

Attachment 1.
Procedures and Work Instructions

Office of Environmental Management – Grand Junction



Moab UMTRA Project
CJ Cell Verification Survey Procedures

Revision 0

February 2021



U.S. Department
of Energy

Office of Environmental Management

Moab UMTRA Project CJ Cell Verification Survey Procedure

Revision 0

Review and Approval

2/9/2021

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Revision History

Revision	Date	Reason for Revision
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1.0 General

1.1 Purpose

The purpose of this procedure is to provide the methodology to be followed by Quality Control (QC) personnel to perform grade verification surveys for various cell “buyoffs”. These verification surveys ensure that the design tolerances for a particular cell feature have been met before building upon the cell feature with the subsequent feature of work. Work features requiring buyoff verification surveys include:

- Cell floor (and associated side slopes)
- Top of Waste Finish Grade
- Top of Interim Cover
- Thickness of Radon Barrier
- Thickness of Bio-intrusion Layer
- Thickness of Frost Protection Layer
- Thickness of Cap Rock

1.2 Scope

This procedure applies to all grade buyoff verification surveys of CJ cell features.

1.3 Definitions

CAD – Computer Aided Design. Software utilized to model or depict topography, create as-builds, or create design models.

GNSS – Global Navigational Satellite System. A satellite navigational system that provides autonomous geo-spatial positioning with global coverage.

TBC–Trimble Business Center. CAD software package used with Trimble hardware for preparing design data or analyzing field data.

Trimble Rover – Equipment consisting of a Trimble GNSS receiver and a Trimble Data Collector. This equipment, when used with a GNSS base station, site calibration (localization) and various designs files is used to capture position data and compare positional data to design grades in real time.

Trimble SCS 900 – Trimble software package utilized on Trimble Data Collectors (TSC2, TSC3, or TSC7).

Trimble TSC2, TSC3, or TSC7 – Trimble data collector utilized as a component of the Trimble Rover.

1.4 Records

All documentation created with this procedure is considered a Project Record and will be managed in accordance with *the Moab UMTRA Project Records Management Manual* (DOE-EM/GJ1545). Moab UMTRA Records are retained and maintained in accordance with federal orders, policies, and regulations.

Following the QA Manager approval of the QC documents, the original documentation shall be transmitted to Records by the QA Manager.

2.0 Responsibilities

2.1 Personnel Duties and Responsibilities

2.1.1 Quality Assurance Manager

The Quality Assurance (QA) Manager is responsible for:

- Implementing and directing Quality Control (QC) activities contained within this procedure.
- Identifying QC problems.
- Initiating, recommending, and/or providing QC solutions.
- Submitting finalized QC documentation to the Client.

2.1.2 Quality Control Representative

The QC Representative is responsible for the proper execution of this procedure and providing the results and associated documentation to the QA Manager.

2.1.3 Operations/Site Manager

The Operations/Site Manager has overall authority and responsibility for the Crescent Junction Project Site. This manager issues directives to all personnel and subcontractors to accomplish the project objectives.

2.1.4 Equipment Operators

Equipment operators are responsible for excavating and placing materials (soil, RRM, cap rock, etc.) in accordance with the specifications and notifying the QC Representative or their supervisor when a work feature is ready for verification.

2.1.5 All Personnel

All employees are responsible for identifying safety hazards and complying with the applicable Radiological Work Permits and Integrated Work Plans. All personnel have a duty and responsibility to stop work in the event they believe a work condition is unsafe for them or their peers.

2.2 Precautions and Limitations

2.2.1 Pause Work

Work shall be immediately terminated by any personnel who believe the activity in progress is unsafe and/or may create an unsafe condition. Work will resume when the condition is corrected.

2.2.2 Safety Protocols

When working around grading or compacting equipment, all personnel shall remain clear of any operating equipment and maintain positive communication with the equipment operator. This communication includes both visual and audio methods.

3.0 Requirements and Procedure

3.1 Tolerances

A. Cell Floor

Compare actual grade (measured to design grade). Acceptable tolerance is +/- 0.1 FT.

B. RRM

Placed to Design grade up to +2" above, no minus tolerance.

C. Interim Cover

Placed to Design grade up to +2" above, no minus tolerance.

D. Radon Barrier

4' Minimum Thickness (As-built Top of Radon Barrier – As-Built Top of Interim Cover must be at least 4.0')

E. Infiltration and Biointrusion Barrier

6" Minimum Thickness (As-built Top of Infiltration and Biointrusion Barrier – As-Built Top of Radon Barrier must be at least 0.5' [6 inches])

F. Frost Protection Layer

3' Minimum Thickness (As-Built Top of Frost Protection Layer – As-Built Top of Infiltration and Biointrusion Barrier must be at least 3.0')

G. Cap Rock

6" Minimum Thickness (As-Built Finish Grade [Top of Rock] – As-Built Top of Frost Protection Layer must be at least 0.5' [6 inches]).

Note: To make thickness comparisons, the as-built points must be collected at the same X&Y coordinates. To accomplish this, the site has an established grid system over the cell which is utilized throughout the project for all verification surveys of all layers.

3.2 Procedure

3.2.1 Field Procedure

Step 1. On the Data Collector open the Site "CRESCENT JUNCTION" and create a new work order (Figure 1).

The work order naming convention is:

Year, Month, Day then the name of what you are doing.
(Example: 20201130 Cell Floor Buyoff).

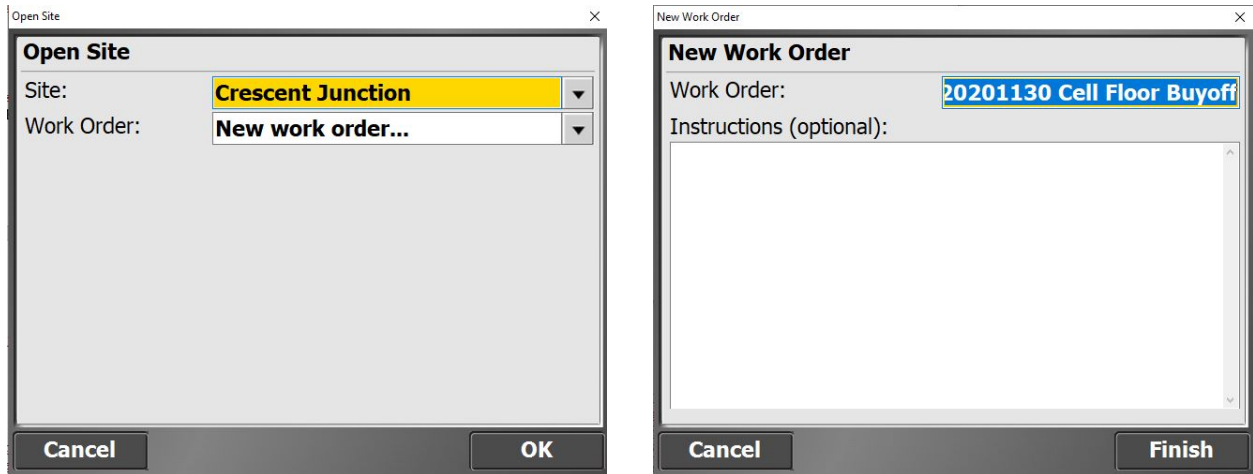


Figure 1. Create New Work Order

Step 2: Select the design associated with the verification buyoff survey you are conducting (Figure 2). Current designs on the data collector include:

- Cell Floor FG
- Cap FG
- Top of Waste
- Interim Cover

Additional designs, such as designs for the bio-intrusion layer, radon barrier, and frost protection layers will be created and installed later, but the methods described herein will be applicable.

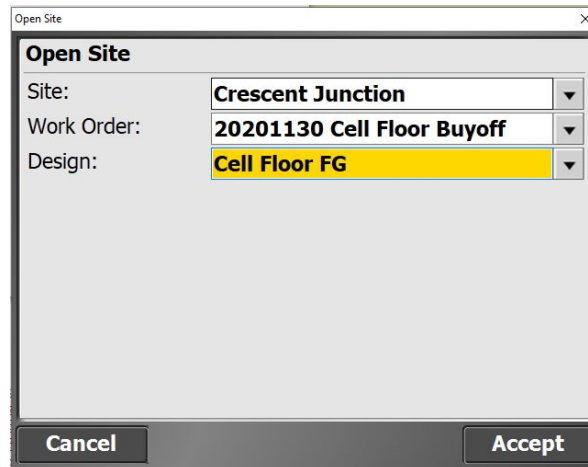


Figure 2. Select Associated Design

Step 3: With the Work Order set up and created, check into a control point to ensure that the rover and base station are reading correctly. To access this function, hit the Home key, then go to GPS and then recheck system (Figure 3).

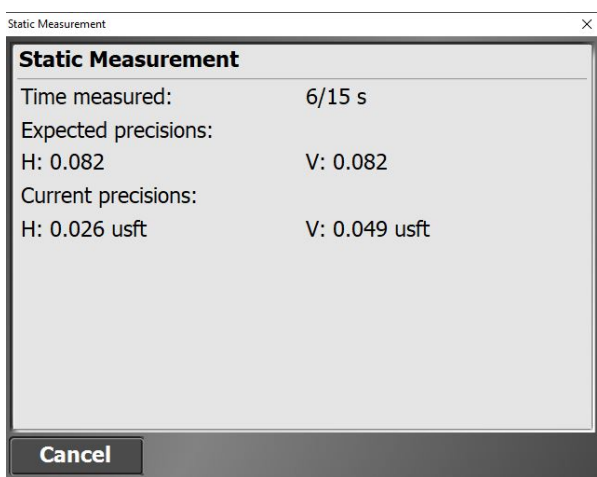
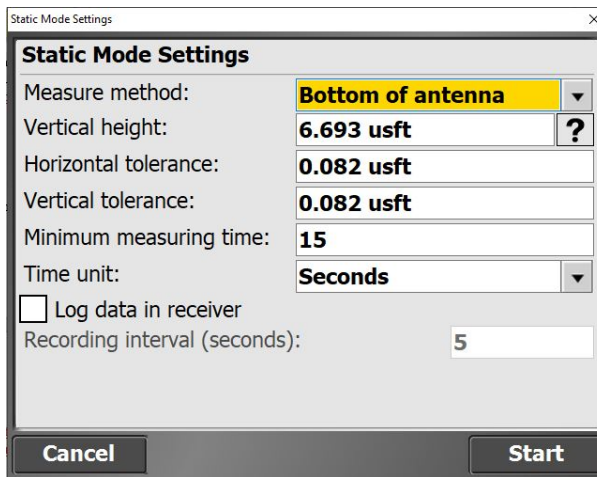
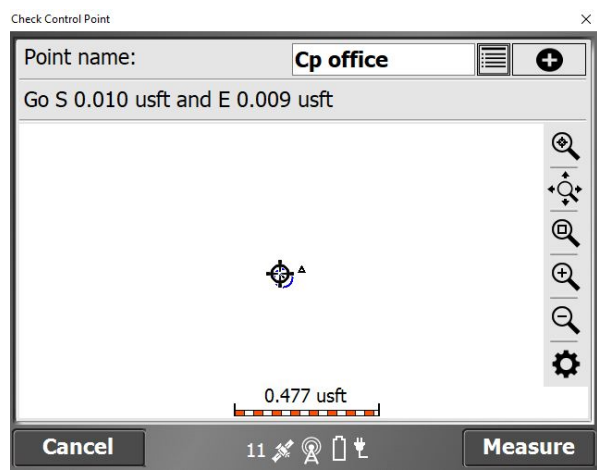
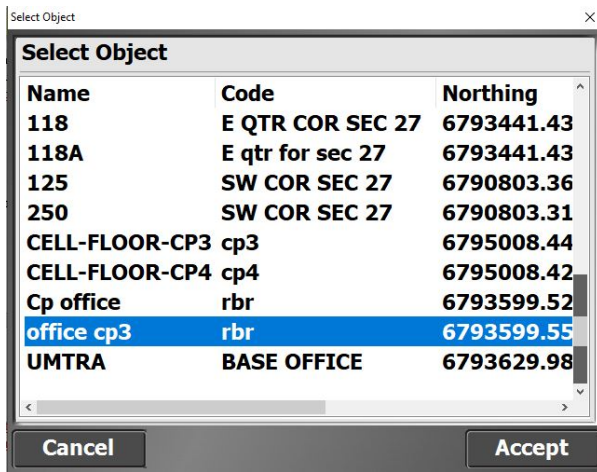
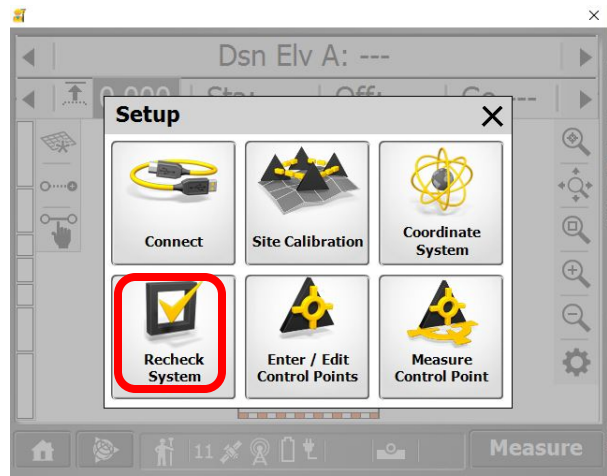
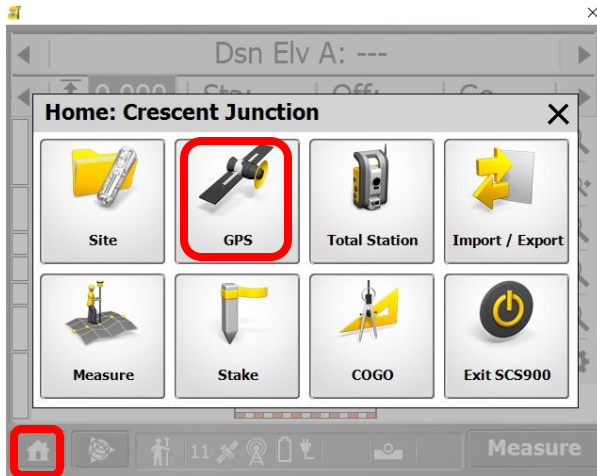


Figure 3. Check Control Point

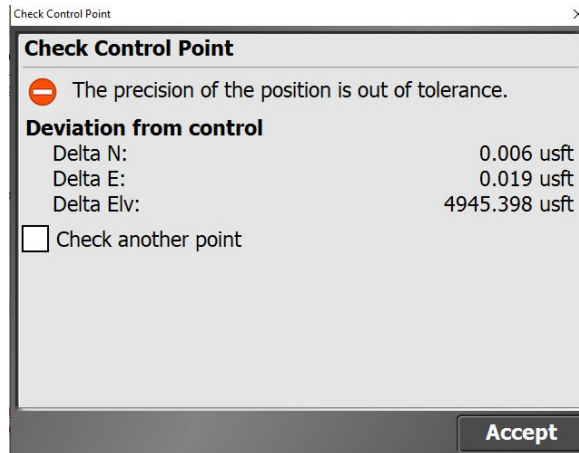


Figure 3. Check Control Point (continued)

This will say “The precision of the position is in tolerance”. This screenshot is from the emulator, which does not have elevation readings, which is why it is off. Ensure all delta readings are less than 0.082 FT (1-inch).

Step 4: Once the rover has been checked into a control point, switch into “Stake” mode. To do so, hit the Home Key, and then select Stake (Figure 4).

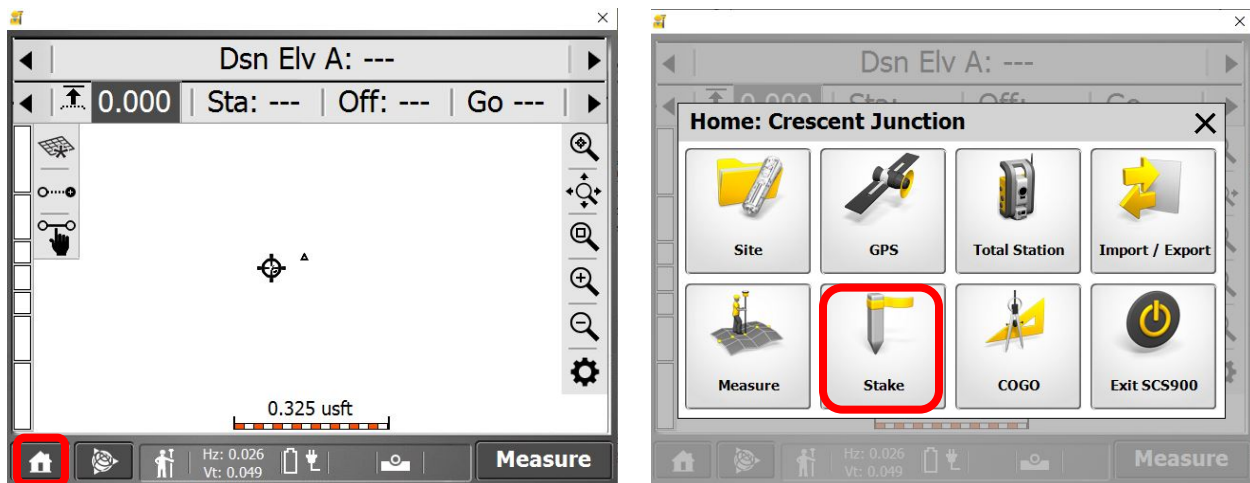


Figure 4. Switch into Stake Mode

Step 5: Once in Stake (stakeout) mode, pick the object to stake. While you may stakeout lines, surfaces, and points, verification occurs on a 50’ x 50’ grid. This same grid is utilized throughout all layers within the cell. As such select points. If no points are showing on the screen they may not be selected for display. The points can be toggled on and off for display using the Gear/Cog on the lower right-hand side of the display. Typically, it is much easier to display just the points without the name, elevation or code displayed. (Figure 5)

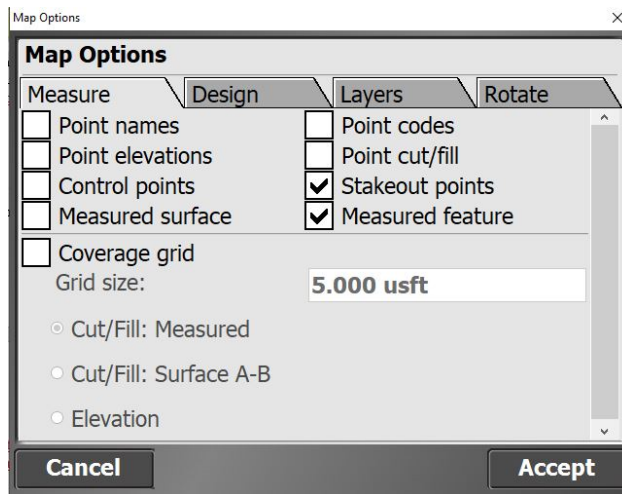
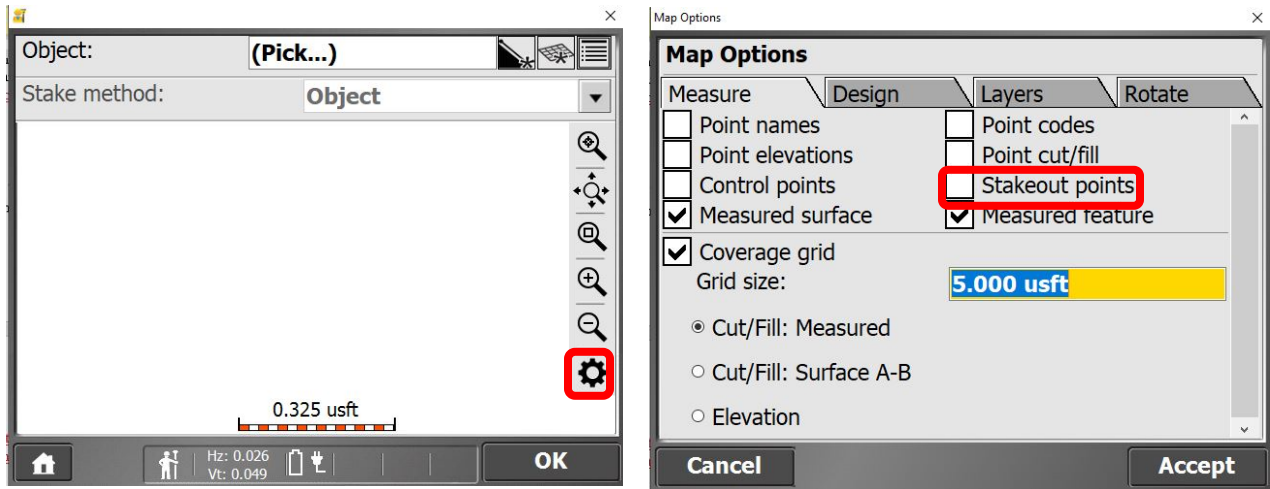


Figure 5. Stakeout Mode

Step 6: Select a point nearby where you are standing (Figure 6). Walk to the point and place the rover rod directly over the point, plumbing up the rod using the level bubble. The residuals (error between your X and Y position and the point location) should be less than 0.082 FT (sub-inch). Once within this range, and with the rod plumb, hit enter to record the point (or hit “stake” on the screen). You don’t need the diagram.

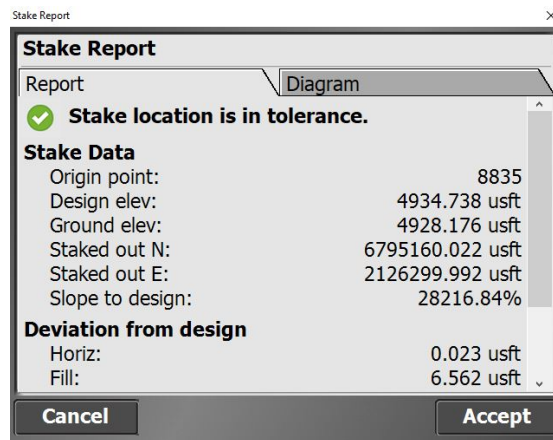
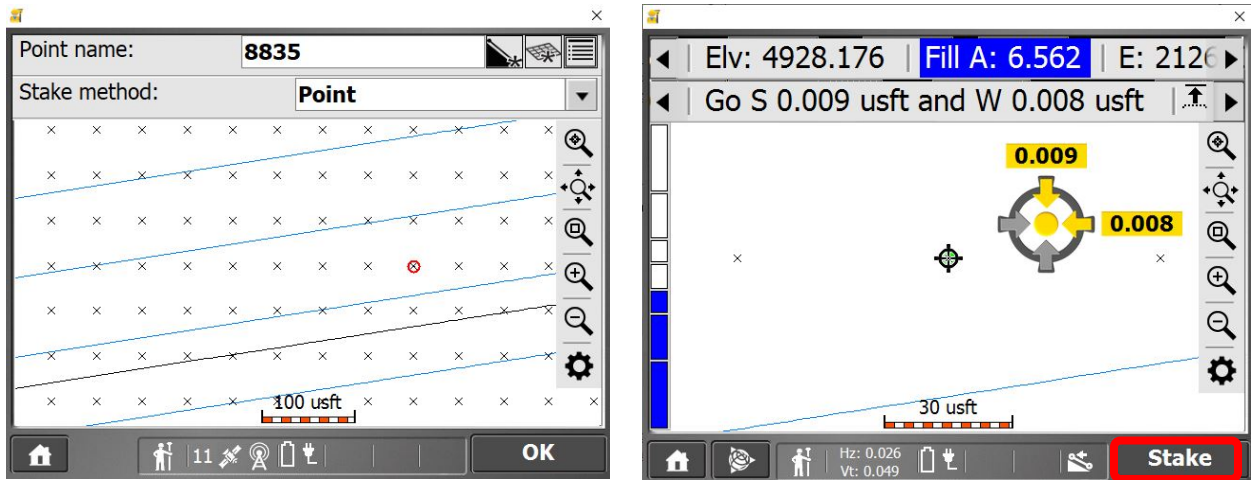


Figure 6. Select Points

Note: The Cut/Fill value should be within the specified grade tolerance. The screenshot is from an emulator that does not contain elevation data.

Step 7: Repeat Step 6 for all points located within the buyoff footprint.

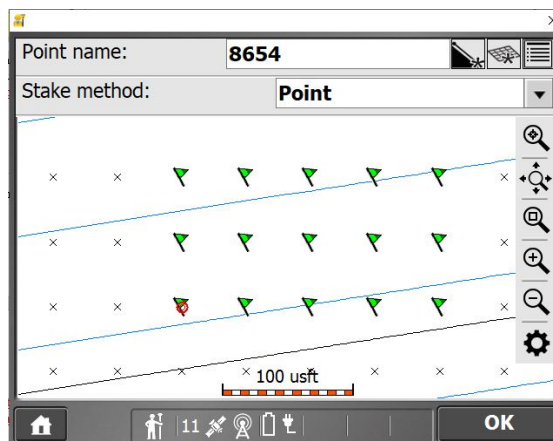


Figure 7. Select All Points

Step 8: Switch the rover into Measure mode (Figure 8) instead of Stake Mode. To do this, hit the Home key, then the Measure button.

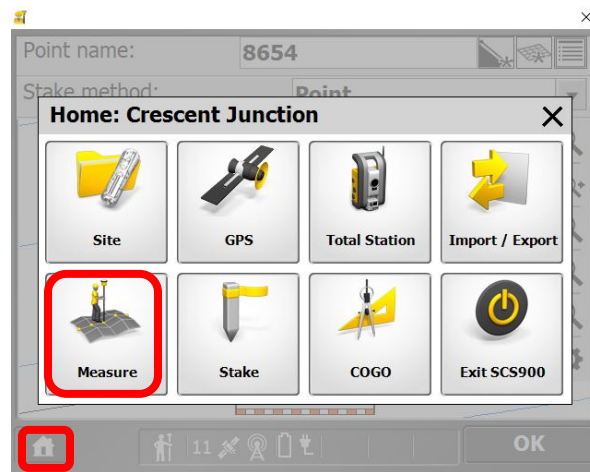


Figure 8. Measure Mode

Step 9: Once in Measure mode, “shoot in” any grade breaks within the buyoff area and the perimeter of the buyoff area (Figure 9), using point codes to describe the point. Typical codes include: Top, Toe, Brk1, 2, BDR, etc. These points are not used for grade verification but are used to create the as-build of the area within the verification survey.

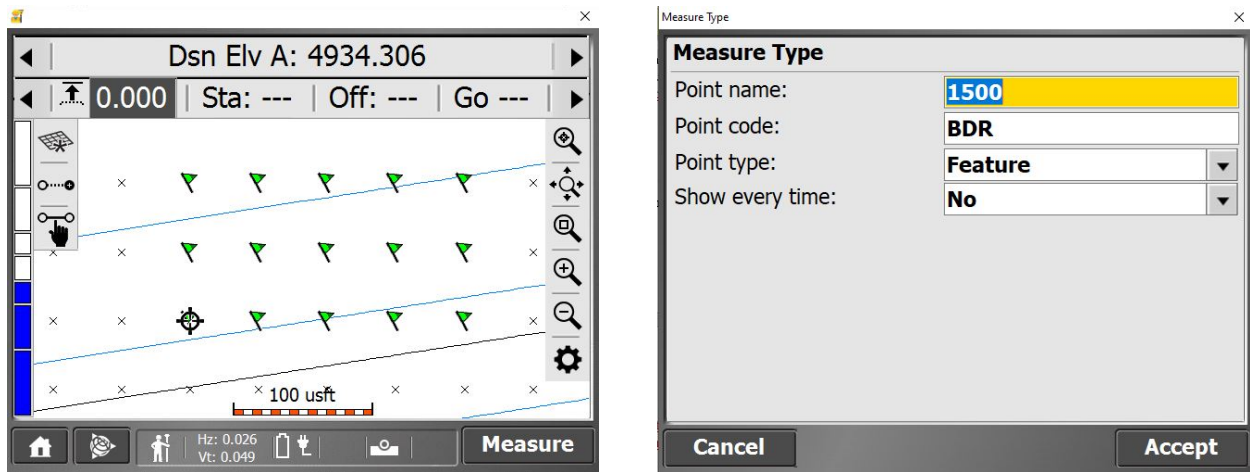


Figure 9. Shoot In and Grade Breaks

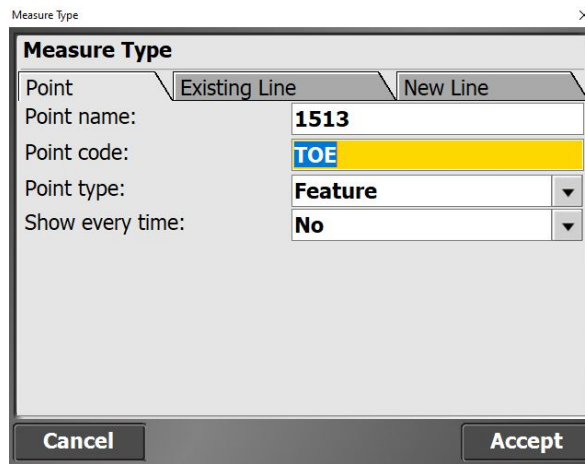


Figure 9. Shoot In and Grade Breaks (continued)

Step10: With the grade verification and topo data collected, the next step is to export the data for use in the office (Figure 10). Hit the Home Key, then Import / Export. Then Export a “Record.txt” File.

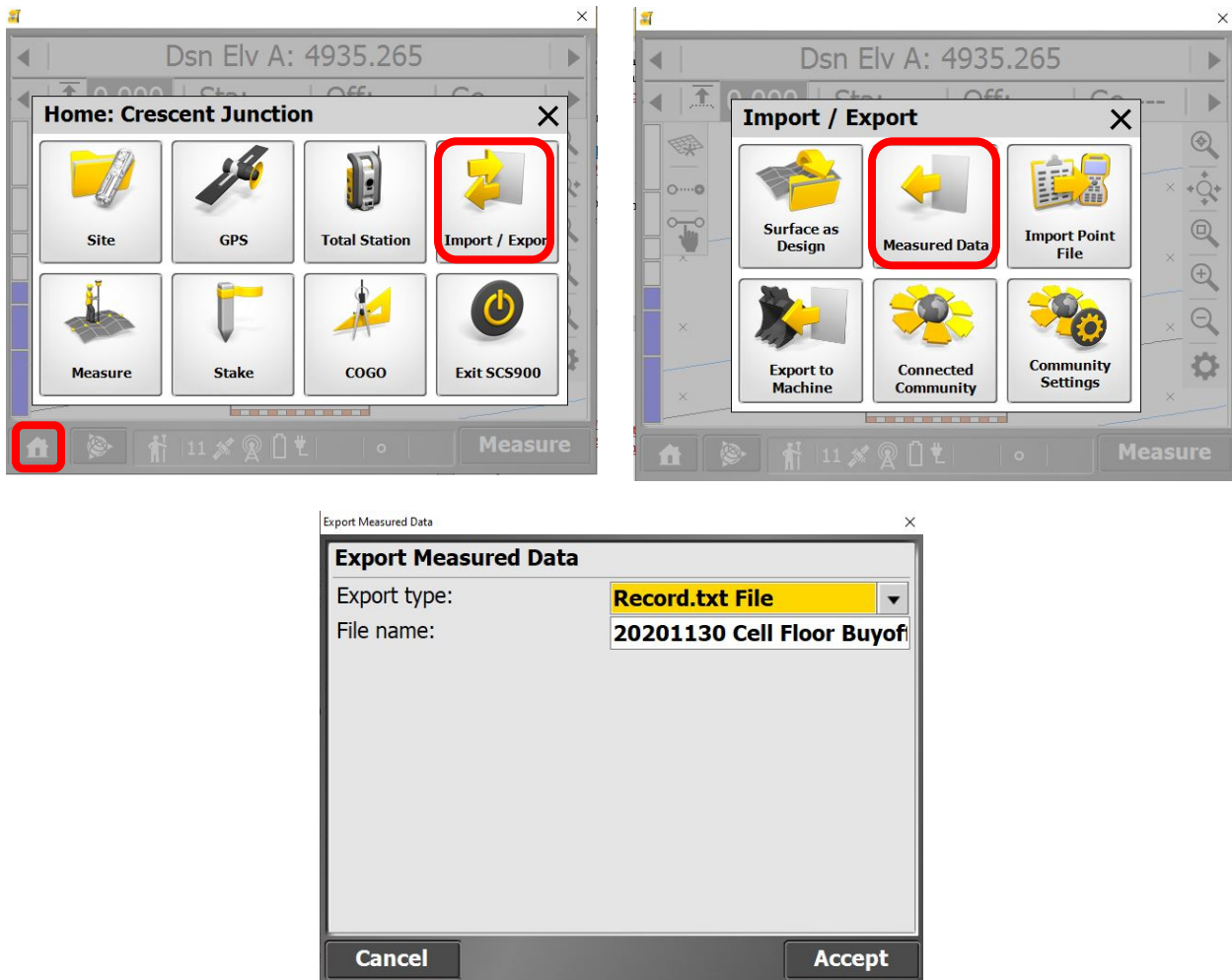


Figure 10. Export Topo Data

3.2.2 Office Procedure

Step 1: Transfer the field collected information from the data collector to the L: Drive Server. A Directory called Trimble Synchronizer Data houses the data backup for the Data Collectors. Within this directory you will find two directories, one named “PC” and the other named “GGE Collector 2” (Figure 11). The “PC” directory is the backup from the TSC7 while the “GGE Collector 2” directory is the backup from the TSC2. Plug an IT issued USB flash drive (thumb drive) into the data collector USB port and then copy the entire directory from the data collector onto the flash drive. Remove the flash drive from the data collector and then plug it into the site computer and then transfer the same directory into the appropriate directory on the server.

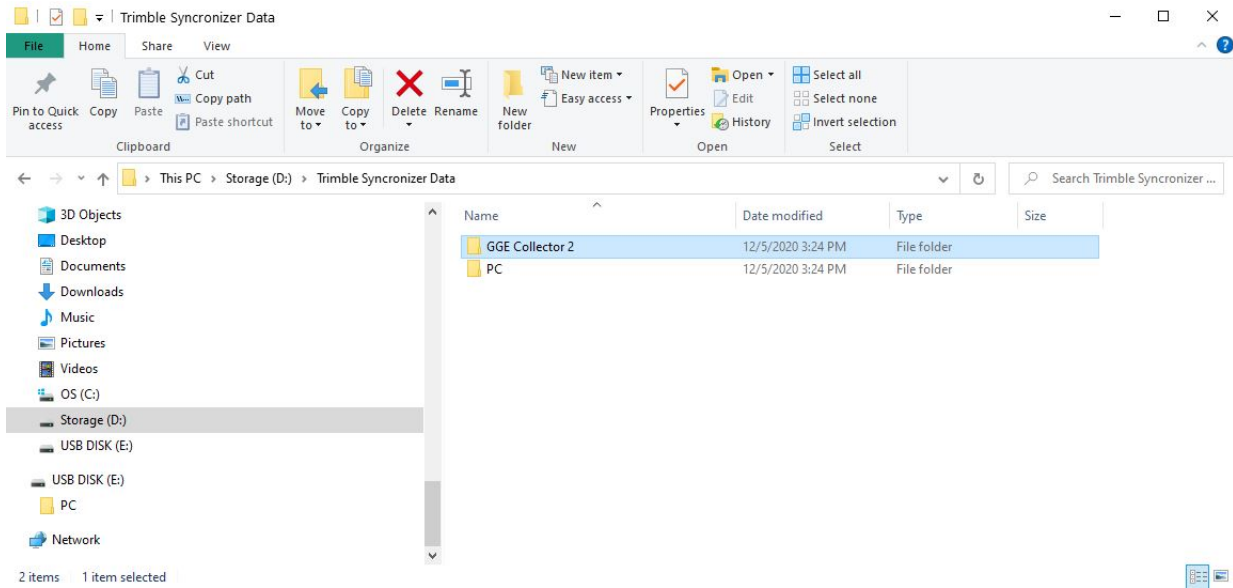


Figure 11. Data Collectors Directories

Step 2: Locate the appropriate SCS Report Utility in the “Forms” directory on the L: drive (Figure 11). Open this Excel File. Use Excel “SCS Report Utility-64” that corresponds to the data collector in which you conducted the survey. (SCS Report Utility-64 TSC7 and SCS Report Utility-64 TSC2).

This PC > CJ Share (\\moab.tac.local) (L:) > QA > QC > Forms Search Forms

Name	Date modified	Type	Size
3D Summary report - Buyoff area03-2020	3/19/2020 4:40 PM	Microsoft Excel W...	2,716 KB
4.7.20-Stakeout Features-All	4/7/2020 3:03 PM	Microsoft Excel C...	1 KB
All layers Buyoff Form - master-	7/27/2020 3:15 PM	Microsoft Excel 97...	196 KB
All layers Buyoff form 4	4/6/2020 9:54 AM	Microsoft Excel 97...	195 KB
All layers Buyoff form 6	4/16/2020 12:46 PM	Microsoft Excel 97...	199 KB
All layers Buyoff form	8/16/2011 9:18 AM	Microsoft Excel 97...	142 KB
All layers Buyoff form1	3/19/2020 11:30 AM	Microsoft Excel 97...	194 KB
All layers Buyoff form2	3/19/2020 4:40 PM	Microsoft Excel 97...	196 KB
All layers Buyoff form3	3/30/2020 2:19 PM	Microsoft Excel 97...	192 KB
Buyoff Random Points 2	4/2/2020 3:12 PM	Microsoft Excel C...	1 KB
Buyoff Random Points	4/2/2020 11:18 AM	Microsoft Excel C...	1 KB
Field moisture sheet	7/2/2019 12:47 PM	Microsoft Excel 97...	40 KB
final random points	4/7/2020 3:06 PM	Microsoft Excel C...	1 KB
full site BUYOFF Corners 03-2020	4/20/2020 7:18 AM	Microsoft Publish...	2,097 KB
Moisture Density	11/9/2020 11:22 AM	Microsoft Excel 97...	132 KB
Page 8	10/20/2020 9:49 AM	Microsoft Publish...	151 KB
Print Screen Template	2/12/2019 2:26 PM	Microsoft Publish...	82 KB
SCS Report Utility-64 TSC2	7/17/2018 1:19 PM	Microsoft Excel 97...	3,479 KB
SCS Report Utility-64 TSC7	11/5/2020 1:04 PM	Microsoft Excel M...	1,495 KB
SCS900 Template	4/7/2020 3:00 PM	Microsoft Excel M...	1,479 KB
UIU19 Buyoff area	6/17/2020 2:52 PM	Microsoft Publish...	118 KB
UIU19 Buyoff Survey	7/1/2020 4:33 PM	Microsoft Excel 97...	188 KB

ed 1.45 MB

Figure 12. SCS Report Utility

Step 3: Click on “1 Import Record” (Figure 13). Navigate to the Trimble Synchronizer directory, proper controller directory, the in Trimble SCS900 Data > Crescent Junction> Work Orders > Work Order Name> Output. Then click on the record.txt file.

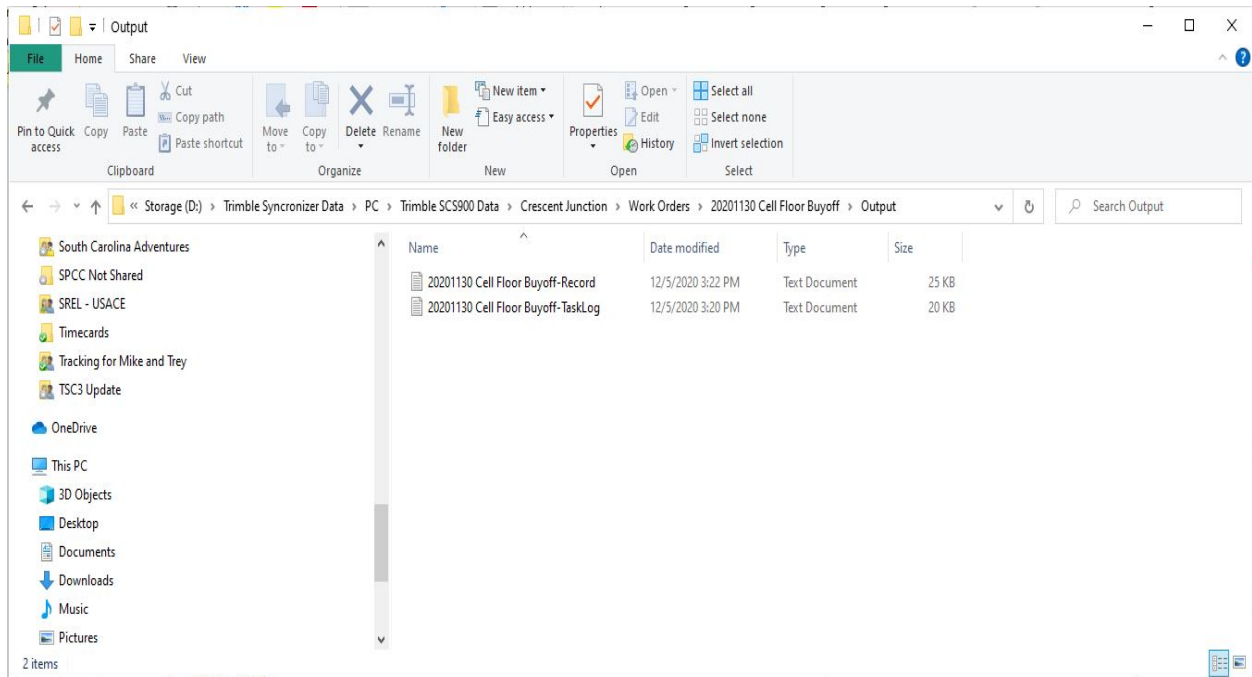
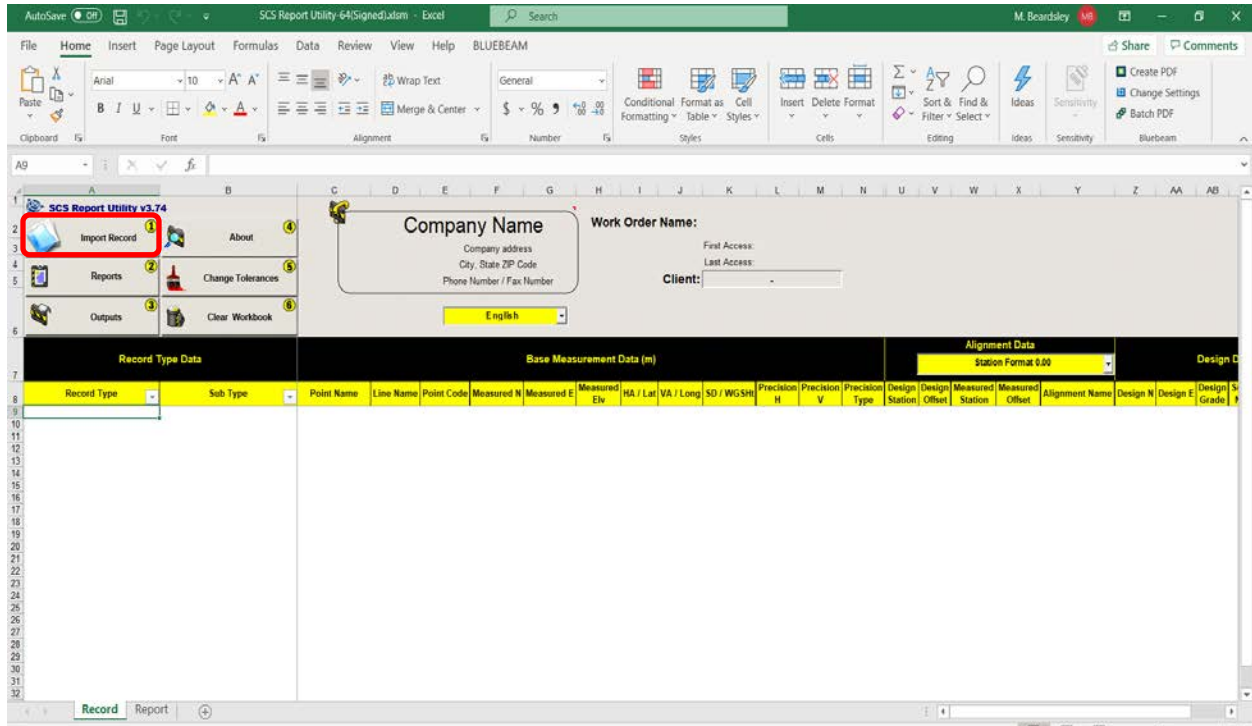


Figure 13. Import Record

Step 4: Once this data is opened you may create several new report tabs in the excel file. Create the Stakeout Features Tab, Measured Features Tab, and a custom Tab of Stakeout Features containing “Point Name, Measured Northing, Measured Easting, Measured Grade, Design Elevation, and Cut/Fill”. All 3 tabs will be created at the bottom of the excel file (Figure 14).

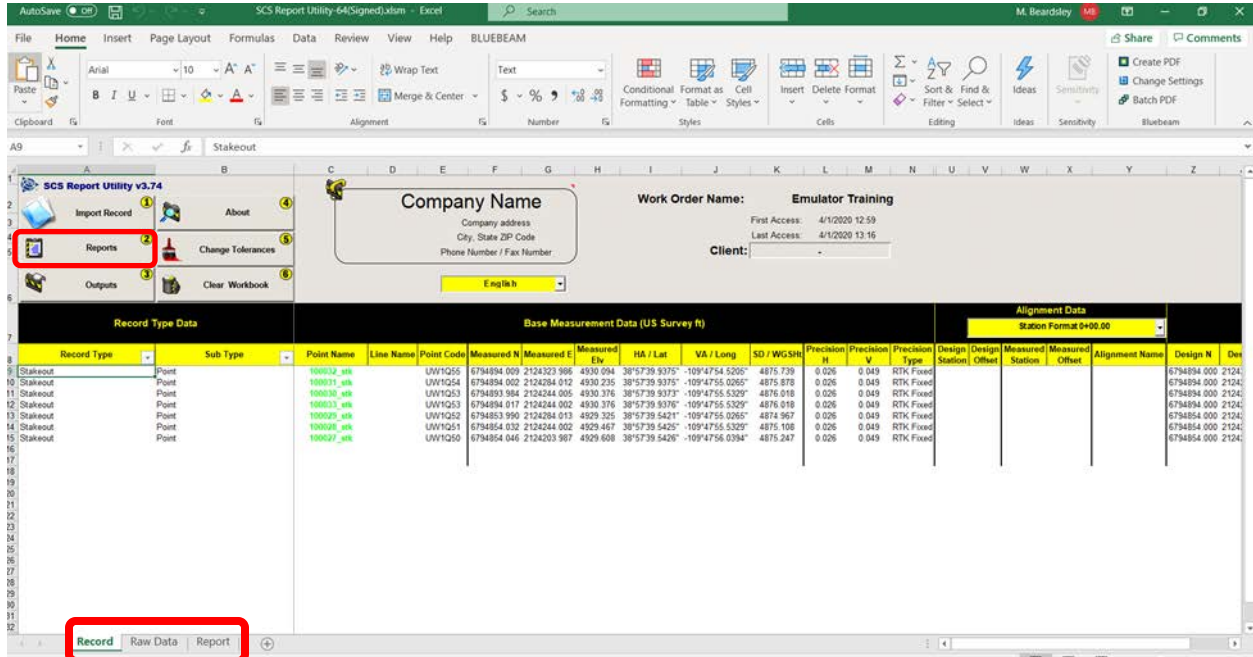


Figure 14. Create Report Tabs in Excel

Next review each tab. In the Report Tab (Figure 15), verify the Control Point Check in. In the Measured Features tab, review the measured as-built features and export a .CSV file of these features (P,N,E,Z,D format).

Store the as-built information in the location per the CJ Directory and Data Storage Procedure. Then review the Stakeout Features Tab. In this tab you will find how well the measured feature compared to the design feature. The cut/fill tells the elevation difference (Measured Elevation – Design Grade). Ensure these values meet the tolerance requirements for the survey. See Tolerance Requirements in Section 3.1. The data in the Custom Tab may then be cut and paste into the Buyoff Form.

AutoSave Off SCS Report Utility-64 Search

File Home Insert Page Layout Formulas Data Review View Help BLUEBEAM

Clipboard Font Alignment Number

E79 Emulator

32			Base longitude	123 16'12.00000" W
33			Base height	164.042 usft
34				
35	Static Mode Settings		Date	12/5/2020
36			Time	2:53:20 PM
37			Minimum measuring time	15
38			Horizontal tolerance	0.082 usft
39			Vertical tolerance	0.082 usft
40			Measure method	Bottom of antenna
41			Measure antenna	6.633 usft
42			Vertical height	
43				
44	System Check		Date	12/5/2020
45			Time	2:53:54 PM
46			Point name	Emulator
47			Measured N	6733593.534 usft
48			Measured E	2123812.475 usft
49			Measured Z	-6.633 usft
50			Delta N	0.070 usft
51			Delta E	0.009 usft
52			Delta Elev	4945.398 usft
53			Base name	Emulator
54			Base latitude	44 33'00.00000" N
55			Base longitude	123 16'12.00000" W
56			Base height	164.042 usft
57				
58	Rover Setup		Date	12/5/2020
59			Time	2:55:24 PM
60			Base name	Emulator
61			Receiver type	Emulator
62			Corrections received via	Radio in Receiver
63			Radio network	2
64			Antenna height	6.562 usft
65			Base latitude	44 33'00.00000" N
66			Base longitude	123 16'12.00000" W
67			Base height	164.042 usft
68				
69	Antenna Height		Date	12/5/2020
70			Time	2:55:24 PM
71			Measure mode	Standing
72			Antenna height	6.562 usft
73				
74	Feature Entered		Date	12/5/2020
75			Time	2:56:22 PM
76			Feature Name	Measure Point
77			Surface	Cell/Floor FG
78				
79	Feature Entered		Date	12/5/2020
80			Time	2:56:26 PM
81			Feature Name	Select Object
82			Surface	Cell/Floor FG
83				
84	Static Mode Settings		Date	12/5/2020
85			Time	2:57:00 PM
86			Minimum measuring time	15
87			Horizontal tolerance	0.082 usft
88			Vertical tolerance	0.082 usft
89			Measure method	Bottom of antenna
90			Measure antenna	6.633 usft
91			Vertical height	

Record Raw Data Report Measure Stakeout Features Custom Report

AutoSave Off SCS Report Utility-64 Search

File Home Insert Page Layout Formulas Data Review View Help BLUEBEAM

Clipboard Font Alignment Number Styles Cells Editing Analysis

A9 Stakeout

SCS Report Utility v3.74

North Wind Portage
20216 Hwy 191
Moab, UT 84032
720-638-7107

Report Utility

Record Type Data

Record Type	Sub Type	Point Name	Line Name	Point Code	Measured N	Measured E	Measured Z
92	Point	9535					
93	Datpoint	9730	FLOOR	973061018	2126250.005	4932	
94	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
95	Datpoint	9750	FLOOR	973061994	2126250.005	4932	
96	Datpoint	9805	FLOOR	973061995	2126250.005	4932	
97	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
98	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
99	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
100	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
101	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
102	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
103	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
104	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
105	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
106	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
107	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
108	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
109	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
110	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
111	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
112	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
113	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
114	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
115	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
116	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
117	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
118	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
119	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
120	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
121	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
122	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
123	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
124	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
125	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
126	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
127	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
128	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
129	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
130	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
131	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
132	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
133	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
134	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
135	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
136	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
137	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
138	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
139	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
140	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
141	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
142	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
143	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
144	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
145	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
146	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
147	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
148	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
149	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
150	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
151	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
152	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
153	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
154	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
155	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
156	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
157	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
158	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
159	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
160	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
161	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
162	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
163	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
164	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
165	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
166	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
167	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
168	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
169	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
170	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
171	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
172	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
173	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
174	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
175	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
176	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
177	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
178	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
179	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
180	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
181	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
182	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
183	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
184	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
185	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
186	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
187	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
188	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
189	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
190	Datpoint	9746	FLOOR	973061991	2126250.005	4932	
191	Datpoint	9746	FLOOR	973061992	2126250.005	4932	
192	Datpoint	9746	FLOOR	973061993	2126250.005	4932	
193	Datpoint	9746	FLOOR	973061994	2126250.005	4932	
194	Datpoint	9746	FLOOR	973061995	2126250.005	4932	
195	Datpoint	9746	FLOOR	973061996	2126250.005	4932	
196	Datpoint	9746	FLOOR	973061997	2126250.005	4932	
197	Datpoint	9746	FLOOR	973061998	2126250.005	4932	
198	Datpoint	9746	FLOOR	973061999	2126250.005	4932	
199	Datpoint	9746	FLOOR	973061990	2126250.005	4932	
200	Datpoint	9746	FLOOR	973061991	2126250.005	4932	

Record Raw Data Report

Figure 15. Report Tab

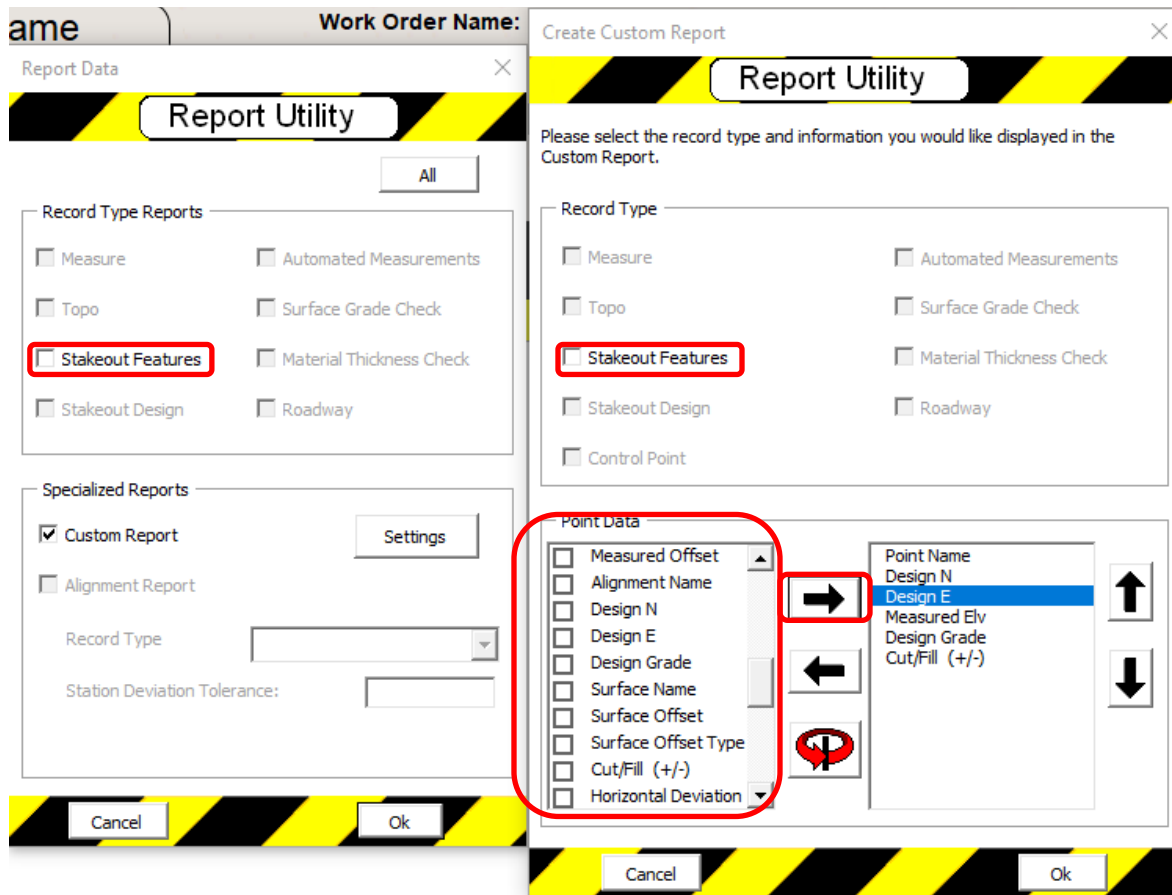


Figure 15. Report Tab (continued)

Note: The Cut/Fill value identified in the reports above can be generated manually by subtracting the Design Grade Value from the Measured Elevation. In the Buyoff form it may be useful to show this math rather than copy and pasting this value so that reviewers can more readily find where these values came from.

Step 5: Export Data to an excel file (Figure 16) with date and name of the buyoff you are doing.

	A	B	C	D	E	F	G
1	Point Name	Measured N	Measured E	Measure d Elv	Design Grade	Cut/Fill (+/-)	
2	21067_stk	6794409.990	2123649.971	4972.144	4972.072	0.072	
3	21030_stk	6794359.949	2123600.054	4970.877	4970.780	0.098	
4	21066_stk	6794360.032	2123649.935	4970.836	4970.808	0.028	
5	21102_stk	6794360.015	2123700.072	4970.840	4970.836	0.004	
6	21101_stk	6794309.973	2123699.945	4969.666	4969.572	0.093	
7	21138_stk	6794310.038	2123749.998	4969.613	4969.571	0.042	
8	21029_stk	6794310.004	2123599.946	4969.553	4969.516	0.037	
9	20993_stk	6794309.941	2123550.011	4969.569	4969.488	0.082	
10	20956_stk	6794309.951	2123500.019	4969.550	4969.460	0.091	
11	20919_stk	6794310.015	2123450.011	4969.554	4969.431	0.123	
12	20882_stk	6794309.974	2123400.047	4969.497	4969.403	0.093	
13	20845_stk	6794310.021	2123350.002	4969.391	4969.375	0.015	
14	20808_stk	6794310.036	2123300.068	4969.363	4969.347	0.016	

	A	B	C	D	E	F	G
1	Point Name	Design N	Design E	Design Gr	Measured	Cut/Fill (+/-)	
2	100133_st	6794610	2122250	4984.336	4983.991	-0.345	
3	100134_st	6794660	2122250	4985.6	4985.321	-0.278	
4	100135_st	6794710	2122250	4986.863	4986.607	-0.257	
5	100136_st	6794760	2122250	4988.127	4987.826	-0.301	
6	100093_st	6794760	2122200	4988.098	4987.827	-0.271	
7	100092_st	6794710	2122200	4986.834	4986.43	-0.404	
8	100091_st	6794660	2122200	4984.419	4984.909	0.49	
9	100090_st	6794610	2122200	4981.901	4982.395	0.494	
10							
11							

Figure 16. Export Data into Excel

Step 6: Copy and paste the values above into the “All Layers Buyoff Form”. Make sure to select the correct buyoff tab on the bottom of the sheet (Figure 17). Complete this report and provide the signed and complete report (Figure 18) to the QA Manager for review and submission to Records.

Cell Floor Buyoff Survey

Point #	Northing	Easting	Surveyed Elevation	Design Elevation	Difference in feet	Difference in inches
4 7715_sls	6795800.01	2125050.03	4955.10	4955.07	0.03	0.4
5 7716_sls	6795909.96	2125050.04	4956.24	4956.21	0.03	0.4
6 7717_sls	6795900.02	2125050.02	4957.34	4957.35	-0.01	-0.1
7 7718_sls	6796010.04	2125049.98	4958.42	4958.48	-0.06	-0.7
8 7719_sls	6796000.05	2125049.92	4959.62	4959.62	0.00	0.0
9 7720_sls	6796109.95	2125049.98	4960.76	4960.76	0.01	0.1
10 7721_sls	6796160.07	2125050.02	4961.97	4961.96	0.00	0.0
11 7722_sls	6796210.03	2125049.96	4963.09	4963.03	0.06	0.7
12 7723_sls	6795510.04	2125100.03	4946.98	4946.93	0.05	0.6
13 7724_sls	6795660.04	2125099.95	4948.10	4948.07	0.03	0.4
14 7725_sls	6795610.04	2125100.02	4949.15	4949.21	-0.06	-0.7
15 7726_sls	6795659.96	2125100.04	4950.41	4950.34	0.06	0.8
16 7727_sls	6795709.98	2125099.98	4951.49	4951.48	0.01	0.1
17 7728_sls	6795759.99	2125100.05	4952.55	4952.62	-0.07	-0.8
18 7729_sls	6795810.04	2125099.99	4953.79	4953.76	0.04	0.4
19 7730_sls	6795800.03	2125100.00	4954.98	4954.89	0.08	1.0
20 7731_sls	6795909.96	2125100.04	4955.99	4956.03	-0.04	-0.5
21 7732_sls	6795900.04	2125100.01	4957.17	4957.17	0.00	0.0
22 7733_sls	6796009.99	2125100.09	4958.35	4958.31	0.04	0.5
23 7734_sls	6796059.94	2125100.03	4959.44	4959.44	0.00	0.0
24 7735_sls	6796110.04	2125100.02	4960.57	4960.58	-0.02	-0.2
25 7736_sls	6796160.03	2125100.02	4961.79	4961.72	0.07	0.9
26 7737_sls	6796210.01	2125100.00	4962.81	4962.86	-0.05	-0.6
27 7738_sls	6795900.01	2125150.07	4938.69	4938.50	0.00	1.0
28 7733_sls	6795260.05	2125150.03	4941.06	4941.07	0.00	0.0
29 7734_sls	6795309.96	2125149.94	4942.22	4942.21	0.01	0.2
30 7735_sls	6795360.06	2125150.00	4943.41	4943.34	0.07	0.8
31 7736_sls	6795409.98	2125149.98	4944.51	4944.48	0.03	0.3
32 7737_sls	6795459.95	2125149.99	4945.71	4945.62	0.09	1.0
33 7738_sls	6795510.08	2125149.97	4946.84	4946.76	0.09	1.1
34 7739_sls	6795560.03	2125149.95	4947.95	4947.89	-0.04	-0.5
35 7800_sls	6795610.07	2125149.97	4949.08	4949.03	0.05	0.6
36 7801_sls	6795659.99	2125150.06	4950.21	4950.17	0.04	0.5
37 7802_sls	6795709.99	2125150.08	4951.32	4951.31	0.01	0.1
38 7803_sls	6795759.99	2125150.04	4952.42	4952.44	-0.02	-0.3
39 7804_sls	6795809.99	2125150.05	4953.52	4953.58	-0.06	-0.7
40 7805_sls	6795860.04	2125150.02	4954.68	4954.72	-0.04	-0.4
41 7806_sls						

Readline | Cap rock | Frost Protection | Sbcmbstruction | Radon Barrier | Interim | Top of Waste | Cell Floor

Figure 17. All Layers Buyoff Form

Step 7: Export both the stakeout report and the measured features report to comma separated value (.csv) files.

Step 8: Put the .csv file into an As-Built directory (per the CJ Directory Structure SOP)

Step 9: Create a TBC file (.vce) or open existing TBC file of applicable As-Built file. Create a layer to match work order name, and import the As-Built points. Draw grade breaks as appropriate. Save this file in the same as As-Built directory as identified in the previous step.