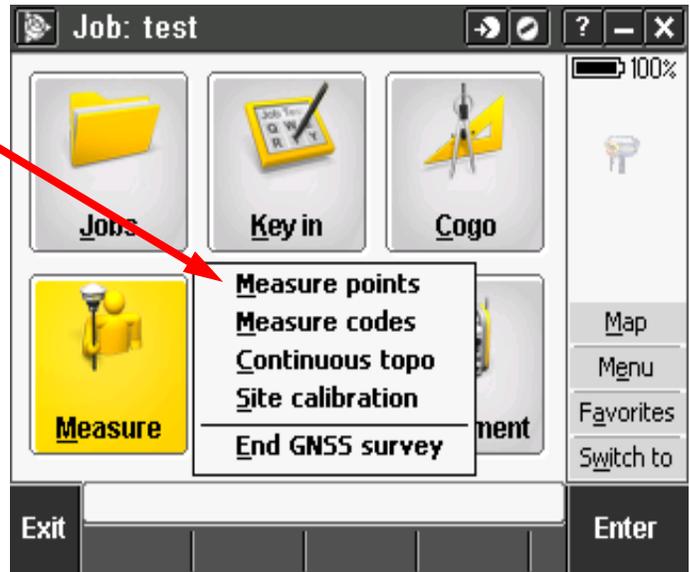


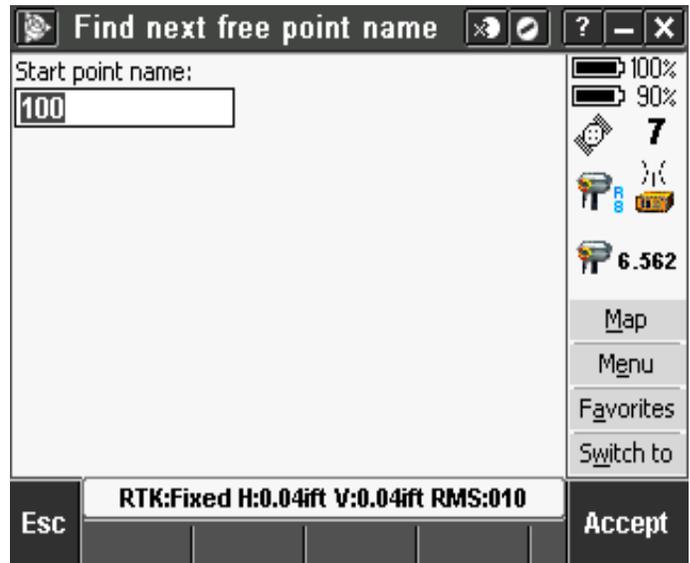
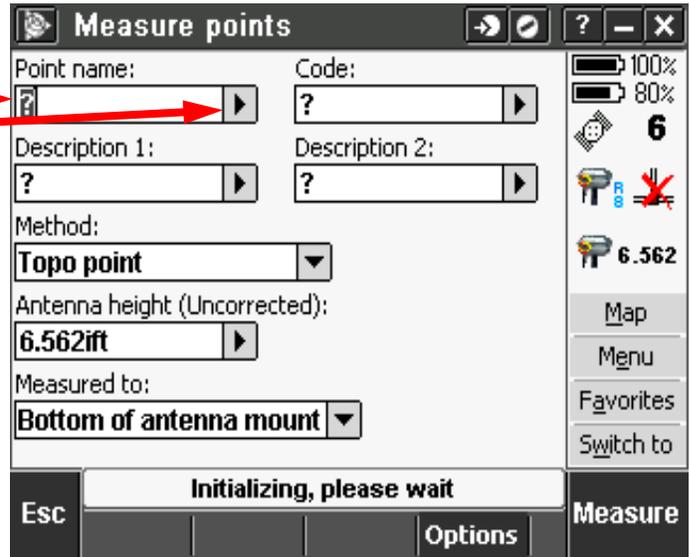
Measure Points Procedures

1. Choose Measure points

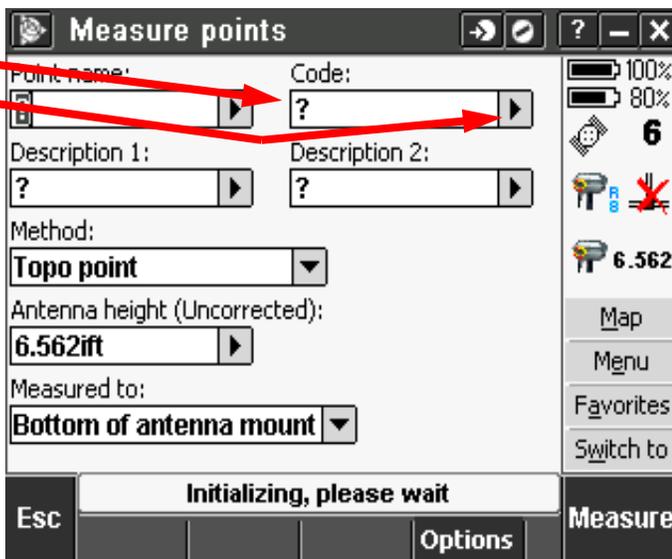


2. Enter Point name:

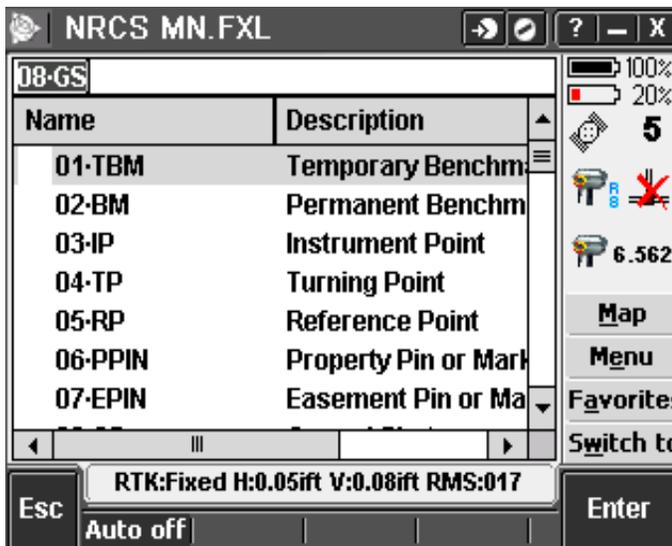
or click on > to view the dropdown.
 Point name is a number, it is useful to reserve 1 to 99 for control points. Start with 100 for all the other shots, you may desire to set up a numerical system to readily distinguish different Codes eg; 1000 – 1999 for watershed divide, 2000 – 2999 for centerline of draw, 3000 – 9999 for ground shots and so forth.



3. Enter Code:
or click on >
to view the dropdown.
Code is a description of the shot you are taking, descriptions have been selected and are to be used for ALL SURVEYS.



For more information on the Minnesota field code library, refer to Quick Reference Guide *100.0 Minnesota Standard Survey Point Codes*.



NRCS MN Field Code Library

01	TBM	Temporary Benchmark
02	BM	Permanent Benchmark
03	IP	Instrument Point
04	TP	Turning Point
05	RP	Reference Point
06	PPIN	Property Pin or Marker
07	EPIN	Easement Pin or Marker
08	GS	Ground Shot
09	TH	Soil Boring (Test Hole)

Control/Ground Shots

Structures	10	BLD	Building
	11	BLDC	Building Corner
	12	CON	Concrete
	13	CONC	Concrete Corner
	14	BIT	Bituminous Pavement
	15	CLDAM	Centerline of Dam
	16	EDAM	Top Edge of Dam
	17	WELL	Well
	18	WALL	Retaining Wall
	19	STRUC	Other Structure

Boundary Shots	20	FX	Fence
	21	FC	Fence Corner
	22	FJ	Fence Junction
	23	FE	Fence End
	24	FG	Fence Gate
	25	PL	Property Line
	26	EL	Easement Line
	27	ROW	Right-of-Way Line
	28	EFLD	Edge of Field
	29	EWET	Edge of Wetland

Water Features	30	CLW	Centerline of Watercourse
	31	CLDRAW	Centerline of Draw
	32	CLDITCH	Centerline of Ditch
	33	EBL	Edge of Bottom LDS
	34	EBR	Edge of Bottom RDS
	35	BNKL	Bank LDS
	36	BNKR	Bank RDS
	37	WL	Water Line (Edge)
	38	GSWET	Ground Shot in Water
	39	H2O	Water Surface Elevation

Roads	40	CLR	Centerline of Road
	41	ER	Edge of Road
	42	CLFR	Centerline of Field Road
	43	EFR	Edge of Field Road
	44	CLD	Centerline of Driveway
	45	ED	Edge of Driveway
	46	RD	Road Ditch Centerline
	47	FLDA	Field Approach
	48	CLRR	Centerline of Railroad
	49	ERR	Edge of Railroad

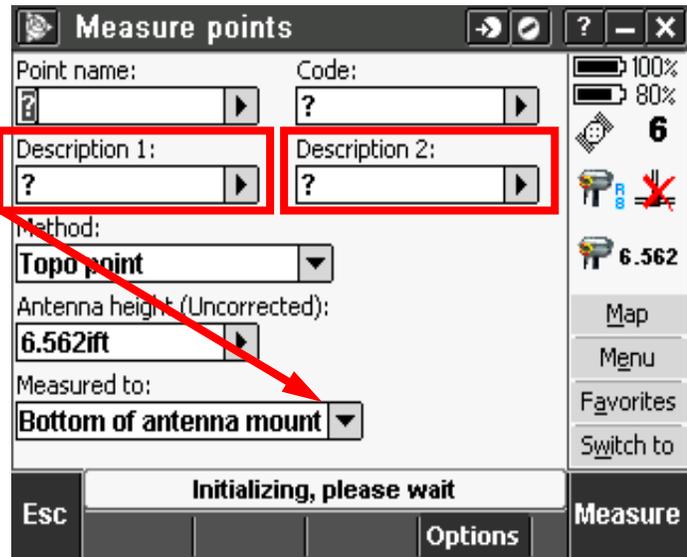
Pipes/Culverts	50	RCPINV	Reinforced Concrete Pipe Invert
	51	RCPTOP	Reinforced Concrete Pipe Top
	52	CMPINV	Corrugated Metal Pipe Invert
	53	CMPTOP	Corrugated Metal Pipe Top
	54	PVC	PVC Pipe
	55	HDPE	HDPE Pipe
	56	APRON	Pipe Apron
	57	INTAKE	Tile Intake
	58	OUTLET	Tile Outlet
	59	TILEFL	Tile Flowline

Vegetation	60	CC	Cropping Change
	61	VC	Vegetation Change
	62	EWOOD	Edge of Woods
	63	TREEL	Tree Line
	64	CTREE	Coniferous Tree
	65	DTREE	Deciduous Tree
	66	SHRUB	Shrub
	67	BRUSH	Brush
	68	ROCK	Rock or Rock Pile
	69		

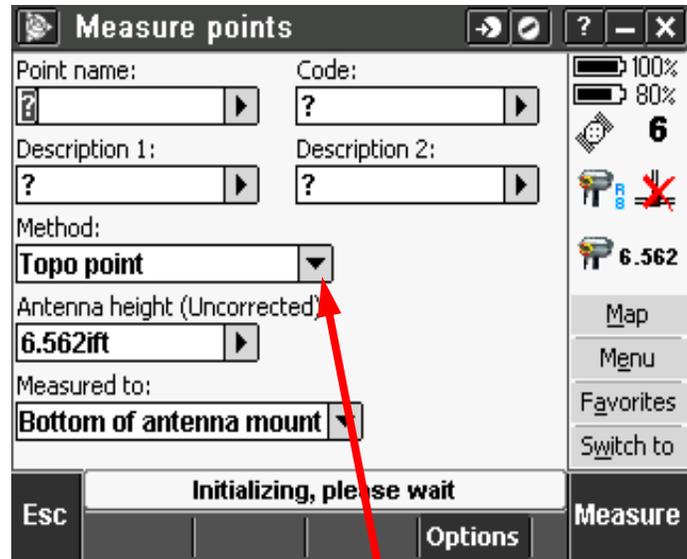
Utilities	70	PP	Power Pole
	71	PLO	Overhead Power Line
	72	PLB	Buried Power Line
	73	TEL	Telephone Line
	74	GAS	Gas Line
	75	WATER	Water Line (Pipe)
	76	FIBER	Fiber Optic Line
	77	UTIL	Other Utility Line
	78	PED	Pedestal (phone, electric, etc.)
	79	GW	Guv Wire

Terrain	80	WD	Watershed Divide
	81	SB	Slope Break
	82	TS	Top of Slope
	83	BS	Bottom of Slope
	84	LS	Low Spot
	85	HS	High Spot

4. Description 1 & 2 further defines the point or shot you are taking. An example for surveying a terrace would be Ground Shot would be used as the Code, Terrace 1 for description 1, 1+00 for description 2, when taking the next shot of the terrace you need only change description 2 to 2+00 or whatever station you are shooting.

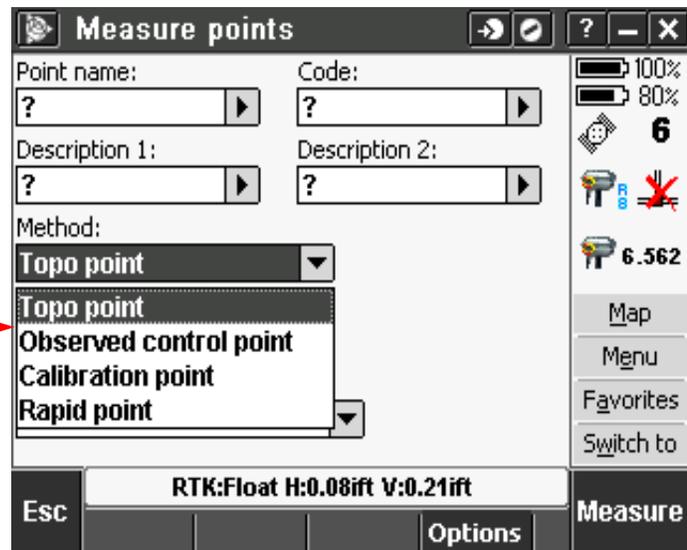


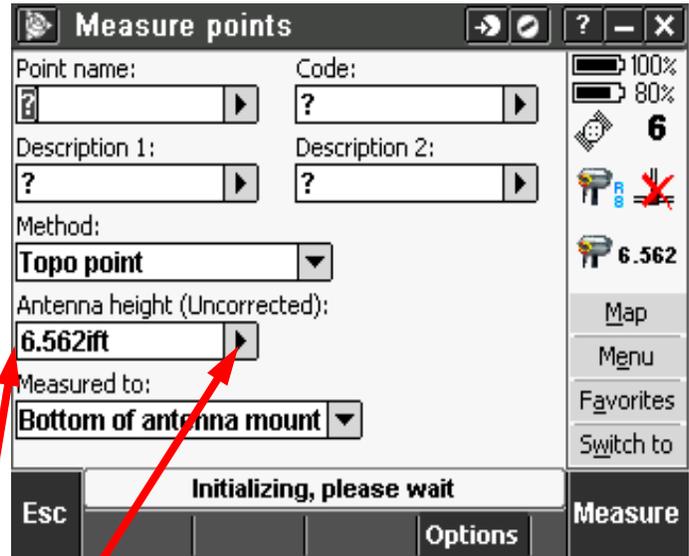
5. You have an option of four **Methods** to choose from
- Topo Point may be selected for taking shots other then control points.
 - Observed Control Point is to be used for control points to include; Temporary Benchmark, Permanent Benchmark, Instrument Point, Reference Point, Property Pin or Marker, and Easement Pin or Marker.
 - Calibration Point Is to be used for site calibration.
 - Rapid Point may be selected for taking shots other then control points.



Click on dropdown

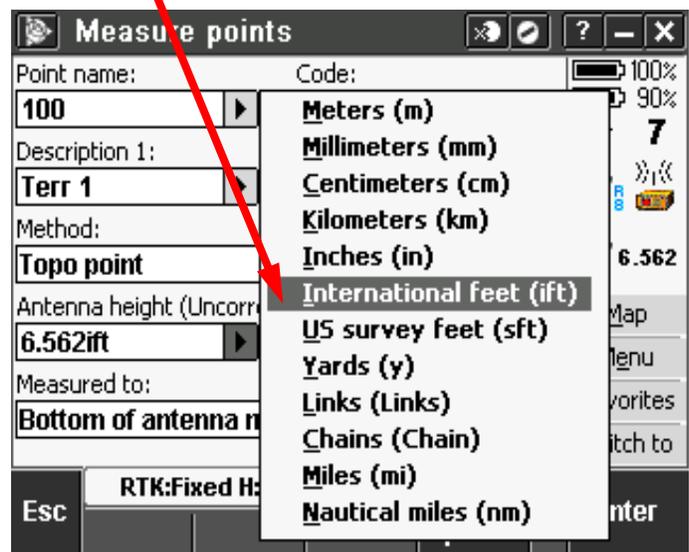
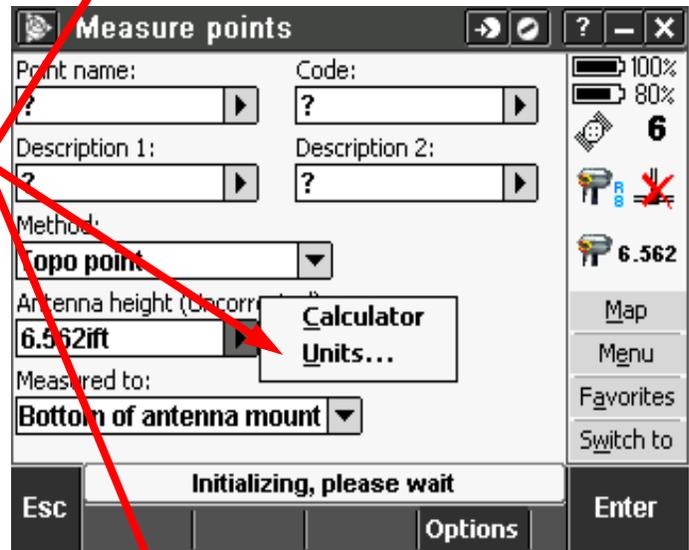
Choose one





6. Enter **Antenna height (Uncorrected):**

After entering the measurement click on the dropdown > and choose the unit of measurement. If rod is completely extended Antenna height is 2 Meters (m) or 6.562 International feet (ift). The antenna height is measured to either the Bottom of the antenna mount (rod height) or the Center of bumper.



7. **Measured to:** is either "Bottom of antenna mount" or "Center of bumper" to change this click on the dropdown and click on the proper choice.

The screenshot shows the 'Measure points' window with the following fields and values:

- Point name: [?]
- Code: [?]
- Description 1: [?]
- Description 2: [?]
- Method: **Topo point**
- Antenna height (Uncorrected): **6.562ft**
- Measured to: **Bottom of antenna mount**

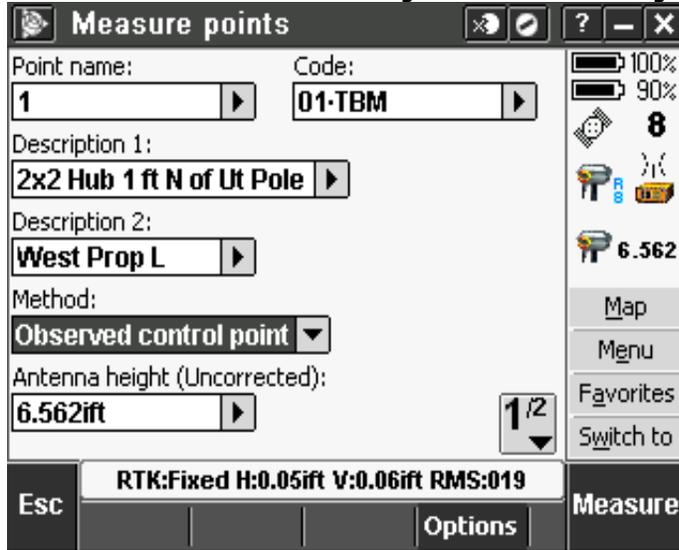
On the right side, there is a battery status indicator (100% and 80%), a signal strength indicator (6), and a distance indicator (6.562). At the bottom, there is a status bar that says 'Initializing, please wait' and buttons for 'Esc', 'Options', and 'Measure'.

The screenshot shows the 'Measure points' window with the 'Measured to' dropdown menu open. The options are:

- Bottom of antenna mount
- Center of bumper
- Antenna Phase Center

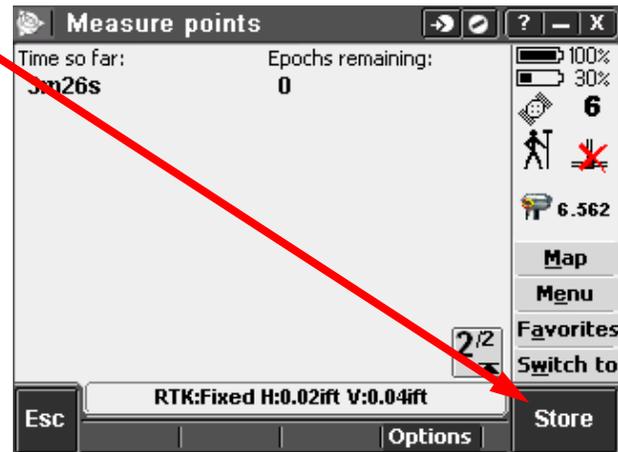
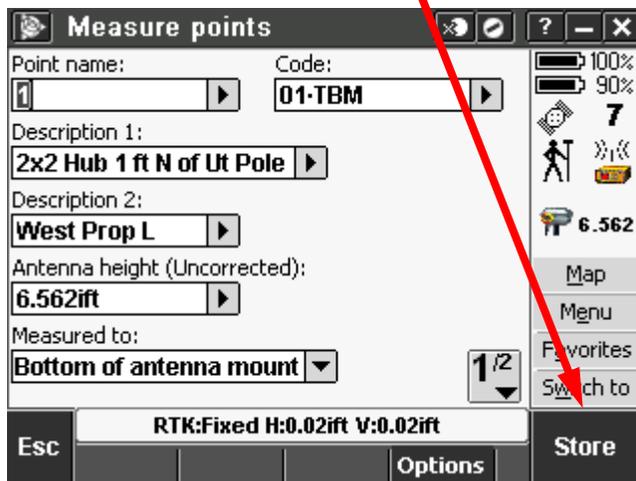
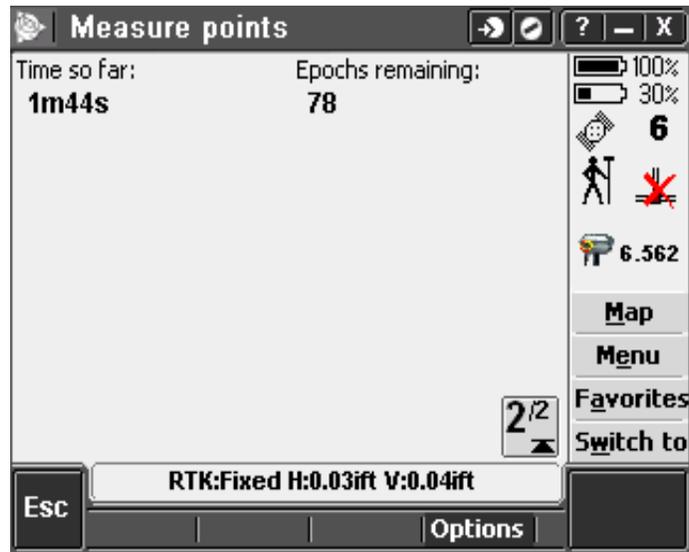
The 'Center of bumper' option is highlighted. The distance indicator on the right now shows '0.13ft RMS:020'. The 'Options' and 'Measure' buttons are visible at the bottom.

Now you are ready to take your shot!



Tap Measure

Page 2 displays the **Time so far:** (amount of time that has elapsed) along with the **Epochs (time) remaining:**. Time for an observed control point is approximate 3 minutes, when the Epochs remaining becomes 0 and the tab displays **Store** tap it and the shot will be stored.



The Store button will activate when the Time to go: reads 0m0s and the horizontal and vertical accuracies are within tolerance.

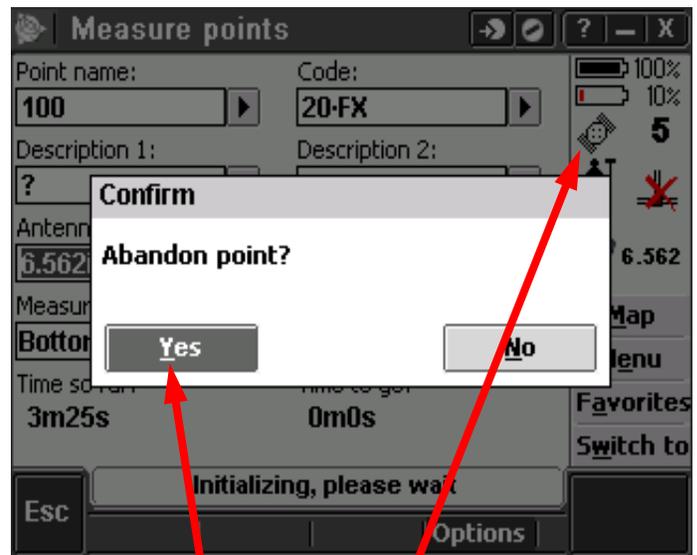
Note: If the Method was set to Rapid Point the shot will automatically store if the accuracies are within tolerance.

The screenshot shows the 'Measure points' interface. The point name is '100' and the code is '08-GS'. The description fields are empty. The antenna height is '6.562ift'. The 'Measured to' dropdown is set to 'Bottom of antenna mount'. The 'Time so far' is '0m7s' and 'Time to go' is '0m0s'. At the bottom, a status bar displays 'RTK:Fixed H:0.03ift V:0.03ift'. The 'Store' button is highlighted in black, indicating it is active. Other buttons include 'Esc', 'Options', 'Map', 'Menu', 'Favorites', and 'Switch to'.

The TSC2 will give this notification as well as a verbal notification when the shot has been successfully stored.

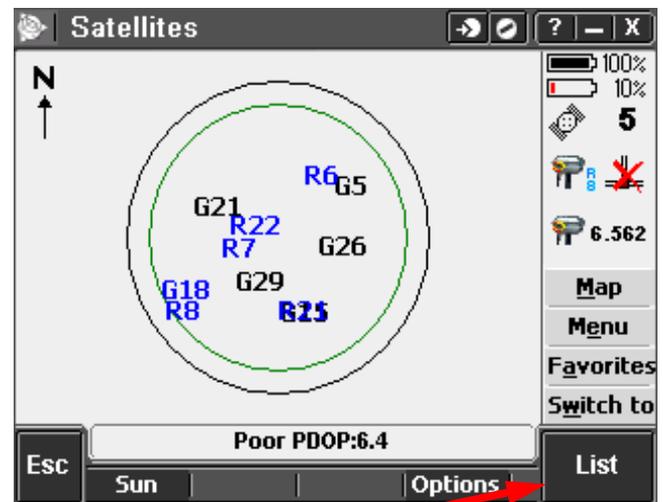
The screenshot shows the 'Measure points' interface for point '115'. The code is '08-GS'. The antenna height is '6.562ift'. The 'Measured to' dropdown is set to 'Bottom of antenna mount'. The 'Time to go' is '0m0s'. A red arrow points from the text above to the 'Observation stored' notification at the bottom of the screen. The 'Store' button is highlighted in black. Other buttons include 'Esc', 'Options', 'Map', 'Menu', 'Favorites', and 'Switch to'.

This screen will appear if Initialization is lost while you are taking a shot. The most common causes of lost initialization are poor PDOP, high RMS, not enough satellites, satellites too low on the horizon, and excess movement of the GPS receiver.

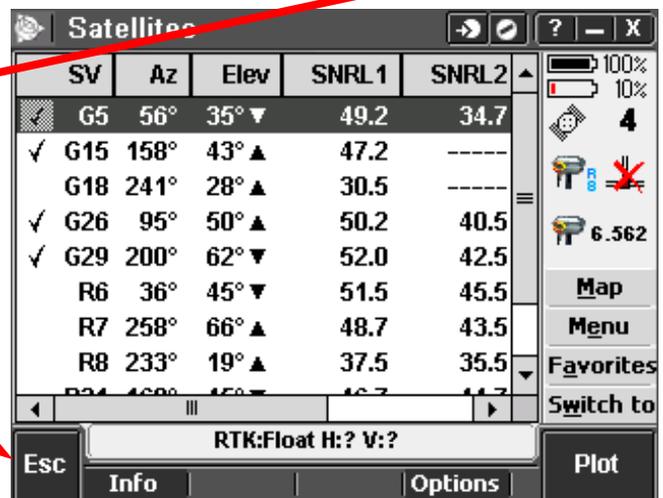


When this screen appears Tap on Yes to abandon the point.

When Initialization is lost frequently check the Satellites by tapping on



This screen show the present location **Plot** of the satellites that are communicating with the GPS unit to view a **List** click on **List** and a chart of the satellite locavion may be viewed. Click on **Esc** tab to return to the previous screen.



When the survey is complete or at the end of the day, closure needs to be done prior to leaving the site. Go to one of the control points you have shot and take a closure shot using “Topo point” method. Compare closure coordinates and elevation to the initial shot.

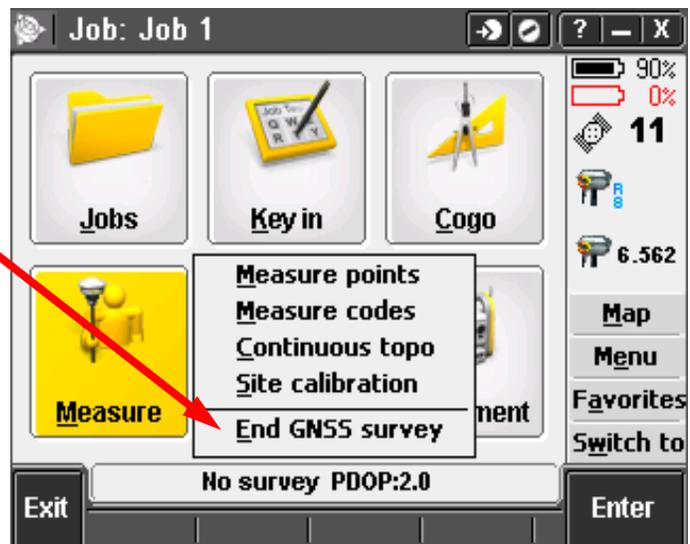
8. To shutdown GPS equipment, tap the Measure tab



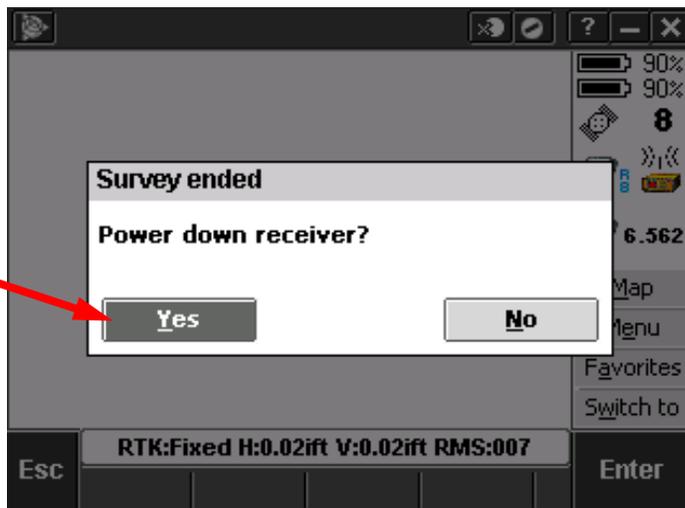
9. Tap on VRS...



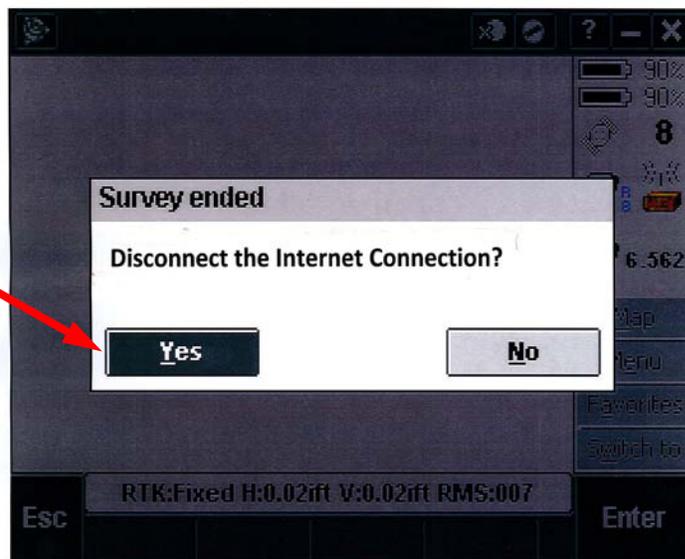
10. Tap on End GNSS survey



11. Click Yes



12. You will also be asked if you would like to Disconnect the Internet Connection. Click yes.



13. Turn controller off by tapping green button