ProMark2 TRAINING

MODULE SIX

GPS DATA COLLECTION

AIM OF MODULE 6

- **IDENTIFY THE BUTTONS AND SCREEN HIGHLIGHT FEATURES TO TRANSITION THE ProMark2 FOR SURVEY DATA COLLECTION**
- **IDENTIFY THE CONFIGURATION CONDITION THAT PRODUCES A SCREEN WARNING THAT TEMPORARILY PROHIBITS THE ProMark2 FROM RECORDING GPS DATA**
- **SHOW AND BRIEFLY EXPLAIN THE RECEIVER SCREENS USED FOR GPS STATUS MONITORING**
- **LIST TWO ACTIONS THAT TAKE PLACE WHEN THE ProMark2 IS POWERED DOWN AT THE END OF A SESSION**

DATA COLLECTION

- **WHEN ALL OF THE POINT ATTRIBUTE DATA IS ENTERED AND SAVED, THE NEXT OBJECTIVE IS TO CONFIGURE THE ProMark2 TO COLLECT DATA FROM THE GPS CONSTELLATION**

- **HIT: ESCAPE**
- **THIS ACTION WILL REVERT BACK TO THE SURVEY SCREEN**
- **USING THE ARROW KEY HIGHLIGHT: COLLECT DATA**
- **HIT: ENTER**

WARNING!!

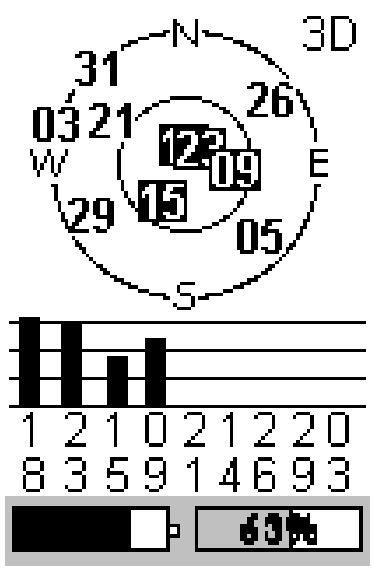
- **RECHECK THE ProMark2 ASSEMBLY AND ENSURE THE EXTERNAL ANTENNA CABLE CONNECTOR IS SEATED PROPERLY IN THE SOCKET ON THE BACK OF THE RECEIVER OR THIS ALARM SCREEN WILL APPEAR**

- **NOTE: THE ProMark2's BUILT-IN <u>QUADRAFILER HELIX</u> ANTENNA DOES NOT HAVE SUFFICIENT GAIN TO SUPPORT STATIC DATA COLLECTION.**

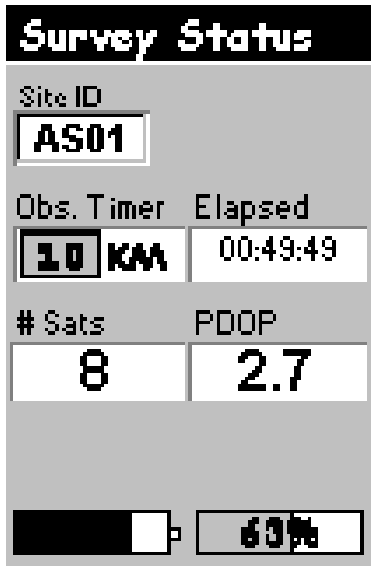
- **THE EXTERNAL ANTENNA CONTAINS A PREAMPLIFIER WHICH IS POWERED FROM THE ProMark2's INTERNAL OR EXTERNAL BATTERY POWER PACKS THAT BOOSTS THE GPS SIGNALS TO SUPPORT SURVEY DATA COLLECTION**

DATA COLLECTION (Cont'd)

THERE ARE TWO IMPORTANT SCREENS (SHOWN BELOW) THAT MUST BE MONITORED CONTINUOUSLY BY THE SURVEYOR TO ENSURE ADEQUATE DATA COLLECTION



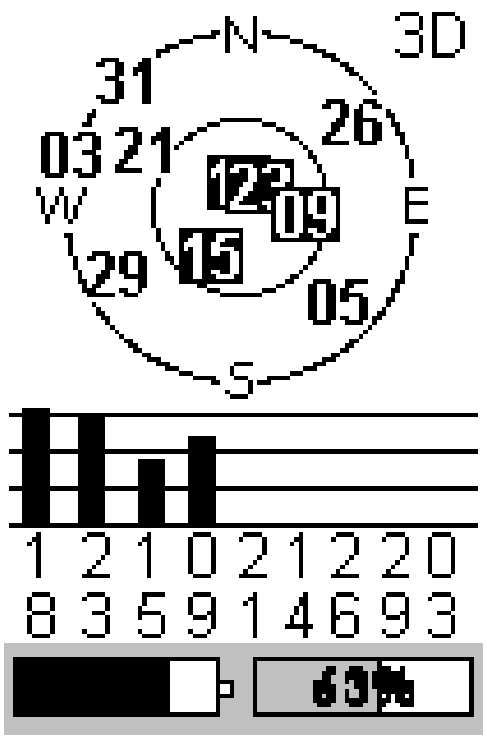
SATELLITE STATUS SCREEN



SURVEY STATUS SCREEN

DATA COLLECTION (Cont'd)

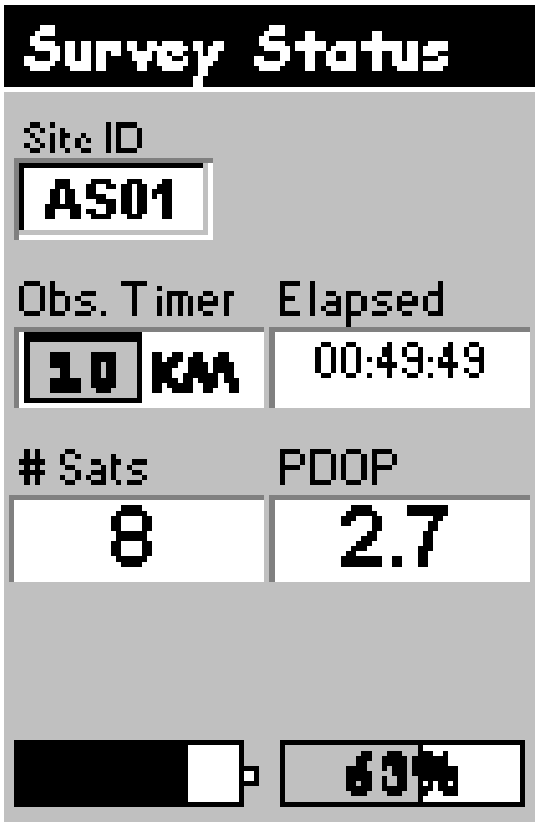
- **THE SATELLITE STATUS SCREEN DISPLAYS A NUMBER OF USEFUL INDICATORS THAT SUPPORT QUALITY MONITORING OF THE GPS CONSTELLATION DURING A SESSION**



- PROVIDES COMPASS REFERENCE
- SKY PLOT [NO BOX CAPTURE=NO LOCK]
- SATELLITES 'TRACKED' [BOX CAPTURE]
- SIGNAL STRENGTH
- SATELLITE VEHICLE ID NUMBER
- BATTERY POWER AND MEMORY AVAILABILITY STATUS

DATA COLLECTION (Cont'd)

- **THE SURVEY STATUS SCREEN PROVIDES ANOTHER IMPORTANT SOURCE FOR DETERMINING THE QUALITY OF THE OBSERVATION**



- WORK SITE IDENTIFICATION
- OBSERVATION TIMER/BASELINE DISTANCE MEASUREMENT
- ELAPSED TIME OF RECORDED OBSERVATION DATA
- NUMBER OF GPS SATELLITES LOGGED DURING A SESSION
- POSITION DILUTION OF PRECISION (PDOP) STATUS OF SATELLITE GEOMETRY
- POWER AND MEMORY STATUS

DATA COLLECTION (Cont'd)

OBSERVATION TIMER:

- **WHEN CONDUCTING A STATIC SURVEY WITH THE ProMark2 THE "RULES" FOR CONDUCTING STATIC SURVEY MUST BE SATISFIED.**
- **THE OBSERVATION TIME FOR SHORT BASELINES (BASE REFERENCE STATION TO THE ROVER) WHICH ARE APPROXIMATELY 10KM IN LENGTH SHOULD BE AT LEAST A MINIMUM OF 30 MINUTES**

ELAPSED TIME:

- **THE ELAPSED TIME OR "EPOCH RECORDING RATE" (e.g. GPS DATA SAMPLING) FOR THE ProMark2 IS DEFAULTED TO EVERY TEN SECONDS**

SATELLITES:

- **A MINIMUM OF FOUR (4) SATELLITES ARE REQUIRED DURING THE ACTUAL SESSION TO ESTABLISH A THREE DIMENSIONAL (3D) POSITION. TO ENSURE THERE ARE SUFFICIENT GPS SATELLITES AVAILABLE ON THE DAY OF THE SESSION, USE THE ASHTECH SOLUTIONS SOFTWARE AND SELECT THE MISSION PLANNING OPTION TO DETERMINE THE NUMBER OF SATELLITES AVAILABLE AND THE DURATION VIEW TIME FOR THESE VEHICLES**

DATA COLLECTION (Cont'd)

POSITION DILUTION OF PRECISION:

- **THE POSITION DILUTION OF PRECISION IS A MEASURE OF THE GPS SATELLITE GEOMETRY OVERHEAD WHERE THE OBSERVATION IS TAKING PLACE**
- **TO ENSURE ACCURATE DATA RESULTS, THE PDOP MUST BE OF SOME VALUE LESS THAN "6". THIS VALUE AIDS IN THE RESOLUTION OF THE SESSION DATA DURING POST-PROCESSING**

SESSION TERMINATION

- **AT THE CLOSE OF THE SESSION AND AFTER A SUFFICIENT AMOUNT OF DATA HAS BEEN COLLECTED, TURN OF THE ProMark2**
- **THIS ACTION WILL AUTOMATICALLY CLOSE AND SAVE THE DATA FILES FOR SUBSEQUENT POST-PROCESSING**
- **AFTER ALL OF THE PLANNED SESSIONS HAVE BEEN COMPLETED, DISASSEMBLY OF THE ProMark2 STATION MAY COMMENCE**
- **NOTE: BEFORE DISASSEMBLING THE STATION, MAKE CERTAIN TO <u>GENTLY</u> PULL THE EXTERNAL ANTENNA CABLE PLUG FROM THE ProMark2 SOCKET TO PRECLUDE DAMAGE TO THE CABLE**

ProMark2 FAQ's

Q: Why does my ProMark2 take so long to track satellites?

A: When the ProMark2 is used for the first time, it doesn't have any information about where the satellites are located. About 15 minutes of tracking at least one satellite allows the unit to acquire the satellites Almanac which contains the rough location of each satellite.

After the almanac is acquired, tracking should occur within seconds of turning the unit on. Setting a user position can also help the receiver track faster the first time out. This is done by entering the Navigate/Set-Up/Initialize Menu and selecting the area where you are using the unit.

Q: Does the ProMark2 let me download an almanac file?

A: Yes! By using the latest Ashtech Solutions version 2.60 it will permit downloading of almanac data for the ProMark2. However, if version 2.50 is used it will only support post-processing.

ProMark2 FAQ's (Cont'd)

Q: The ProMark2 won't enter data collect mode. What's going on?

A: The ProMark2 External Antenna must be connected before the unit will enter the data collect mode. Set-Up Mode can be entered even with no antenna connected.

Q: What is the ProMark2 occupation timer?

A: The occupation timer is an indicator that the receiver has collected enough data to achieve the optimum system accuracy for a given baseline length. It is engineered to provide 95% reliability. For baselines longer than 10km, this reliability can be reduced by Ionospheric and Tropospheric irregularities. Adding occupation time for longer baselines will raise this reliability.

In some cases when the processed results do not meet expectation, Ashtech Solution data processing parameters can be adjusted, the data processed, and baseline results can be improved.

ProMark2 FAQ's (Cont'd)

Q: Does the ProMark2 occupation timer work around trees and obstructions?

A: The timer assumes the same satellites are tracked at the base and rover site. Data with frequent cycle slips (ex: breaks in the signal information stream as a result of natural or man-made obstructions that block the signals path) can limit the occupation timer's effectiveness.

If two sites can communicate, then it would be best to wait until both receiver's occupation timers indicate that enough data has been collected for a given baseline length.

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