After all five surveys were completed; the data was downloaded by the site geophysicist for on-site review and editing. Proprietary software supplied by the instrument's manufacturer (DAT61) was used to convert the data files from binary to ASCII format.

After data file conversion, the data was uploaded to Geosoft's Oasis Montaj software. The local coordinates were converted to the project coordinate system and units. All data was leveled using a 30 point rolling de-median filter. A latency correction of 0.3-sec was applied to adjust the timing between EM61-MK2A data and the logged RTK DGPS data for all datasets. Data were then gridded, contoured, and displayed on a map using the minimum curvature gridding algorithm. Targets were selected manually for each IVS dataset, as described in Section 3.0.

Table 9-1: RAA-04 IVS Survey Line/Transect Direction

Line	Direction (ft)	Offset (ft)	Comment
Line 0	0 to 80	-2.5	Simulated grid
Line 1	80 to 0	-1.25	Half line spacing [Blind Seed Item (BSI) range]
Line 2	0 to 80	0	Simulated grid
Line 3	80 to 0	2.5	Simulated grid
Line 4	0 to 80	10	Dynamic background

9.1 DGM DATA OF ALL REPEATS ON ALL TRANSECTS

A post installation survey of RAA-04 IVS was conducted five times by the IVS team to validate the installation, and to build a basis for computing average response values. Results from the five surveys and the response peak mean for each IVS seed item is provided in Table 9-2.

Table 9-2: RAA-04 IVS Post Installation Survey Results

File	Seed Item Leveled Time Gate 1 Response Peaks (mV)				
	IVS_01	IVS_02	IVS_03	IVS_04	IVS_05
RAA04_GSV_01	18.13	3.32	12.79	29.46	9.87
RAA04_GSV_02	19.41	3.32	13.02	22.76	6.85
RAA04_GSV_03	20.62	3.98	13.53	32.27	9.5
RAA04_GSV_04	19.4	5.93	17.42	31.45	11.05
RAA04_GSV_05	22.66	3.6	18.91	33.37	9.95
Average	20.0	4.0	15.1	29.9	9.4

9.2 EXAMPLE MAPS/PROFILES OF DATA

All data sets were gridded using the minimum curvature gridding algorithm with cell spacing set to 0.3-ft and a 2.5 blanking distance. The map of RAA-04_GSV_01 in Figure 9-1 and a profile plot of the centerline are provided in Figure 9-2. . Note that Z1_Lev is the leveled Time Gate 1 profile, Z2_Lev is the leveled Time Gate 2 profile, etc.

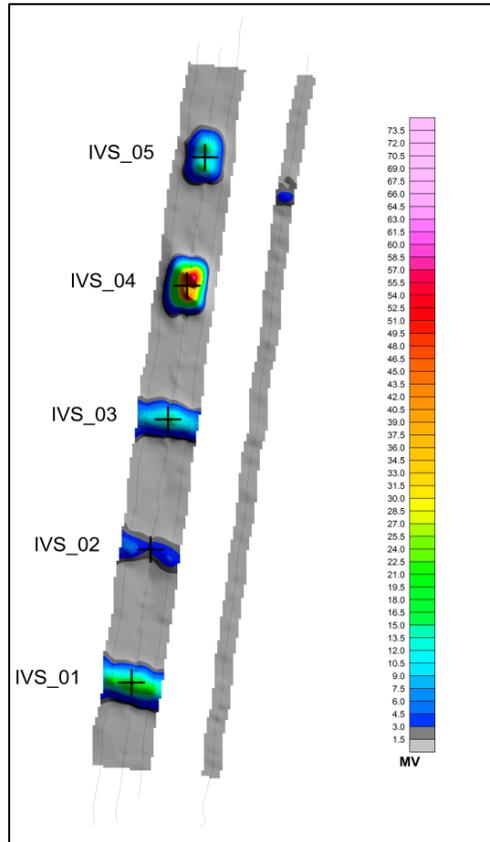


Figure 9-1: RAA-04 GSV_01 Post-Installation Survey Map of Levelled Time Gate 1 (mV)

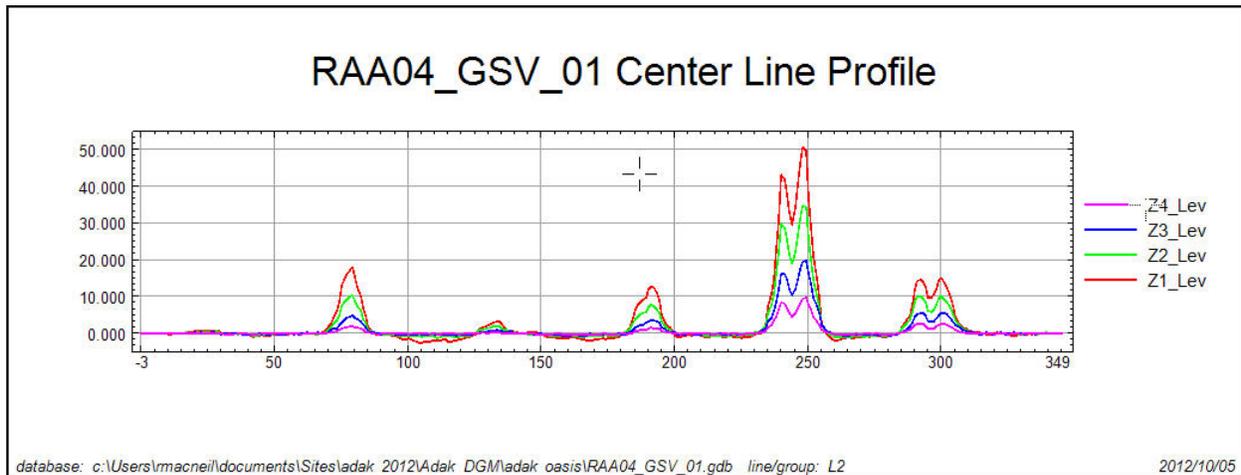


Figure 9-2: RAA-04 GSV_01 Center Line (Line 2) Profile

9.3 DISCUSSION OF LOGISTICS

RAA-04 IVS was located in a relatively flat, open space near the survey area. Mobilization to the RAA required approximately 30 minutes from the city of Adak. Survey time for all five lines of the IVS is less than 5 minutes after instrument warm-up. Survey time for center line and background line only should be less than 2 minutes after instrument warm-up.

10.0 DGM DATA ANALYSIS

Each IVS database was analyzed for data density along-track with the results documenting that 0% exceeded the designed along-track sample density of 0.6-ft (0.183-m). Therefore, the planned performance metric of <5% sample separation exceeding 0.6-ft is recommended for production DGM. An example along-track plot is provided in Figure 10-1.

DGM coverage of the IVS was planned for 100% site coverage at 3.0-ft (0.9-m) line spacing except around known obstacles. To achieve this coverage metric, field teams are instructed to collect data on 2.5-ft line spacing. The IVS databases were analyzed for footprint coverage. Using the planned 2.5-ft line spacing to collect the IVS data, achieved 100% coverage at 3.0-ft (0.9-m) metric. An example across-track coverage plot is provided in Figure 10-2.

All datasets were reviewed for proper time gate response (e.g., gate 1 > gate 2 > gate 3 > gate 4) over anomaly peaks.

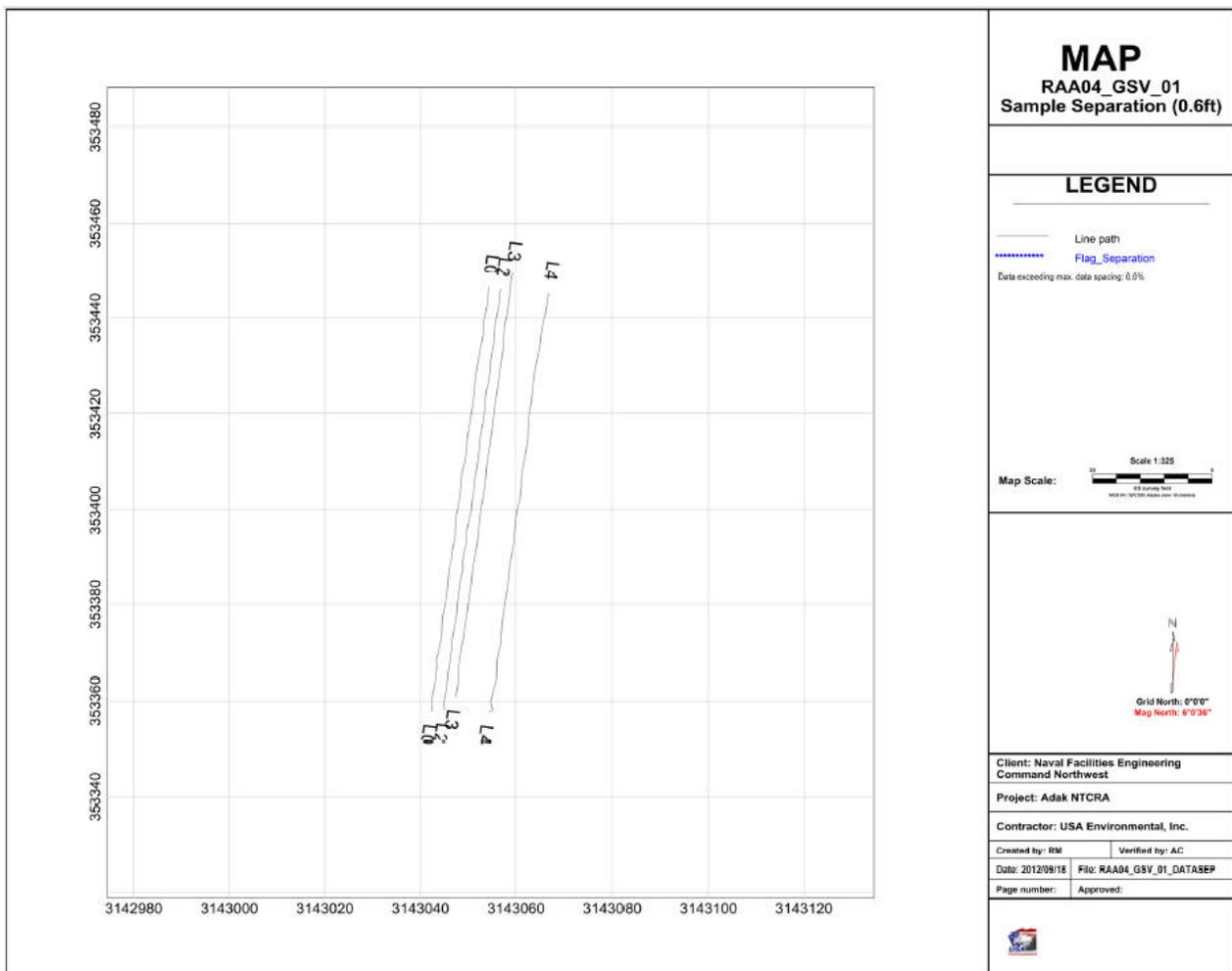


Figure 10-1: Data Separation QC Plot for RAA-04 GSV_01

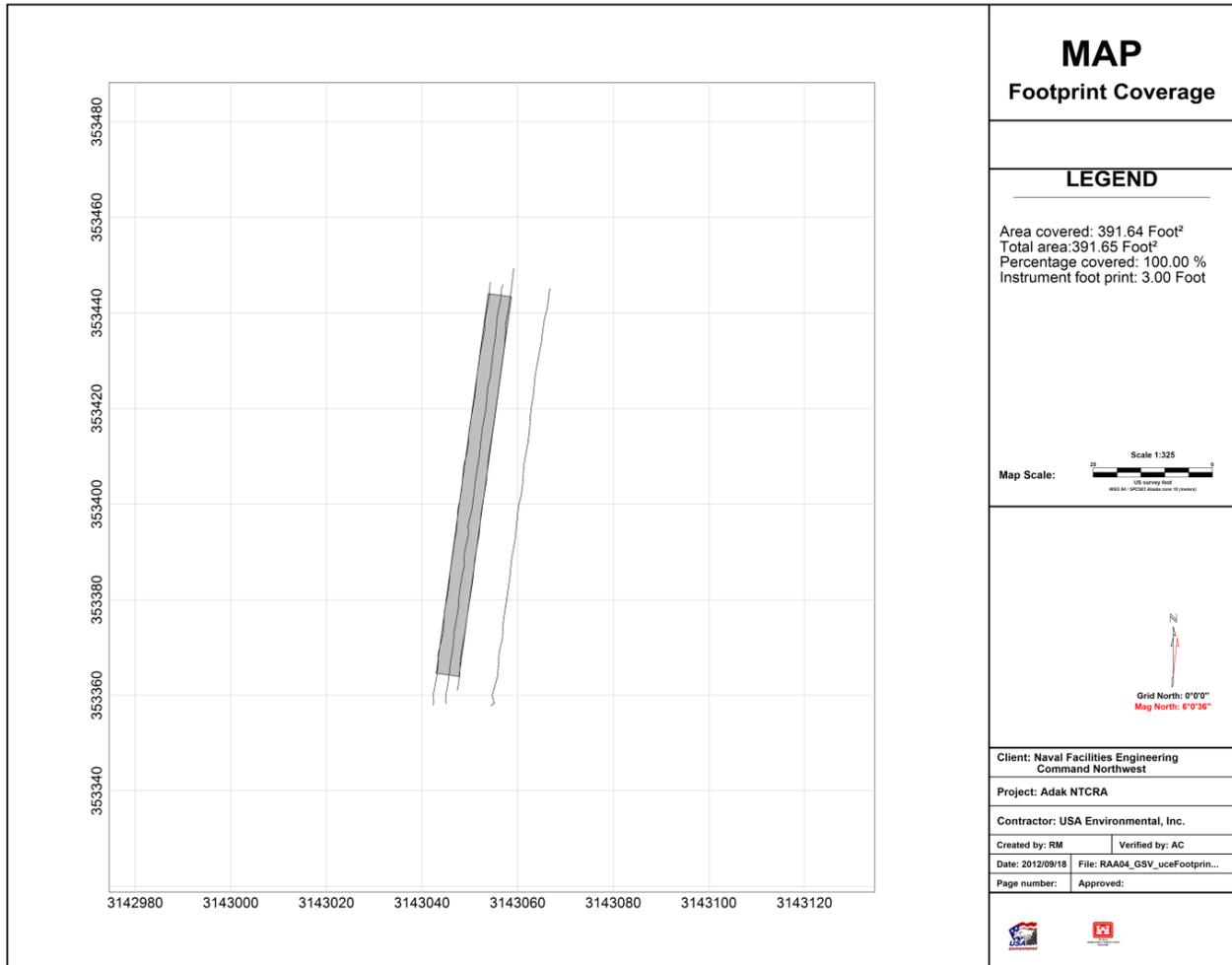


Figure 10-2: Footprint Coverage QC Plot for RAA-04 GSV_01

10.1 DISCUSSION AND QUANTIFIED RESULTS FOR LATENCY/LAG

All datasets were adjusted for latency corrections using a 0.3-sec correction to ensure no zig-zag features were present in the final gridded data.

10.2 EM61 MK2 RESPONSE OVER ISOs AND COMPARISON TO MODEL RESULTS

Each RAA-04 IVS seed item was evaluated to the published Naval Research Laboratory (NRL, 2008; NRL, 2009) ISO response tables for the adjusted depth to walking surface. All IVS seed items in RAA-04 were within the published curves and repeatability was established during the five surveys of the IVS. Response values, averages, background noise statistics and comparison charts are included in the RAA-04 IVS Seed Response with Plots.xls spreadsheet (see Appendix B). An example comparison chart is provided in Figure 10-3.

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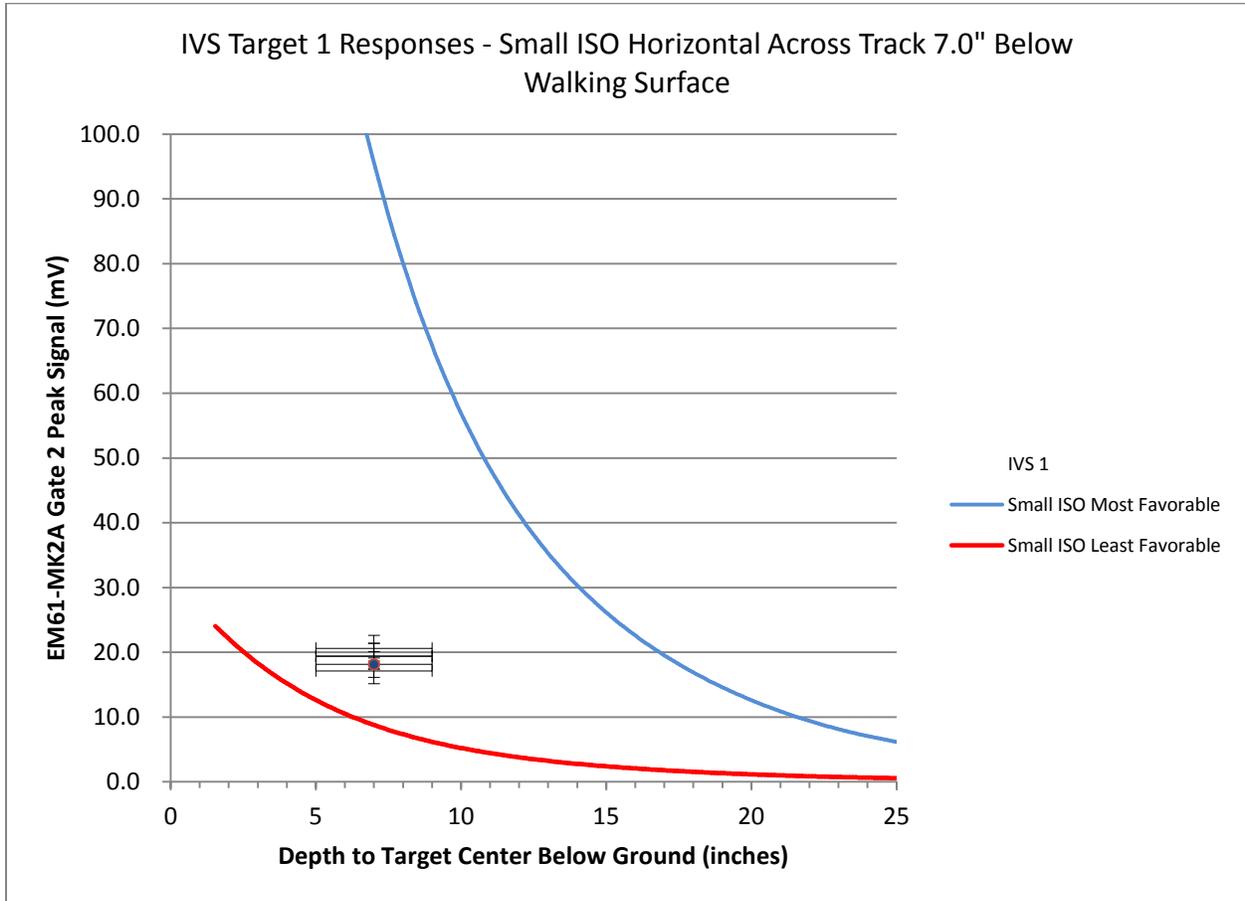


Figure 10-3: RAA-04 EM61-MK2A Time Gate 1 Responses for IVS_01

Each IVS seed item was also evaluated in a cumulative plot showing amplitude and failure criteria limits of $\pm 20\%$ or $\pm 2 \times$ std. dev. of the five-run average as shown for seed item #1 in Figure 10-4.

USA noted that not all RAA-04 IVS seed item responses met the $\pm 20\%$ failure criteria. RAA-04 IVS seed item 2, a small ISO buried 9.2-in below mineral surface, oriented across-track, on pass 4, exceeded the 20% metric by 1.1-mV (36.7%). Seed item 3, a small ISO buried 6.6-in below the mineral surface, oriented across-track, on pass 5 exceeded the 20% metric by 0.7-mV (5%). The most likely cause for this was normal dips and rises in coil height. All other RAA-04 IVS seed items met the response metric, within 20% of the initial five-run average.

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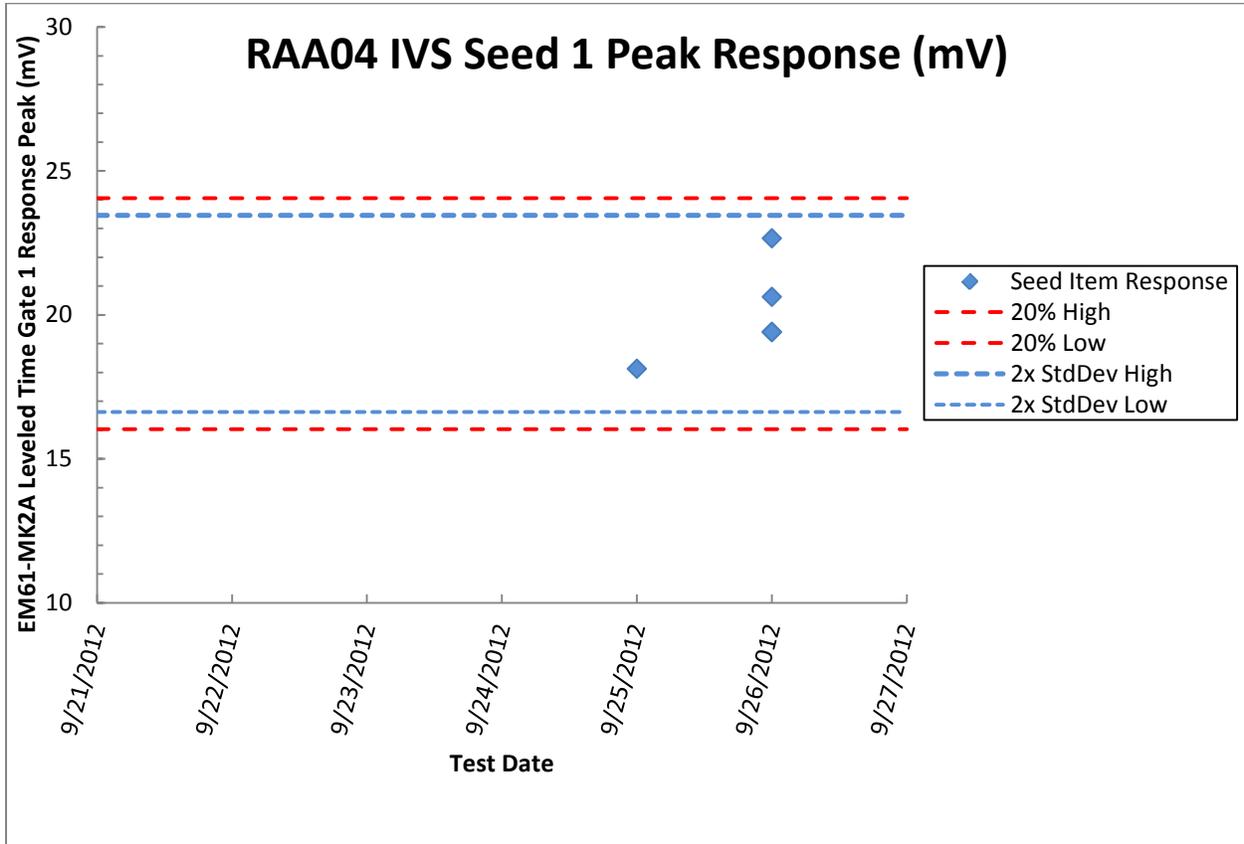


Figure 10-4: Cumulative Plot of RAA-04 IVS_01 Amplitudes with $\pm 20\%$ and $\pm 2x$ std. dev. Failure Criteria

10.3 ANOMALY LOCATION VS KNOWN LOCATION OF ISOS

A spreadsheet (see Appendix B) showing downline positioning of ISOs from the DGM interpretation compared to the known positions, and cumulative plots of the variance with time (also showing failure criteria limits) was created for RAA-04 IVS data. Figure 10-5 shows an example plot for IVS_01 seed. All RAA-04 IVS seed items passed the location metric within 25-cm.

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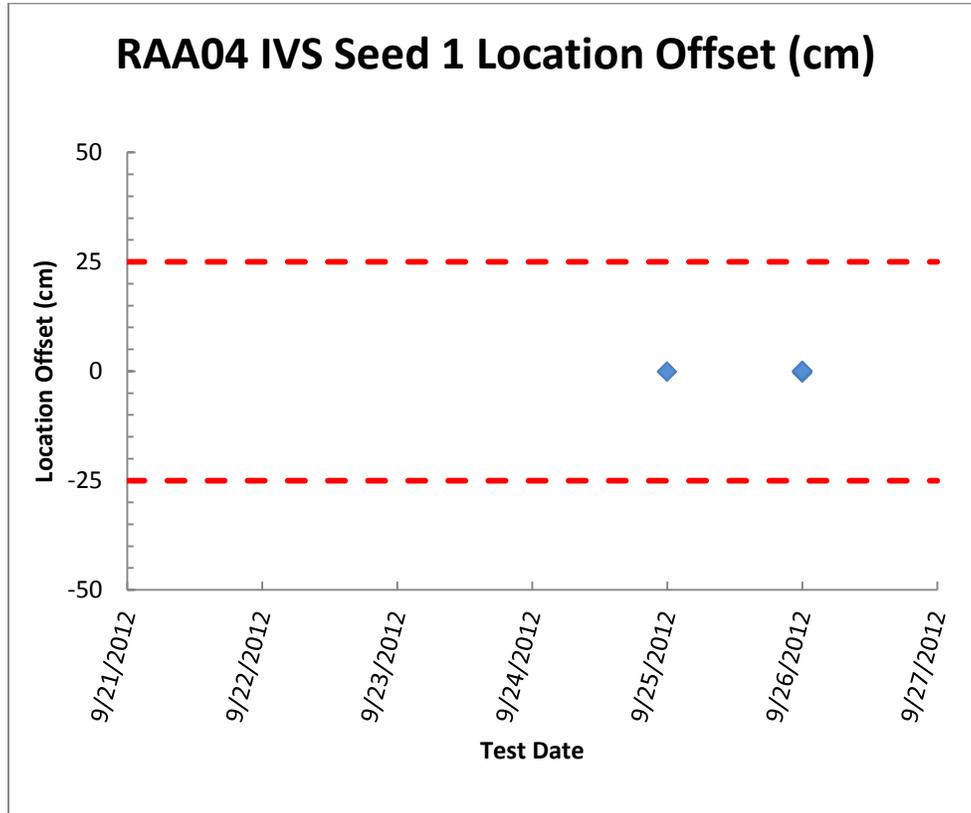


Figure 10-5: Cumulative Plot of Differences between Interpreted (DGM) and Known (Surveyed) Positions with Failure Criteria

10.4 BACKGROUND NOISE

A background noise line was installed 10-ft from the center line and data were collected five times. These results (+/- 0.59 mV) are consistent with the other RAAs and previous DGM efforts on Adak. The results are shown in Table 10-1.

Table 10-1: RAA-04 Background Noise Line Statistics for Time Gate 1

Date	File Name	Z1_Lev (std. dev.)
9/25/2012	RAA04_GSV_01	0.766
9/26/2012	RAA04_GSV_02	0.922
9/26/2012	RAA04_GSV_03	0
9/26/2012	RAA04_GSV_04	0.79
9/26/2012	RAA04_GSV_05	0.493
	Mean Background	0.5942

10.5 EFFECT OF TRANSECT LOCATION ON ISO AMPLITUDE

No effect on ISO amplitude was encountered at this RAA IVS due to geology or clutter. The low dynamic background noise indicates that good signal to noise can be expected at the RAA-04 IVS, and may extend to RAA-04.

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11.0 IVS INSTALLATION SUMMARY

Post-installation DGM surveys verified that the DGM instrumentation (sensors and positioning), instrument operators, data acquisition methodologies, and data processing and analysis procedures met the DQOs established for the project in the GSV Plan and DGM SOPs (e.g., RTK DGPS reoccupation, the along-line data density metric and survey area coverage, and the IVS seed item location accuracy). A comparison table of mean time gate 1 response values by RAA is included in Table 11-1 (yellow highlighted cells show the lowest IVS seed item response value across all three IVSs).

Table 11-1: Comparison Table of Mean Time Gate 1 Response Values by RAA

	RAA-02				RAA-03				RAA-04			
	Min	Max	Mean	2x std. dev.	Min	Max	Mean	2x std. dev.	Min	Max	Mean	2x std. dev.
IVS_1	15.6	23.8	19.0	6.1	12.4	17.1	14.6	3.5	18.1	22.7	20.0	3.4
IVS_2	4.9	8.6	6.2	3.0	5.8	7.7	6.7	1.4	3.3	5.9	4.0	2.2
IVS_3	20.7	25.8	22.9	4.5	12.5	17.4	15.5	3.7	12.8	18.9	15.1	5.7
IVS_4	22.3	27.7	24.4	4.2	16.1	22.9	19.9	4.9	22.8	33.4	29.9	8.4
IVS_5	8.9	10.6	9.9	1.4	10.2	12.6	11.8	2.0	6.8	11.0	9.4	3.1
Background RMS	0.61				0.65				0.59			

Only the IVS seed item response peak within 20% of the five-run average DQO was not consistently met. Out of the 75 IVS seed item response peaks, there were a total of five response peak failures (6.7%) outside 20% of their five-run average response peak value. There were a total of one failure (1.3%) below the 20% metric and four failures (5.3%) above the 20% metric. All five failures occurred on the first three small ISOs oriented across-track (the orientation that is most difficult to detect) All IVS seed item response peaks passed the more robust failure criteria of the larger of $\pm 20\%$ or 2x std. dev. of the five-run average or the previous week's average.

The IVS data from all three IVSs was analyzed for the minimum IVS seed item response in each RAA, grouped by seed item depth (e.g., 3x, 5x, and 7x the outer diameter), to establish a basis for the minimum expected BSI (small ISO) response value. The minimum five-run average IVS seed item response for each depth category was identified, along with the std. dev. A factor of (2x std. dev.) was subtracted from the five-run average as the best predictor of the minimum expected BSI response. Table 11-2 summarizes these results.

Based on these IVS results, it is recommended that the IVS anomaly amplitude failure criteria be modified to the more robust the larger of $\pm 20\%$ or 2x std. dev. of the previous week's average metric that better accounts for the dynamic response uncertainties associated with slight survey line path offsets, minor coil height changes due to terrain, EM61-MK2 sampling intervals, and noise.

No other changes to the DGM metrics are recommended at this time.

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Table 11-2: Minimum Expected BSI Response (EM61-MK2 Leveled Time Gate 1 Channel)

RAA	BSI Depth	Mean (mV)	Std. Dev. (mV)	2x Std. Dev. (mV)	Minimum Expected BSI Response (mV)
RAA-02	3X Diameter	19.03	3.04	6.08	12.9
	5X Diameter	22.88	2.24	4.47	18.4
	7X Diameter	6.24	1.48	2.96	3.3
RAA-03	3X Diameter	14.65	1.77	3.54	11.1
	5X Diameter	15.51	1.83	3.66	11.8
	7X Diameter	6.72	0.68	1.37	5.4
RAA-04	3X Diameter	18.94	1.34	2.67	16.3
	5X Diameter	14.83	2.37	4.73	10.1
	7X Diameter	4.0	1.10	2.19	1.8

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12.0 BLIND SEED ITEM (BSI) INSTALLATION

The BSI effort, on Parcel 4 of Adak, AK, was carried out by the two-man BSI team consisting of a UXOTII (Richard Moyer) and a Field Engineer/Instrument Operator (Scott Crandall). The Quality Control Specialist (Robert Shauger) accompanied the BSI team. The effort took place from Friday, 21 September through Thursday, 27 September 2012, over three RAAs: RAA-02, RAA-03, and RAA-04. On Friday, September 21, the BSI team, in conjunction with the IVS team (led by Ric MacNeil), established survey control points and back check points at RAA-03 and RAA-04 (see Table 1-1). RAA-3 was completed over the course of five production days (21-25 September 2012), using the RAA-03 survey control point. RAA-04 was completed over the course of two production days (25 and 26 September 2012). RAA-02 was completed in one production day (27 September 2012). The RAA-04 and RAA-02 BSI effort used the ARA survey control point. The back check results for each BSI day are provided in Table 1-2.

12.1 BSI INSTALLATION LOGISTICS

The procedure for the BSI installation began with the setup of the RTK Base station and back check. The White's DFX300 was also checked to ensure proper functionality. Once all the equipment was verified to be operating correctly, one BSI was placed in every full grid and one BSI was placed in every equivalent full grid of partial grids. A 3-ft area was checked, with the White's DFX300, around the selected location. If anomalies were detected in the area, a new location within the selected grid was chosen for the BSI. If no anomalies were detected in the area, a hole was dug taking care to leave the tundra intact. The following details of BSI location were then recorded in the data logger:

- BSI number
- BSI type
- Coordinates
- Depth (tundra thickness and depth below mineral surface)
- Orientation (EW or NS)
- Inclination (all Horizontal).

A total of 368 BSIs (small ISOs) were placed at a depth below the mineral surface of 3X, 5X, or 7X, the outside diameter of the BSI (4-, 6.6-, or 9.2-in). Once the BSI was placed at its target depth and orientation the RTK DGPS was placed on the center of the item, leveled up, and the coordinates collected. After all the data was collected, the hole was back filled, taking care to place the tundra back as it was found. The White's DFX300 was then used to ensure that the BSI could be located.

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Figure 12-1: BSI Team Installing Blind Seed in RAA-04

12.2 BSI DATA SUMMARY AND REFERENCE

The collected data was compiled into a password protected spreadsheet, and posted to the QA contractor Sharepoint.

12.3 MINIMUM EXPECTED BSI RESPONSE

The IVS data from all three IVSs was analyzed for the minimum IVS seed item response in each RAA, grouped by seed item depth (e.g., 3x, 5x, and 7x the outer diameter), to establish a basis for the minimum expected BSI response value. A conservative BSI response value of 3.0-mV on the leveled time gate 1 channel is recommended as the minimum threshold for BSI selection as all small ISOs were detected at or above this response value and provided a high signal to noise ratio above background during anomaly selection. RAA anomaly screening thresholds established in the MEC QAPP for each RAA (see Table 12-1) are noted to be higher than the recommended BSI selection threshold for some RAAs. The anomaly screening thresholds were developed based on the MEC and the depths they were encountered in past site investigations and not theoretical detection depths of the geophysical system. To incorporate both the proposed BSI selection threshold and the recommended anomaly selection criteria for each RAA, DGM anomalies in all RAAs will be selected at a 3.0-mV threshold on the leveled time gate 1 channel. The resulting target database will be ranked by response amplitude, with only the anomalies above the RAA screening threshold forwarded for intrusive investigation. However, all of the anomalies at or above the 3.0-mV selection threshold will be used to assess BSI detection that may fall below the anomaly screening threshold but above the BSI selection threshold. QC and QA are able to verify that the BSIs were detected in the event that their mV response is below the RAA specific pick threshold. If any

BSI fails to meet these initial selection criteria, it will be evaluated on a case-by-case scenario, but would not necessarily constitute a grid failure.

Table 12-1: Anomaly Screening Thresholds by RAA

RAA	Time Gate	Threshold	Basis
RAA-01	1	7	40-mm grenade
RAA-02	1	3	20-mm projectile
RAA-03 West	1	4.8	37-mm projectile
RAA-03 East	1	7	40-mm grenade
RAA-03 East (AOC HG-01)	1	7	40-mm grenade
RAA-04	1	3.4	81-mm mortar

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APPENDIX A. SEED ITEM PHOTOS

This appendix contains the following IVS seed item photos:

- RAA-02
- RAA-03
- RAA-04.

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RAA02 IVS SEED ITEM PHOTOS

RAA-02
IVS-01 ACROSS
S MAIN ISO-TRACK
4 inch below M.S
7 inch below W.S.





RAA-02
IVS-01 ACROSS
S MAIN ISO - TRACK
4 inch below M.S
7 inch below W.S.



RAA-02
I VS-01
5 MAIN ISD - ACROSS TRACK

4 inch below M.S

7 inch below W.S.

RAA-02
I VS-02 ACROSS
S MAIN ISO TRACK
9.2 inch below M.S
12.2 inch below W.S.

RAA-02
I VS-02 ACROSS
S MAIN ISO-TRACK
9.2 inch below M.S
12.2 inch below W.S.



RAA-02
I.V.S-02
SMALL ISO - ACROSS
TRACK

9.2 inch below M.S

12.2 inch below W.S.

RAA-02
I.V.S-0.3 ACROSS
S MAIN ISO - TRACK
6.6 inch below M.S
8.6 inch below W.S.



RAA-02

IVS-0.3 ACROSS

S MAIN ISO - TRACK

6.6 inch below M.S

8.6 inch below W.S.



RAA-02

I VS-03

ACROSS

S MAIN ISO - TRACK

6.6 inch below M.S

8.6 inch below W.S.

Quartet

RAA-02
I VS-04 Along
S MAIN ISO - TRACK
4 inch below M.S.
6 inch below W.S.



RAA-02
IVS-04
SMAN ISO - TRACK
4 inch below M.S
6 inch below W.S.

Quarter



RAA-02

I.V.S-0.4

Along
S MAIN ISD - TRACK

4 inch below M.S.

60 inch below W.S.

RAA-02

IVS-05

ALONG

S MAIN ISO-TRACK

9.2 inch below M.S

11.2 inch below W.S.

RAA-02

IVS-05

SMALL ISO - TRACK

Along

9.2 inch below M.S

11.2 inch below W.S.

RAA-02

IVS-05

Along
S MAIN ISD - TRACK

9.2 inch below M.S

11.2 inch below W.S







RAA03 IVS SEED ITEM PHOTOS

RAA-03

IVS - 01

SMALL ISO - ^{Across} ~~Track~~

4 inch below M.S.

7 inch below W.S.

RAA-03

IVS - 01
SMALL ISO-TRUCK

Across

4. inch below M.S.

7 inch below W.S.

Quartet

3
2
1
11
10
9
8
7
6
5
4



RAA-03

IVS - 01
SMALL ISO-^{Across} TRACK
4 inch below M.S.
7 inch below W.S.

Quartet

1 FT
11
10
9
8
7
6
5
4



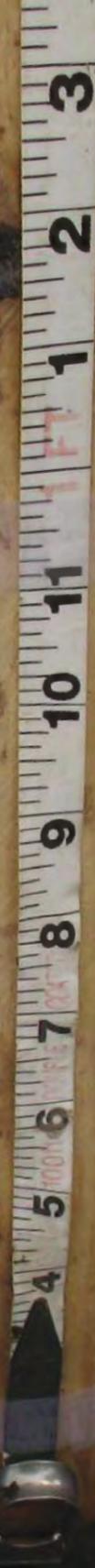
RAA-03

IVS - 01
SMALL ISO-TRUCK

4 inch below M.S.

7 inch below W.S.

Quartet



RAA-03

1VS-02

SMALL ISO - Across
Track

9.2 inch below M.S.

12.2 inch below W.S.

RAA-03

IVS - 02

SMALL ISO - ^{Across} ~~Tree~~

9.2 inch below M.S.

12.2 inch below W.S.

RAA-03

IVS - 02

SMALL ISO - ^{Across} TRUCK

9.2 inch below M.S.

12.2 inch below W.S.

RAA-03

IVS - 02

SMALL ISO - Across
Track

9.2 inch below M.S.

12.2 inch below W.S.

RAA-03

IVS - 02

SMALL ISO - ^{Across} TRUCK

9.2 inch below M.S.

12.2 inch below W.S.

Dartec

RAA-03

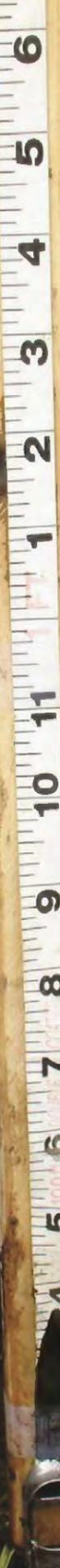
IVS - 03

SMALL ISO - ^{ACROSS} TRUCK

6.6 inch below M.S.

9.6 inch below W.S.

Quartet



RAA-03

IVS - 03

SMALL ISO - ^{Across} TRUCK

6.6 inch below M.S.

9.6 inch below W.S.

RAA-03

IVS - 03

SMALL ISO - ^{Across} Track

6.6 inch below M.S.

9.6 inch below W.S.

RAA-03

1VS - 03

SMALL ISO - ^{Across} TRUCK

6.6 INCH below M.S.

9.6 inch below W.S.

RAA-03

IVS - 04

SMALL ISO-^{ALONG} TRACK

4 inch below M.S.

7 inch below W.S.

RAA-03

IVS - 04

SMALL ISO - ^{ALONG} TRACK

4 inch below M.S.

7 inch below W.S.



RAA-03

IVS - 04

SMALL ISO-TREE ^{Along}

4 inch below M.S.

7 inch below W.S.

RAA-03

IVS - 04

SMALL ISO - ^{Along} ~~TRUCK~~

4 inch below M.S.

7 inch below W.S.

Quarter

RAA-03

IVS - 05
SMALL ISO - TRACK ^{Along}
9.2 inch below M.S.
12.2 inch below W.S.



RAA-03

IVS - 05

SMALL ISO - Along
TRUCK
9.2 inch below M.S.

12.2 inch below W.S.

Quartet



RAA-03

1VS-05

SMALL ISO-^{Along}TRUCK

9.2 inch below M.S.

12.2 inch below W.S.

Quartet

RAA-03

IVS - 05

SMALL ISO-^{Along} TRUCK
9.2 inch below M.S.

12.2 inch below W.S.

RAA-03

IVS - 05

SMALL ISO-^{ALONG} TRACK

9.2 inch below M.S.

12.2 inch below W.S.

10
9
8
7
6
5
4
3
2
1
11
10
9
8
7
6
5
4











RAA04 IVS SEED ITEM PHOTOS

RAA-04
IVS-01
SMALL ISO - ACROSS
TRACK
4 inch below M.S
7 inch below W.S.

Quartet

RAA-04
IVS-01 - ACROSS
SMALL ISO - TRACK
4 inch below M.S
7 inch below W.S.

Quarter

RAA-04
IVS-01
SMALL ISO - ACROSS
TRACK
4 inch below M.S
7 inch below W.S.

Quartet

RAA-04
IVS-01 ACROSS
SMALL ISO - TRACK
4 inch below M.S
7 inch below W.S.



RED WING

RAA-04
IVS-02 ACROSS
SMALL ISO-TRACK
9.2 inch below M.S
12.2 inch below W.S.

Quincy

RAA-04
IVS-02 ACROSS
SMALL ISO-TRACK
9.2 inch below M.S
12.2 inch below W.S.

Quarter



RAA-04
IVS-02
SMALL ISO - ACROSS
TRACK
9.2 inch below M.S
12.2 inch below W.S.

Quartet

RAA-04
IVS-02 ACROSS
SMALL ISO-TRACK
9.2 inch below M.S
12.2 inch below W.S.

RED WING

RAA-04
I VS-02 ACROSS
SMALL ISO-TRACK
9.2 inch below M.S
12.2 inch below W.S.

Quartet



RAA-04
IVS-0.4
SMALL ISO - TRACK
4 inch below M.S
7 inch below W.S.



RAA-04
IVS-03 ACROSS
SMALL ISO-TRACK
6.6 inch below M.S
9.6 inch below W.S.

Quarter



RAA-04
IVS-03 ACROSS
SMALL ISO-TRACK
6.6 inch below M.S
9.6 inch below W.S.



Quartet



RAA-04
IVS-03 ACROSS
SMALL ISOT TRACK
6.6 inch below M.S
9.6 inch below W.S.

RED WING

RAA-04

IVS-03 ACROSS

SMALL ISO-TRACK

6.6 inch below M.S

9.6 inch below W.S.



RAA-04
IVS-0.4 Along
SMALL ISO - TRACK
4 inch below M.S
7 inch below W.S.



RAA-04

IVS-0.4

5 MAIL ISO - ^{Along} TRACK

4 inch below M.S

7 inch below W.S.

Quartet

RAA-04
IVS-0.4 ALONG
SMALL ISO-TRACK
4 inch below M.S
7 inch below W.S.

RED WING

QUARTZ



RAA-04

IVS-05

SMALL ISO - TRACK

Along

9.2 inch below M.S

12.2 inch below W.S.

DATE



RAA-04

IVS-05

Along

SMALL ISO-TRACK

9.2 inch below M.S

12.2 inch below W.S



RED WING

RAA-04
I VS-05
SMALL ISO - TRACK
9.2 inch below M.S
12.2 inch below W.S.



RAA-04
I.V.S-05
SMALL ISO - TRACK
9.2 inch below M.S
12.2 inch below W.S.

RAA-04

IVS-0.5

SMALL ISO - TRACK

Along

9.2 inch below M.S

12.2 inch below W.S.

Quercus









APPENDIX B. IVS TRACKING SPREADSHEETS

This appendix contains the following Excel IVS Tracking Spreadsheets (electronic files only).

- RAA-02 IVS Seed Response with Plots.xls
- RAA-03 IVS Seed Response with Plots.xls
- RAA-04 IVS Seed Response with Plots.xls

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APPENDIX C. SAFETY MEETING TRAINING RECORDS

This appendix contains copies of the Safety Meeting Training Records.

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3. Topics Covered (Check all that apply)			
<input checked="" type="checkbox"/>	Site Safety Personnel	<input checked="" type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input checked="" type="checkbox"/>	Emergency Response Plan
<input checked="" type="checkbox"/>	Site Characterization	<input checked="" type="checkbox"/>	Hazard Communication
<input checked="" type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input checked="" type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s)	<input checked="" type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input checked="" type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input checked="" type="checkbox"/>	Emergency Communication
<input checked="" type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input checked="" type="checkbox"/>	Work and Support Zones	<input checked="" type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input checked="" type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input checked="" type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input checked="" type="checkbox"/>	Spill Containment Procedures	<input checked="" type="checkbox"/>	Other: (Specify) Vehicle Safety/Operation
<input checked="" type="checkbox"/>	Equipment Safety	<input checked="" type="checkbox"/>	Other: (Specify) Indigenous Wildlife

4. Remarks: This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner  Date: 21 Sept 2012
Site Safety Officer - Signature

SAFETY MEETING/TRAINING RECORD

Date: 22 Sept 2012

Time: 0745 AM PM

Location/Site: Adak, AK

1. Reason for Meeting/Training: (Check all that apply):

<input checked="" type="checkbox"/>	Daily Safety Meeting/Training	<input type="checkbox"/>	Periodic Safety Meeting/Training
<input checked="" type="checkbox"/>	Initial Site Safety Meeting/Training	<input checked="" type="checkbox"/>	New Site Procedures
<input checked="" type="checkbox"/>	New Task Briefing	<input checked="" type="checkbox"/>	New Site Information
<input type="checkbox"/>	Periodic Review of Site Information	<input type="checkbox"/>	Other (Explain):

2. Personnel Attending Meeting/Training:

Name	Signature	Company
Manok Synakorn	Signed	USAE
Ric MacNeil	Signed	USAE
Rick Moyer	Signed	USAE
Ted Pate	Signed	USAE
Charles Haggerty	Signed	USAE
Robert Shauger	Signed	USAE
Scott Crandall	Signed	USAE
Thomas Spitler	Signed	USAE/Prospective
Taylor Sword	Signed	AGVIQ
Mark Blohm	Signed	Battelle QA
Les Clarke	Signed	Battelle QA
Justin Peach	Signed	NAVFAC NW

3. Topics Covered (Check all that apply)			
<input checked="" type="checkbox"/>	Site Safety Personnel	<input checked="" type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input checked="" type="checkbox"/>	Emergency Response Plan
<input checked="" type="checkbox"/>	Site Characterization	<input checked="" type="checkbox"/>	Hazard Communication
<input checked="" type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input checked="" type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s)	<input checked="" type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input checked="" type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input checked="" type="checkbox"/>	Emergency Communication
<input checked="" type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input checked="" type="checkbox"/>	Work and Support Zones	<input checked="" type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input checked="" type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input checked="" type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input checked="" type="checkbox"/>	Spill Containment Procedures	<input checked="" type="checkbox"/>	Other: (Specify) Vehicle Safety/Operation
<input checked="" type="checkbox"/>	Equipment Safety	<input checked="" type="checkbox"/>	Other: (Specify) Indigenous Wildlife

4. Remarks: This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place. Initial safety briefing given to Thomas Spittler.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner 
Site Safety Officer - Signature

Date: 22 Sept 2012

SAFETY MEETING/TRAINING RECORD

Date: 23 Sept 2012

Time: 0745 AM PM

Location/Site: Adak, AK

1. Reason for Meeting/Training: (Check all that apply):			
<input checked="" type="checkbox"/>	Daily Safety Meeting/Training	<input type="checkbox"/>	Periodic Safety Meeting/Training
<input type="checkbox"/>	Initial Site Safety Meeting/Training	<input type="checkbox"/>	New Site Procedures
<input type="checkbox"/>	New Task Briefing	<input type="checkbox"/>	New Site Information
<input type="checkbox"/>	Periodic Review of Site Information	<input type="checkbox"/>	Other (Explain):
2. Personnel Attending Meeting/Training:			
Name	Signature	Company	
Manok Synakorn	Signed	USAE	
Ric MacNeil	Signed	USAE	
Rick Moyer	Signed	USAE	
Ted Pate	Signed	USAE	
Charles Haggerty	Signed	USAE	
Robert Shauger	Signed	USAE	
Scott Crandall	Signed	USAE	
Taylor Sword	Signed	AGVIQ	
Les Clarke	Signed/In Field	Battelle QA	
Mark Blohm	Signed/In Field	Battelle QA	
Justin Peach	Signed/In Field	NAVFAC NW	

3. Topics Covered (Check all that apply)			
<input checked="" type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input type="checkbox"/>	Emergency Response Plan
<input type="checkbox"/>	Site Characterization	<input type="checkbox"/>	Hazard Communication
<input type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s) Rommel Stakes	<input type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input type="checkbox"/>	Emergency Communication
<input type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input type="checkbox"/>	Work and Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input type="checkbox"/>	Spill Containment Procedures	<input type="checkbox"/>	Other: (Specify)
<input checked="" type="checkbox"/>	Equipment Safety	<input type="checkbox"/>	Other: (Specify)

4. Remarks: This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner 
 Site Safety Officer - Signature

Date: 23 Sept 2012

SAFETY MEETING/TRAINING RECORD

Date: 24 Sept 2012

Time: 0745 AM PM

Location/Site: Adak, AK

1. Reason for Meeting/Training: (Check all that apply):			
<input checked="" type="checkbox"/>	Daily Safety Meeting/Training	<input type="checkbox"/>	Periodic Safety Meeting/Training
<input checked="" type="checkbox"/>	Initial Site Safety Meeting/Training	<input checked="" type="checkbox"/>	New Site Procedures
<input checked="" type="checkbox"/>	New Task Briefing	<input checked="" type="checkbox"/>	New Site Information
<input type="checkbox"/>	Periodic Review of Site Information	<input type="checkbox"/>	Other (Explain):
2. Personnel Attending Meeting/Training:			
Name	Signature	Company	
Manok Synakorn	Signed	USAE	
Ric MacNeil	Signed	USAE	
Rick Moyer	Signed	USAE	
Ted Pate	Signed	USAE	
Charles Haggerty	Signed	USAE	
Robert Shauger	Signed	USAE	
Scott Crandall	Signed	USAE	
Thomas Spitler	Signed	USAE/Prospective	
Les Clarke	Signed/In Field	Battelle QA	
Mark Blohm	Signed/In Field	Battelle QA	
Justin Peach	Signed	NAVFAC NW	
Kevin	Briefed in Field	QA Survey Contractor	
Rob	Briefed in Field	QA Survey Contractor	

3. Topics Covered (Check all that apply)			
<input checked="" type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input checked="" type="checkbox"/>	Emergency Response Plan
<input checked="" type="checkbox"/>	Site Characterization	<input checked="" type="checkbox"/>	Hazard Communication
<input checked="" type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input checked="" type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s)	<input checked="" type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input checked="" type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input checked="" type="checkbox"/>	Emergency Communication
<input checked="" type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input checked="" type="checkbox"/>	Work and Support Zones	<input checked="" type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input checked="" type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input checked="" type="checkbox"/>	Spill Containment Procedures	<input checked="" type="checkbox"/>	Other: (Specify) Vehicle Safety/Operation
<input checked="" type="checkbox"/>	Equipment Safety	<input checked="" type="checkbox"/>	Other: (Specify) Indigenous Wildlife

4. **Remarks:** This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place. NAVFAC NW/Battelle QA survey contractors were briefed (initial) in the field adjacent to Andrew Lake and entrance to RAA-003 before entering the work area. Rommel stakes found in the OBOD area by Battelle QA and surveyors. While not in our area of concern, all teams were notified of Rommel Stake presence and to be aware of possible encounters within our areas of concern.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner 
Site Safety Officer - Signature

Date: 24 Sept 2012

SAFETY MEETING/TRAINING RECORD

Date: 25 Sept 2012

Time: 0745 AM PM

Location/Site: Adak, AK

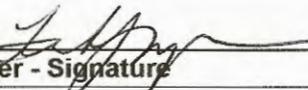
1. Reason for Meeting/Training: (Check all that apply):			
<input checked="" type="checkbox"/>	Daily Safety Meeting/Training	<input type="checkbox"/>	Periodic Safety Meeting/Training
<input type="checkbox"/>	Initial Site Safety Meeting/Training	<input type="checkbox"/>	New Site Procedures
<input type="checkbox"/>	New Task Briefing	<input type="checkbox"/>	New Site Information
<input type="checkbox"/>	Periodic Review of Site Information	<input type="checkbox"/>	Other (Explain):
2. Personnel Attending Meeting/Training:			
Name	Signature	Company	
Manok Synakorn	Signed	USAE	
Ric MacNeil	Signed	USAE	
Rick Moyer	Signed	USAE	
Ted Pate	Signed	USAE	
Charles Haggerty	Signed	USAE	
Robert Shauger	Signed	USAE	
Scott Crandall	Signed	USAE	
Les Clarke	Signed/In Field	Battelle QA	
Mark Blohm	Signed/In Field	Battelle QA	
Justin Peach	Signed	NAVFAC NW	
Kevin	Briefed in Field	QA Survey Contractor	
Rob	Briefed in Field	QA Survey Contractor	
Taylor Sword	Signed	AGVIQ	

3. Topics Covered (Check all that apply)			
<input checked="" type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input type="checkbox"/>	Emergency Response Plan
<input type="checkbox"/>	Site Characterization	<input type="checkbox"/>	Hazard Communication
<input type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s) Rommel Stakes	<input type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input checked="" type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input type="checkbox"/>	Emergency Communication
<input type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input checked="" type="checkbox"/>	Work and Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input type="checkbox"/>	Spill Containment Procedures	<input type="checkbox"/>	Other: (Specify)
<input checked="" type="checkbox"/>	Equipment Safety	<input type="checkbox"/>	Other: (Specify)

4. Remarks: This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner 
 Site Safety Officer - Signature

Date: 25 Sept 2012

SAFETY MEETING/TRAINING RECORD

Date: 26 Sept 2012

Time: 0745 AM PM

Location/Site: Adak, AK

1. Reason for Meeting/Training: (Check all that apply):

<input checked="" type="checkbox"/>	Daily Safety Meeting/Training	<input type="checkbox"/>	Periodic Safety Meeting/Training
<input type="checkbox"/>	Initial Site Safety Meeting/Training	<input type="checkbox"/>	New Site Procedures
<input type="checkbox"/>	New Task Briefing	<input type="checkbox"/>	New Site Information
<input type="checkbox"/>	Periodic Review of Site Information	<input type="checkbox"/>	Other (Explain):

2. Personnel Attending Meeting/Training:

Name	Signature	Company
Manok Synakorn	Signed	USAE
Ric MacNeil	Signed	USAE
Rick Moyer	Signed	USAE
Ted Pate	Signed	USAE
Charles Haggerty	Signed	USAE
Robert Shauger	Signed	USAE
Scott Crandall	Signed	USAE
Les Clarke	Signed/In Field	Battelle QA
Mark Blohm	Signed/In Field	Battelle QA
Justin Peach	Signed/In Field	NAVFAC NW
Kevin	Briefed in Field	QA Survey Contractor
Rob	Briefed in Field	QA Survey Contractor
Taylor Sword	Signed	AGVIQ
Thomas Spitler	Signed	USAE/Prospective

3. Topics Covered (Check all that apply)			
<input checked="" type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input type="checkbox"/>	Emergency Response Plan
<input type="checkbox"/>	Site Characterization	<input type="checkbox"/>	Hazard Communication
<input type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s) Rommel Stakes	<input checked="" type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input type="checkbox"/>	Emergency Communication
<input type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input type="checkbox"/>	Work and Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input type="checkbox"/>	Spill Containment Procedures	<input type="checkbox"/>	Other: (Specify)
<input checked="" type="checkbox"/>	Equipment Safety	<input type="checkbox"/>	Other: (Specify)

4. **Remarks:** This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place. Manok came to me after working hours and reported that he met with Robert Shauger at his site residence and that Mr. Shauger didn't look well, was disoriented, looked pale, and had symptoms of heartburn and a tingling sensation. Manok had called for medical support from the clinic which Mr. Shauger declined. I immediately went to see Mr. Shauger and assessed his condition. He looked well, was coherent, had a higher than normal pulse (120+ BPM). Recommended he go to clinic first thing in the morning to get checked out. Manok concurred.

5. **Verification:**

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner  Date: 26 Sept 2012
 Site Safety Officer - Signature

SAFETY MEETING/TRAINING RECORD

Date: 27 Sept 2012

Time: 0745 AM PM

Location/Site: Adak, AK

1. Reason for Meeting/Training: (Check all that apply):			
<input checked="" type="checkbox"/>	Daily Safety Meeting/Training	<input type="checkbox"/>	Periodic Safety Meeting/Training
<input type="checkbox"/>	Initial Site Safety Meeting/Training	<input type="checkbox"/>	New Site Procedures
<input type="checkbox"/>	New Task Briefing	<input type="checkbox"/>	New Site Information
<input type="checkbox"/>	Periodic Review of Site Information	<input type="checkbox"/>	Other (Explain):
2. Personnel Attending Meeting/Training:			
Name	Signature	Company	
Manok Synakorn	Signed	USAE	
Ric MacNeil	Signed	USAE	
Rick Moyer	Signed	USAE	
Ted Pate	Signed	USAE	
Charles Haggerty	Signed	USAE	
Robert Shauger	Signed	USAE	
Scott Crandall	Signed	USAE	
Les Clarke	Signed/In Field	Battelle QA	
Mark Blohm	Signed/In Field	Battelle QA	
Justin Peach	Signed/In Field	NAVFAC NW	
Kevin	Briefed in Field	QA Survey Contractor	
Rob	Briefed in Field	QA Survey Contractor	
Taylor Sword	Signed	AGVIQ	
Thomas Spittler	Signed	USAE/Prospective	

3. Topics Covered (Check all that apply)

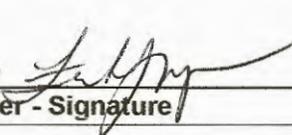
<input checked="" type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input type="checkbox"/>	Emergency Response Plan
<input type="checkbox"/>	Site Characterization	<input type="checkbox"/>	Hazard Communication
<input type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input checked="" type="checkbox"/>	Physical Hazard(s) Rommel Stakes	<input type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input type="checkbox"/>	Emergency Communication
<input type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input type="checkbox"/>	Work and Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input type="checkbox"/>	Spill Containment Procedures	<input type="checkbox"/>	Other: (Specify)
<input checked="" type="checkbox"/>	Equipment Safety	<input type="checkbox"/>	Other: (Specify)

4. Remarks: This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place. Mr. Shauger was escorted to the clinic on Adak this morning by Manok and was seen by medical personnel. Mr. Shauger was flown off island today enroute home. I was dual hated as Safety/QC by Manok Synakorn/Robert Crownover and took Mr. Shauger's place in the field today. The following project personnel will be leaving the island today: Ric MacNeil, Ted Pate, Robert Shauger, Charles Haggerty, Les Clarke, Mark Blohm, Justin Peach, Taylor Sword, and the QA surveyors Kevin and Rob.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner
Site Safety Officer - Signature



Date: 27 Sept 2012

3. Topics Covered (Check all that apply)

<input type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input checked="" type="checkbox"/>	Site/Work Area Description	<input type="checkbox"/>	Emergency Response Plan
<input type="checkbox"/>	Site Characterization	<input type="checkbox"/>	Hazard Communication
<input type="checkbox"/>	Biological Hazard(s)	<input checked="" type="checkbox"/>	On-Site Emergency
<input type="checkbox"/>	Chemical Hazard(s)	<input checked="" type="checkbox"/>	On-Site Injuries/Illnesses
<input type="checkbox"/>	Physical Hazard(s)	<input type="checkbox"/>	Evacuation Procedures
<input checked="" type="checkbox"/>	Heat Stress	<input type="checkbox"/>	Rally Point(s)
<input checked="" type="checkbox"/>	Cold Stress	<input type="checkbox"/>	Emergency Communication
<input type="checkbox"/>	Site Control	<input checked="" type="checkbox"/>	Directions to Medical Facility
<input checked="" type="checkbox"/>	Work and Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input checked="" type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring Program
<input type="checkbox"/>	Air monitoring	<input type="checkbox"/>	Specific Task Training
<input checked="" type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Confined Spaces
<input type="checkbox"/>	Engineering Controls and Equipment	<input type="checkbox"/>	Heavy Equipment
<input type="checkbox"/>	Spill Containment Procedures	<input type="checkbox"/>	Other: (Specify)
<input checked="" type="checkbox"/>	Equipment Safety	<input type="checkbox"/>	Other: (Specify)

4. Remarks: This form not provided onsite. Signatures of attendees were placed on old USA Environmental, Inc. forms and also on the backs of each of the old forms on site. This revised form, obtained after the site visit of 20-30 Sept 2012, is to represent actual attendees of the daily safety meetings, either as a group or, of those individuals who were briefed in the field in the case of the NAVFAC/Battelle QA/QA Survey representatives. Dates on this form reflect actual meetings that took place. Packed gear for shipment and fueled rental vehicles. Manok and Tom Spitler to RAA-003 to locate and map remote sections of this AOC. Fueled and returned Argo's and island vendor equipment. End of field operations today.

5. Verification:

I certify that the personnel listed above on this record received the Information and/or Training described as indicated. Personnel not attending this meeting/training will receive said information/training prior to commencing their assigned duties.

Frank J. Magner 
 Site Safety Officer - Signature

Date: 28 Sept 2012

SAFETY BRIEFING CHECKLIST/AAPP ACCEPTANCE FORM

SITE NAME: Adak OU B-2 NTCRA DATE/TIME: 20 Sept 2012

GENERAL INFORMATION

- Purpose of Visit
- Key Site Personnel/Responsibilities
- Training & Medical Requirements

SITE-SPECIFIC INFORMATION

- Site Description/Characterization/Past Uses
- Previous Studies/History
- Site Characterization
- Potential Site Hazards/Health Effects
- MEC Safety Procedures
- Site Personal Protective Equipment (PPE) Program
- Site SOPs
- Site Control Measures and Communications
- Emergency Equipment
- Emergency Response/Phone Numbers/Nearest Medical Facility
- Unanticipated hazardous conditions shall result in ceasing activities and evacuation of the site in accordance with instructions from the UXOSO/QCS.

PLAN ACCEPTANCE

I, the undersigned, have read and have been verbally briefed on the topics noted above and in the AAPP; I understand the AAPP and agree to comply with all the indicated safety and health requirements:

PRINTED NAME	ORGANIZATION	SIGNATURE	DATE
ROBERT SHANKAR	USAE	<i>[Signature]</i>	9/20/12
Richard Martel	USAE	<i>[Signature]</i>	9/20/12
CHARLES HAGGERTY	USAE	<i>[Signature]</i>	9/20/12
TEA PATE	USAE	<i>[Signature]</i>	9/20/12
Mark Bohn	Battelle	<i>[Signature]</i>	9/20/12
Rick Moyer	USAE	<i>[Signature]</i>	9/20/12
LES CLARKE	BATTELLE	<i>[Signature]</i>	9/20/12
Safety Briefing Presenter		Signature	Date
Frank J. Wagner		<i>[Signature]</i>	20 Sept 2012

USA Environmental, Inc.

Tailgate Safety Briefing

Date: 9/21/2012 Location: ADAK

Time: 0745 AM PM Team #: _____

1. Reason for Briefing:

<input checked="" type="checkbox"/>	Daily Safety Briefing		New Site Procedure
<input type="checkbox"/>	Initial Safety Briefing		New Site Information
<input type="checkbox"/>	New Task Briefing		Review of Site Information
<input type="checkbox"/>	Periodic Safety Meeting		Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
Ric MacNeil	<i>[Signature]</i>	CEO
Rick Meyer	<i>[Signature]</i>	T-II
TED PATE	<i>[Signature]</i>	T-I
CHARLES HAGBERTY	<i>[Signature]</i>	T-II
ROBERT A. SHAWGER	<i>[Signature]</i>	UXOQCS
Scott Crandall	<i>[Signature]</i>	Field Engineer
Mark Blom	<i>[Signature]</i>	QA Geo

Briefing Given By:

Name	Signature	Position
Frank J. Magner	<i>[Signature]</i>	UXOQCS/SSHO

3. Topics: (Check All That Apply)

<input type="checkbox"/>	Site Safety Personnel	<input type="checkbox"/>	Decontamination Procedures
<input type="checkbox"/>	Site/Work Area Description	<input type="checkbox"/>	Emergency Response/Equipment
<input type="checkbox"/>	Physical Hazards	<input type="checkbox"/>	On-Site Injuries/Illnesses
<input type="checkbox"/>	Chemical/Biological Hazards	<input type="checkbox"/>	Reporting Procedures
<input type="checkbox"/>	Heat/Cold Stress	<input type="checkbox"/>	Directions to Medical Facility
<input type="checkbox"/>	Work/Support Zones	<input type="checkbox"/>	Drug and Alcohol Policies
<input type="checkbox"/>	PPE	<input type="checkbox"/>	Medical Monitoring
<input type="checkbox"/>	Safe Work Practices	<input type="checkbox"/>	Evacuation/Egress Procedures
<input type="checkbox"/>	Air Monitoring	<input type="checkbox"/>	Communications
<input type="checkbox"/>	Task Training	<input type="checkbox"/>	Confined Spaces
<input type="checkbox"/>	MEC Precautions	<input type="checkbox"/>	Other:

4. Remarks:

LES CLARKE	<i>[Signature]</i>	QA
Justin Beach	<i>[Signature]</i>	NAVEAC NW
JANORE SODIC	<i>[Signature]</i>	
MANOLE SYMOKOS	<i>[Signature]</i>	CRSA Env. Inc.

5 gal
JERRY
CONS
Rebar

(over) →

USA Environmental, Inc.	
Tailgate Safety Briefing	
Date: <u>9/22/12</u>	Location: <u>ADAK, AK</u>
Time: <u>0745</u> (AM) PM	Team #: <u>ALL</u>

1. Reason for Briefing:

<input checked="" type="checkbox"/> Daily Safety Briefing	<input type="checkbox"/> New Site Procedure
<input type="checkbox"/> Initial Safety Briefing	<input type="checkbox"/> New Site Information
<input type="checkbox"/> New Task Briefing	<input type="checkbox"/> Review of Site Information
<input type="checkbox"/> Periodic Safety Meeting	<input type="checkbox"/> Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
Ric MacNeil	<i>[Signature]</i>	CEO
CHARLES MAGGERS	<i>[Signature]</i>	TECH II
TED PATE	<i>[Signature]</i>	TI
Rick Moyer	<i>[Signature]</i>	T-II
ROBERT A. SHAWLER	<i>[Signature]</i>	UXORS
Scott Crandell	<i>[Signature]</i>	Field Engineer

Briefing Given By:

Name	Signature	Position
Frank J. Wagner	<i>[Signature]</i>	UXOS/SSH0

3. Topics: (Check All That Apply)

<input checked="" type="checkbox"/> Site Safety Personnel	<input type="checkbox"/> Decontamination Procedures
<input checked="" type="checkbox"/> Site/Work Area Description	<input checked="" type="checkbox"/> Emergency Response/Equipment
<input checked="" type="checkbox"/> Physical Hazards	<input checked="" type="checkbox"/> On-Site Injuries/Illnesses
<input checked="" type="checkbox"/> Chemical/Biological Hazards	<input checked="" type="checkbox"/> Reporting Procedures
<input checked="" type="checkbox"/> Heat/Cold Stress	<input checked="" type="checkbox"/> Directions to Medical Facility
<input type="checkbox"/> Work/Support Zones	<input checked="" type="checkbox"/> Drug and Alcohol Policies
<input checked="" type="checkbox"/> PPE	<input checked="" type="checkbox"/> Medical Monitoring
<input checked="" type="checkbox"/> Safe Work Practices	<input checked="" type="checkbox"/> Evacuation/Egress Procedures
<input checked="" type="checkbox"/> Air Monitoring	<input checked="" type="checkbox"/> Communications
<input checked="" type="checkbox"/> Task Training	<input type="checkbox"/> Confined Spaces
<input checked="" type="checkbox"/> MEC Precautions	<input type="checkbox"/> Other:

CHECK vehicles fluids BEETS etc. Log check in team logs each day

4. Remarks:

Justin Peach	<i>[Signature]</i>	UXORS NW
Taylor Scott	<i>[Signature]</i>	
Thomas Spitzer	<i>[Signature]</i>	
MANOK SYNAKOW	<i>[Signature]</i>	UXOS
LES CLARRE	<i>[Signature]</i>	BAITELCE
Mark Blohn	<i>[Signature]</i>	1. 12

(OVER) →

STAGING on Mainland "Steward" to ADAK

- STAMPSON Barge -

- TOP PICK Containers

- Container SIZES 20' - 40'?

- MOVE Containers to LOCATION other than the LANDOWN YARD? ALKUT Corp. owns Landown Yard
Conec footprint/monthly @ .15¢ a sqft Elaine w/ ALKUT Corp.

How many CONEXES

AGV10 2 ea 20' Containers

fork lift rental 50⁰⁰ hr Daily w/ operator included 600⁰⁰ / without operator 300⁰⁰ daily
operator @ 75⁰⁰ hr.

ADAK Benefit regarding vehicles bought and left here.
Get w/ Jack regarding

- Location of Storage area (BAY AREA) Earth covered magazine

How to Transport Equipment to Storage area. ↗

Don Tom

ALGO USE for OBOD-01

→ RAA-3 → Blue

Very wet AREA

USA Environmental, Inc.

Tailgate Safety Briefing

Date: 9/23/2012

Location: ADAC, AK

Time: 0814 AM PM

Team #: ACL

1. Reason for Briefing:

<input checked="" type="checkbox"/> Daily Safety Briefing	New Site Procedure
<input type="checkbox"/> Initial Safety Briefing	New Site Information
<input type="checkbox"/> New Task Briefing	Review of Site Information
<input type="checkbox"/> Periodic Safety Meeting	Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
menold SYNAKORN	<i>[Signature]</i>	Pr.
Scott Frendell	<i>[Signature]</i>	Field Engineer
Rie MacNeil	<i>[Signature]</i>	BEU
TEA PATE	<i>[Signature]</i>	TI
Rick Meyer	<i>[Signature]</i>	T-II
ROBERT A. SHAW	<i>[Signature]</i>	UXO/QES
CHARLES HACKETT	<i>[Signature]</i>	T-II

Briefing Given By:

Name	Signature	Position
Frank J. Wagner	<i>[Signature]</i>	UXO/SSHU

3. Topics: (Check All That Apply)

<input type="checkbox"/> Site Safety Personnel	<input type="checkbox"/> Decontamination Procedures
<input type="checkbox"/> Site/Work Area Description	<input type="checkbox"/> Emergency Response/Equipment
<input type="checkbox"/> Physical Hazards	<input type="checkbox"/> On-Site Injuries/Illnesses
<input type="checkbox"/> Chemical/Biological Hazards	<input type="checkbox"/> Reporting Procedures
<input type="checkbox"/> Heat/Cold Stress	<input type="checkbox"/> Directions to Medical Facility
<input type="checkbox"/> Work/Support Zones	<input type="checkbox"/> Drug and Alcohol Policies
<input type="checkbox"/> PPE	<input type="checkbox"/> Medical Monitoring
<input type="checkbox"/> Safe Work Practices	<input type="checkbox"/> Evacuation/Egress Procedures
<input type="checkbox"/> Air Monitoring	<input type="checkbox"/> Communications
<input type="checkbox"/> Task Training	<input type="checkbox"/> Confined Spaces
<input type="checkbox"/> MEC Precautions	<input type="checkbox"/> Other:

4. Remarks:

Taylor Swain JTB/ML
Justin Peach MAF/PC

Sept 24, 2012
 Daily Safety/Tailgate Mtg.
 Frank Magny SSHO/UXOS

23 Sept Safety Mtg.
 Justin Peach Attended.

Attendees:

1. Scott Cornwall
2. TED PATE
3. Rick Meyer
4. Manok Synakorn
5. ROBERT SHAWLER

6. CHARLES Haggerty
7. Ric MacNeil 11.
8. [Signature] 12.
9. T. SPITZER 13.
10. J. Peach NAVAC NW 14.

25 Sept 2012 TUESDAY Daily Safety/Tailgate Mtg.
 Frank T. Magny UXOS/SSHO

SIGN IN: Rommel Stakes / Rain wind / Getting started / Production - BSI's / IS.

1. J. Peach NAVAC NW
2. Rick Meyer
3. ROBERT SHAWLER
4. CHARLES Haggerty
5. TED PATE

6. Ric MacNeil
7. Scott Cornwall
8. Manok Synakorn
9. Taylor Sward - 12:15 Hr
- 10.

Rebar for MacNeil

- Bungee cords

USA Environmental, Inc.

Tailgate Safety Briefing

Date: 9/26/2012

Location: AKAK, AK

Time: 7:45 @ AM PM

Team #: ALL

1. Reason for Briefing:

<input checked="" type="checkbox"/> Daily Safety Briefing		New Site Procedure
<input type="checkbox"/> Initial Safety Briefing		New Site Information
<input type="checkbox"/> New Task Briefing		Review of Site Information
<input type="checkbox"/> Periodic Safety Meeting		Other: (Specify)

2. Personnel Attending:

Name	Signature	Position
CHARLES HABBERTY	<i>[Signature]</i>	T-II
ROBERT A. SHAWNEE	<i>[Signature]</i>	UKOCS
Rick Moyer	<i>[Signature]</i>	T-II
Scott Lammell	<i>[Signature]</i>	Field Engineer
J. SPITLER		
RIC McNeil	<i>[Signature]</i>	GEO
TED PATE	<i>[Signature]</i>	TI

Briefing Given By:

Name	Signature	Position
Frank J. Magner	<i>[Signature]</i>	UKOCS/SSH0

3. Topics: (Check All That Apply)

<input type="checkbox"/> Site Safety Personnel	<input type="checkbox"/> Decontamination Procedures
<input type="checkbox"/> Site/Work Area Description	<input type="checkbox"/> Emergency Response/Equipment
<input type="checkbox"/> Physical Hazards	<input type="checkbox"/> On-Site Injuries/Illnesses
<input type="checkbox"/> Chemical/Biological Hazards	<input type="checkbox"/> Reporting Procedures
<input type="checkbox"/> Heat/Cold Stress	<input type="checkbox"/> Directions to Medical Facility
<input type="checkbox"/> Work/Support Zones	<input type="checkbox"/> Drug and Alcohol Policies
<input type="checkbox"/> PPE	<input type="checkbox"/> Medical Monitoring
<input type="checkbox"/> Safe Work Practices	<input type="checkbox"/> Evacuation/Egress Procedures
<input type="checkbox"/> Air Monitoring	<input type="checkbox"/> Communications
<input type="checkbox"/> Task Training	<input type="checkbox"/> Confined Spaces
<input type="checkbox"/> MEC Precautions	<input type="checkbox"/> Other:

4. Remarks:

Tank or Saddle Fuel/Inlet -
 Manual Sampling
 Justin Beach N/A/AC

100gal. Saddle Tank for Vehicles/ACGO fueling in the field

(OVER) →

27 Sept 2012

Daily Safety / Tailgate
Frank J. Meyer UXOS/SSHO
78 BSI's ARGO OPS

1. ~~Steve~~ 6. ~~FRANK~~
2. ~~Rick~~ 7. ~~Ken~~
3. ~~John~~ 8. Justin Peach ~~John~~ NAVFAC NW
4. ~~John~~ 9. ~~Steve~~ SPITER
5. ~~John~~
- 10.

12 HRS. 26 Sept
 13 HRS. 27 Sept
 8 HRS 28 Sept

28 Sept 2012

Daily Safety / Tailgate Frank J. Meyer UXOS/SSHO
 RAA:003 Remote Grids ~~MANCK/TOM~~ SCOUT area /
 SAFE ARGO OPS / ROMMEL STAKES / MEC / SLIPS - Trips - Falls.
 2. RADIOS 1ea person

1. ~~Steve~~ ~~MANCK~~ SPITER
2. Rick T-II
3. John FID Eng
- 4.
- 5.

Bucket next to Sandbags

APPENDIX D. DAILY IVS AND BSI INSTALLATION REPORT

This appendix presents the daily IVS and BSI installation reports applicable to this effort.

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Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date: 9/21/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 1
---	---	------------------------

Contractor: USA Environmental, Inc.	Superintendent: Manok Synakorn
---	--

AM Weather: Cloudy/Rain, Visibility 10 miles, Max Wind 16mph, Max Gust 23mph	PM Weather: Cloudy/Rain, Visibility 10 miles, Max Wind 16mph, Max Gust 23mph	Temperature: (min/max): 37/50 F
--	--	---------------------------------

Work Location & Description	Employer	Number	Trade	Hours
Battelle Office: Kickoff Meeting to discuss operation goals and procedures. Inventoried all shipped gear and recoded serial numbers. Set up EM61-MK2A in stretcher mode. BM18: Obtained Survey Control at RAA-03 utilizing BM18 as a start point. RAA-03: RTK Base Station setup at RAA-03 for use by BSI and IVS teams. Completed two BSI's in RAA-03. IVS team located idealized RAA-03 IVS location and background analog survey with White's all metals detector.	Scott Crandall	1	QC Geo Scientist	11
	Robert Shauger	1	UXOQCS	11
	Richard Moyer	1	UXOTII	11
	Richard MacNeil	1	Site Geophysicist	11
	Ted Pate	1	UXOTII	11
	Charles Haggerty	1	UXOTII	11

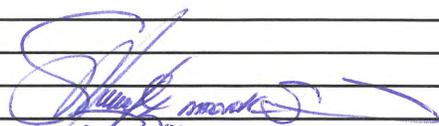
Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No: _____	Total work hours on site this date:	66
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: _____ No: No	Cumulative work hours from previous report:	0
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes _____ No: No	Cumulative work hours since start of work:	66
Was hazardous material/waste released to the environment? (If yes, attach description of incident and proposed action.)	Yes _____ No: No		

List safety actions taken today/safety inspections conducted:

Remarks:
 Considerable time taken to bring control from BM-18 to the site. Back check was done on BR-6 near radar domes. Secondary base and back check recorded at control point ADK-401 as a mid-point for possible radio repeater site. Control point and back check installed in RAA-03 (RAA-03 base and RAA-03 BC). RAA-03 idealized IVS location had tall grass, lots of standing water, and building debris scattered throughout. Area used for IVS slightly cluttered but similar of surrounding areas.

	Started	In Process	Completed/Found	Total Completed/Found
	2	0	2	2
Target Locations			0	0
DMM with HE or Propellant			0	0
Small Arms			0	0
MPPEH			0	0
Investigated locations			0	0
Total Metallic Items (Debris) (items/ est. lbs)			0	0
				Ratio 0 / 0

Grid Numbers Started This Day: 2 BSI Grids
 Grid Numbers Completed This Day: 2 BSI Grids
 DMM Found This Day (Grid/Item): 0
 Small Arms (Grid/ Item): 0
 MPPEH Found This Day (Grid/Item): 0

Manok Synakorn	9/21/12
	Date
Site Superintendent	

Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date:
9/22/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 2
---	---	------------------------

Contractor: USA Environmental, Inc.	Superintendent: Manok Synakorn
AM Weather: Cloudy/Rain, Visibility 10 miles, Max Wind 18mph, Max Gust 25mph	PM Weather: Cloudy/Rain, Visibility 10 miles, Max Wind 18mph, Max Gust 25mph
Temperature: (min/max): 39/48 F	

Work Location & Description	Employer	Number	Trade	Hours
Morning safety brief and vehicle inspection.	Scott Crandall	1	QC Geo Scientist	11
RAA-03: RTK Base Station setup at RAA-03 for use by BSI and IVS teams.	Robert Shauger	1	UXOQCS	11
Completed 30 BSI's in RAA-03.	Richard Moyer	1	UXOTII	11
Moved IVS location slightly North due to clutter in grid. Team runs a background survey with EM61-MK2A in stretcher mode. Site geo reviews data with QA contractor. Run second background survey as quality control measure. Team begins de-vegetation of IVS area (~ 2 hours to complete).	Richard MacNeil	1	Site Geophysicist	11
	Ted Pate	1	UXOTII	11
	Charles Haggerty	1	UXOTII	11

Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No: _____	Total work hours on site this date:	66
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: _____ No: No	Cumulative work hours from previous report:	66
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes _____ No: No	Cumulative work hours since start of work:	132
Was hazardous material/waste released to the environment? (If yes, attach description of incident and proposed action.)	Yes _____ No: No		

List safety actions taken today/safety inspections conducted:

Remarks:

Considerable time in the AM due to RTK GPS issues. RAA-03 is considerably cluttered with building and cultural debris resulting in the team shifting the IVS slightly to the North causing a delay. The team also took longer than expected for de-vegetation efforts due to the very high grass in the area.

	Started	In Process	Completed/Found	Total Completed/Found	
	30	0	30	32	
Target Locations			0	0	
DMM with HE or Propellant			0	0	
Small Arms			0	0	
MPPEH			0	0	
Investigated locations			0	0	Ratio
Total Metallic Items (Debris) (items/ est. lbs)			0	0	0 / 0

Grid Numbers Started This Day: 30
 Grid Numbers Completed This Day: 30
 DMM Found This Day (Grid/Item): 0
 Small Arms (Grid/ Item): 0
 MPPEH Found This Day (Grid/Item): 0

Manok Synakorn 9/22/12
 Site Superintendent Date

Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date:
9/23/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 3
---	---	------------------------

Contractor: USA Environmental, Inc.	Superintendent: Manok Synakorn
AM Weather: Cloudy/Rain, Visibility 9 miles, Max Wind 31mph, Max Gust 43mph	PM Weather: Cloudy/Rain, Visibility 9 miles, Max Wind 41mph, Max Gust 43mph
Temperature: (min/max): 42/51 F	

Work Location & Description	Employer	Number	Trade	Hours
Morning Safety Briefing & Mobilization to site.	Scott Crandall	1	QC Geo Scientist	11
RAA-03: RTK Base Station setup at RAA-03 for use by IVS & BSI team.	Robert Shauger	1	UXOQCS	11
Completed 49 BSI's in RAA-03.	Richard Moyer	1	UXOTII	11
IVS team begins installation of IVS lines and seed items. Once all items are emplaced the end points of the lines and grid corners are recorded with the RTK-DGPS. All seed items are photographed. Depths are recorded with a tape measure and the RTK-DGPS for depths below mineral surface and depth below walking surface. EM61-MK2A static and response test is performed. RAA-03 IVS 01 is collected and reviewed by site geophysicist. Evening static and response test is collected.	Richard MacNeil	1	Site Geophysicist	11
15:00-17:15 IVS teams mobs to RAA-04 to shoot in two control points for RTK-DGPS base and back check near Adak Recreation Center.	Ted Pate	1	UXOTII	11
	Charles Haggerty	1	UXOTII	11

Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No: _____	Total work hours on site this date:	66
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: _____ No: No	Cumulative work hours from previous report:	132
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes: _____ No: No	Cumulative work hours since start of work:	198
Was hazardous material/waste released to the environment? (If yes, attach description of incident and proposed action.)	Yes: _____ No: No		

List safety actions taken today/safety inspections conducted:

Remarks:

Considerable time in the AM due to RTK GPS issues. RAA-03 is considerably cluttered with building and cultural debris resulting in the team shifting the IVS slightly to the North causing a delay. The team also took longer than expected for de-vegetation efforts due to the very high grass in the area.

	Started	In Process	Completed/Found	Total Completed/Found	
	49	0	49	81	
Target Locations		0	0	0	
DMM with HE or Propellant		0	0	0	
Small Arms		0	0	0	
MPPEH		0	0	0	
Investigated locations		0	0	0	Ratio
Total Metallic Items (Debris) (items/ est. lbs)		0	0	0	0 / 0

Grid Numbers Started This Day: 49 _____

Grid Numbers Completed This Day: 49 _____

DMM Found This Day (Grid/Item): 0 _____

Small Arms (Grid/Item): 0 _____

MPPEH Found This Day (Grid/Item): 0 _____

Manok Synakorn	9/23/12
Site Superintendent	Date

Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date:
9/24/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 4
---	---	-----------------

Contractor: USA Environmental, Inc.	Superintendent: Manok Synakorn
---	--

AM Weather: Cloudy/Rain, Visibility 7 miles, Max Wind 47mph, Max Gust 62mph	PM Weather: Cloudy/Rain, Visibility 7 miles, Max Wind 47mph, Max Gust 62mph	Temperature: (min/max): 42/46 F
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Work Location & Description	Employer	Number	Trade	Hours
Morning Safety briefing, IVS team mobilizes to RAA-04, BSI team mobilizes to RAA-03. RAA-03: RTK Base Station setup at RAA-03 for use by BSI team. Completed 52 BSI's in RAA-03. Attempt to set up RTK-DGPS base station at ARA Base. High winds keep team from setting up base station. The IVS team located the idealized area for RAA-04 IVS using a Trimble GeoXT. The team then selected a section with similar terrain, vegetation, and geology as the investigation area just to the East of the idealized IVS boundary and performed a background survey using a Whites all metal detector. EM61-MK2A background survey performed using L/S/F method. IVS was laid out but could not be completed due to lack of RTK DGPS. Mob to RAA-02 to recon access for RAA-02 IVS installation.	Scott Crandall	1	QC Geo Scientist	11
	Robert Shauger	1	UXOQCS	11
	Richard Moyer	1	UXOTII	11
	Richard MacNeil	1	Site Geophysicist	11
	Ted Pate	1	UXOTII	11
	Charles Haggerty	1	UXOTII	11

Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No: _____	Total work hours on site this date:	66
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: _____ No: No	Cumulative work hours from previous report:	198
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes: _____ No: No	Cumulative work hours since start of work:	264
Was hazardous material/waste released to the environment? (If yes, attach description of incident and proposed action.)	Yes: _____ No: No		

List safety actions taken today/safety inspections conducted:

Remarks:
 The IVS team located the idealized area for RAA-04 IVS using a Trimble GeoXT. The team then selected a section with similar terrain, vegetation, and geology as the investigation area just to the East of the idealized IVS boundary and performed a background survey using a Whites all metal detector. The Tech II confirmed that the site was sufficiently anomaly free. An area approximately 115ft by 21ft was then staked out and a background survey was performed using the EM61-MK2A in stretcher mode. Due to extreme high winds, the RTK DGPS base station for RAA-04 was not set-up the morning of the 24th of September. The first background survey was run using line/station/fiducials to characterize the site location. The site geophysicist processed the background survey data on-site and confirmed that the area was suitable for the IVS installation to begin. An 80ft center line was laid out using tape measures and then the offset and background lines were installed. Large non-metallic plastic stakes were installed at the ends of each line and high visibility rope was secured along each line between the plastic stakes.

	Started	In Process	Completed/Found	Total Completed/Found	
	52	0	52	133	
Target Locations			0	0	
DMM with HE or Propellant			0	0	
Small Arms			0	0	
MPPEH			0	0	
Investigated locations			0	0	Ratio
Total Metallic Items (Debris) (items/ est. lbs)			0	0	0 / 0

Grid Numbers Started This Day: 52
 Grid Numbers Completed This Day: 52
 DMM Found This Day (Grid/Item): 0
 Small Arms (Grid/Item): 0
 MPPEH Found This Day (Grid/Item): 0

Manok Synakorn	9/24/12
Site Superintendent	Date

Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date:
9/25/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 5
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Contractor: USA Envorinmental, Inc.	Superintendent: Manok Synakorn
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AM Weather: Cloudy/Rain, Visibility 9 miles, Max Wind 30mph, Max Gust 39mph	PM Weather: Cloudy/Rain, Visibility 9 miles, Max Wind 30mph, Max Gust 39mph	Temperature: (min/max): 41/46 F
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Work Location & Description	Employer	Number	Trade	Hours
Morning Safety briefing, IVS team mobilizes to RAA-04, BSI team mobilizes to RAA-03. RAA-03: RTK Base Station setup at RAA-03 for use by BSI team. Completed 34 BSI's in RAA-03. Break down Base Station at 1430. RAA-04: Utilized RTK Base Station at ARA-Base (setup by IVS team), BSI team begins operations on RAA-04. Completed 19 BSI's in RAA-04. Set up RTK-DGPS base station at ARA Base. The IVS team performed a second background survey with the EM61-MK2A in stretcher mode with RTK data positioning. The team then finished the IVS installation and collected the IVS data with the EM-61MK2A. Mob to RAA-02. Team takes an Argo to RAA-02 IVS area. Finds a suitable location and begin background surveys. After review, the IVS is set up and all RTK DGPS points are taken and everything photographed. Not able to DGM IVS due to GPS battery problems. End of day.	Scott Crandall	1	QC Geo Scientist	11
	Robert Shauger	1	UXOQCS	11
	Richard Moyer	1	UXOTII	11
	Richard MacNeil	1	Site Geophysicist	11
	Ted Pate	1	UXOTII	11
	Charles Haggerty	1	UXOTII	11

Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No:	Total work hours on site this date:	66
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: No: No	Cumulative work hours from previous report:	264
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes No: No	Cumulative work hours since start of work:	330
Was hazardous material/waste released to the environment? (If yes, attach description of incident and proposed action.)	Yes No: No		

List safety actions taken today/safety inspections conducted:

Remarks:
The IVS team returned to RAA-04 IVS after establishing the RTK DGPS base station at ARA base in South of RAA-04. The IVS team then performed a second background survey with the EM61-MK2A in stretcher mode with RTK data positioning. The site geophysicist processed the background survey data on-site and confirmed that the area was suitable for the IVS installation to resume. The team then began installation of the small ISOs at the pre-determined points along the center line as described in the GSV Plan. The height of the tundra overburden was measured and recorded at each IVS seed item location. Each seed item was emplaced at the approved depth in the mineral soil and the full distance from the tundra surface and mineral soil surface to the center of the IVS seed item was measured with a tape measure and recorded. Prior to burial, the ISOs were photographed (in-place) using the survey tape for orientation reference, and the ISO position (x, y, and depth to center) were measured with the RTK DGPS. A second RTK DGPS measurement was made over each IVS seed item at the walking surface height. The end points of all lines were also measured and recorded with the RTK DGPS. The set-up in RAA-02 was similar to that described in RAA-04

	Started	In Process	Completed/Found	Total Completed/Found	
	52	0	52	185	
Target Locations			0	0	
DMM with HE or Propellant			0	0	
Small Arms & Smokeless Powder			0	0	
MPPEH			0	0	
Investigated locations			0	0	Ratio
Total Metallic Items (Debris) (items/ est. lbs)			0	0	0 / 0

Grid Numbers Started This Day: 54
 Grid Numbers Completed This Day: 54
 DMM Found This Day (Grid/Item): 0
 Small Arms & Smokeless Powder (Grid/ Item): 0
 MPPEH Found This Day (Grid/Item): 0

Manok Synakorn
 Site Superintendent 9/25/12
 Date

Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date:
9/26/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 6
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Contractor: USA Environmental, Inc.	Superintendent: Manok Synakorn
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AM Weather: Cloudy/Rain, Visibility 9 miles, Max Wind 34mph, Max Gust 48mph	PM Weather: Cloudy/Rain, Visibility 9 miles, Max Wind 34mph, Max Gust 48mph	Temperature: (min/max): 41/44 F
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Work Location & Description	Employer	Number	Trade	Hours
Morning safety brief and mobilization to site. Arrive in area south of RAA-04. Set up RTK-DGPS base station at ARA Base. BSI team continues operations on RAA-04. Completed 99 BSI's in RAA-04. The IVS team performed four additional DGM surveys of RAA-04 IVS to comply with GSV Plan. Mob to RAA-03. The IVS team performed four additional DGM surveys of RAA-03 IVS to comply with GSV Plan. Mob to RAA-02. The IVS team performed five DGM surveys of RAA-02 IVS to comply with GSV Plan. Installed five blind seed items for QA contractor with the RLS present to record secondary measurements.	Scott Crandall	1	QC Geo Scientist	11
	Robert Shauger	1	UXOQCS	11
	Richard Moyer	1	UXOTII	11
	Richard MacNeil	1	Site Geophysicist	11
	Ted Pate	1	UXOTII	11
	Charles Haggerty	1	UXOTII	11

Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No: _____	Total work hours on site this date:	66
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: _____ No: No	Cumulative work hours from previous report:	330
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes: _____ No: No	Cumulative work hours since start of work:	396

List safety actions taken today/safety inspections conducted:

Remarks:
The IVS team returned to RAA-04 IVS and RAA-03 IVS to perform four additional DGM surveys to comply with the GSV plan. RAA-02 IVS had all five files collected in the afternoon.

	Started	In Process	Completed/Found	Total Completed/Found	
	99	0	99	284	
Target Locations			0	0	
DMM with HE or Propellant			0	0	
Small Arms			0	0	
MPPEH			0	0	
Investigated locations			0	0	Ratio
Total Metallic Items (Debris) (items/ est. lbs)			0	0	0 / 0

Grid Numbers Started This Day: <u>99</u>	
Grid Numbers Completed This Day: <u>99</u>	
DMM Found This Day (Grid/Item): <u>0</u>	
Small Arms (Grid/ Item): <u>0</u>	
MPPEH Found This Day (Grid/Item): <u>0</u>	
Manok Synakorn	<u>9/26/12</u>
Site Superintendent	Date

Daily IVS & BSI INSTALLATION REPORT

Sheet 1 of 1

Date:
9/27/12

Contract No: N44255-12-C-3003	Title & Location IVS & BSI Installation for NTCRA at OU B-2 Adak, AK.	Report No. 7
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Contractor: USA Environmental, Inc.	Superintendent: Manok Synakorn
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AM Weather: Cloudy/Rain, Visibility 10 miles, Max Wind 18mph, Max Gust 24mph	PM Weather: Cloudy/Rain, Visibility 10 miles, Max Wind 18mph, Max Gust 24mph	Temperature: (min/max): 39/48 F
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Work Location & Description	Employer	Number	Trade	Hours
RAA-02: Utilized RTK Base Station at ARA-Base (setup by IVS team), BSI team begins operations on RAA-02. Completed 78 BSI's in RAA-04. **IVS team completed 5 BSI's on 9/26/12. This was done to help QA contractor complete their task while keeping to their flight schedule.	Scott Crandall	1	QC Geo Scientist	13
	Frank Magner	1	UXOQCS	13
	Richard Moyer	1	UXOTII	13

Was a job safety meeting held this date? (If yes, attach a copy of the meeting minutes.)	Yes: See Safety Record No: _____	Total work hours on site this date:	39
Were there any lost time accidents? (If yes, attach a copy of completed OSHA report.)	Yes: _____ No: No	Cumulative work hours from previous report:	396
Was trenching/scaffolding/HV electrical/high work done this date? (If yes, attach statement or checklist showing inspection performed.)	Yes: _____ No: No	Cumulative work hours since start of work:	435

List safety actions taken today/safety inspections conducted:

Remarks:
This is the last daily production report for the September 2012 field effort.

	Started	In Process	Completed/Found	Total Completed/Found	
	78	0	78	362	
Target Locations			0	0	
DMM with HE or Propellant			0	0	
Small Arms			0	0	
MPPEH			0	0	
Investigated locations			0	0	Ratio
Total Metallic Items (Debris) (items/ est. lbs)			0	0	0 / 0

Grid Numbers Started This Day: 78
 Grid Numbers Completed This Day: 78
 DMM Found This Day (Grid/Item): 0
 Small Arms (Grid/Item): 0
 MPPEH Found This Day (Grid/Item): 0

Manok Synakorn	9/27/12
Site Superintendent	Date

APPENDIX E. IVS DATA PROCESSING AND SEED ITEM SELECTION FORM

This appendix contains the IVS Data Processing and Seed Item Selection Form applicable to this effort.

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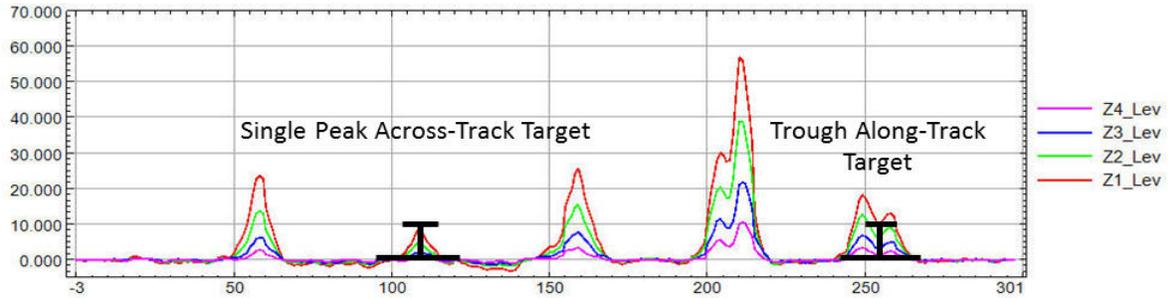
Adak IVS Data Processing and Seed Item Selection Form for each DGM Team

Data Processing Steps for daily IVS checks	
1	Transfer data to fiels PC
2	Import file to Geosoft Oasis montaj
	Set and convert to project coordinates
3	Latency correct data - nominally 0.3 seconds
4	Level data using the median filter
5	Show profile of leveled time gate 1
Seed Item Selections	
1	Manually record location and peak value colsest to response center for seed items IVS-01, IVS-02, and IVS-04 (see example IVS chart)
2	Manually record location and peak value of null between twin peaks colsest to response center for seed items IVS-05, and IVS-05 (see example IVS chart)
3	Copy seed item locations and response peaks to Excel tracking sheet
4	Calculate location offsets
5	Plot location offsets in cumulative chart for each seed item
6	Plot Response Peaks in cumulative chart for each seed item
7	Document any/all failures imediately to the affected DGM team, USA's on-site DGM QC, USA's Project Geophysicist and the Navy's on-site QA contractor
8	Include cumulative location and response plots for each DGM team in daily DGM production report

Background Noise Results

- | | |
|---|--|
| 1 | Review Background Line and calculate line statistics. Record the Standard Deviation value. |
|---|--|

Example IVS Center Line Profile



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