PRODUCT DATASHEET

SURFACE TEST DEVICE

BT/SV/CTD

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1.0 Introduction

The purpose of this manual is to describe the installation and operation, using WinMK21 software, of Surface Test Device part number 414095-1 using a hand launcher.

2.0 Battery Installation

2.1 Surface Test Device

Unpack Surface Test Device and loosen three captive screws (Figure 1) and slide tray assembly out (Figure 2). Note + (Plus) symbol on battery clip (Figure 3). Grasp negative terminal of battery clip (Figure 4) and install AA battery.

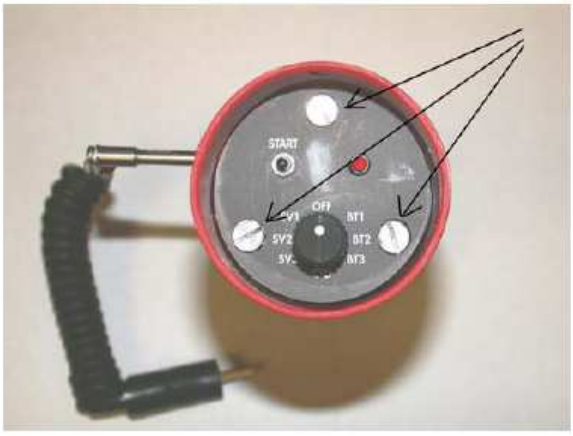

Figure 1

Figure 2

Figure 3

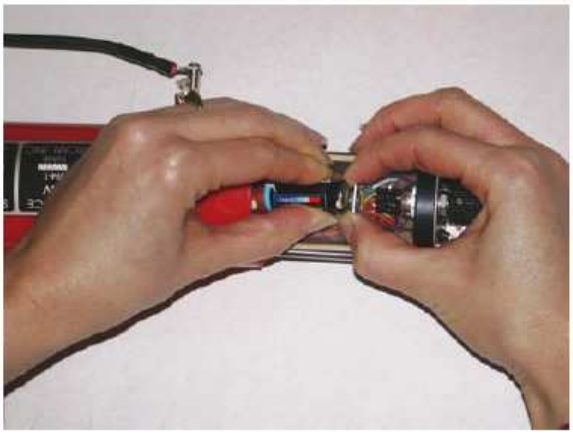

Figure 4

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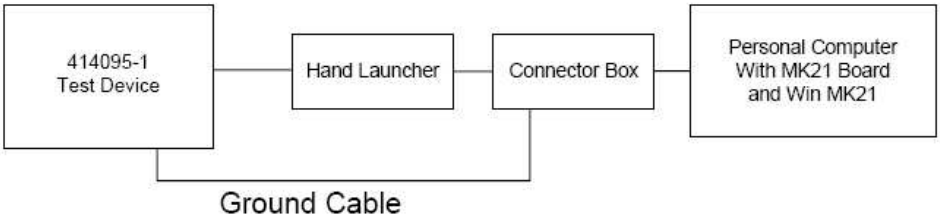
Figure 5

3.0 Operation

Test Device Connection



3.1 Tests:

BT1: Temperature Step Profile.
BT2: Isometric Temperature Profile.
BT3: Fine Temperature profile.

SV1: Sound Velocity Step Profile
SV2: Isometric Sound Velocity Profile.
SV3: Fine Sound Velocity Profile.

CTD: Conductivity/Temperature Profile

3.2 WinMK21 Software Settings:

Enter Test Device serial number and other pertinent data into the Launch Information blocks.
For BT tests select "T-7".
For SV tests select "XSV-01".
For CTD tests select "XCTD-1".

Units:

Select Options, Units, System Parameters
For BT1-3, SV1-3, and CTD select English units (deg F, ft, ft/sec), Storage Mode to Export, and select Automatic Backup.

Depth:

For 414095-1 BT tests, select menu Options, Probe, Selection menu click 'More', select ORIGINAL (NON-IGOSS) depth equations.

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3.3 Temperature tests

3.3.1 BT1 Temperature Step Profile.

Start MK21 software and select T-7. At "Load Probe" prompt, select BT1 on the dial press and hold the START button until the LED starts flashing (about 1 second) and load the device into the launcher and connect ground cable. 45 seconds later the device starts the drop. The drop should appear similar to (Figure 6), compare to (Table 1).

Depth (ft)	Limit	Temp (deg F)	Limit
0	(+/- 5ft)	28.0	(+/- 0.1 deg)
400	(+/- 5ft)	50.0	(+/- 0.1 deg)
800	(+/- 5ft)	70.0	(+/- 0.1 deg)
1100	(+/- 5ft)	96.0	(+/- 0.1 deg)
1400	(+/- 5ft)	70.0	(+/- 0.1 deg)
1700	(+/- 5ft)	50.0	(+/- 0.1 deg)
2100	(+/- 5ft)	28.0	(+/- 0.1 deg)

Table 1

BT1: Temperature Step Profile

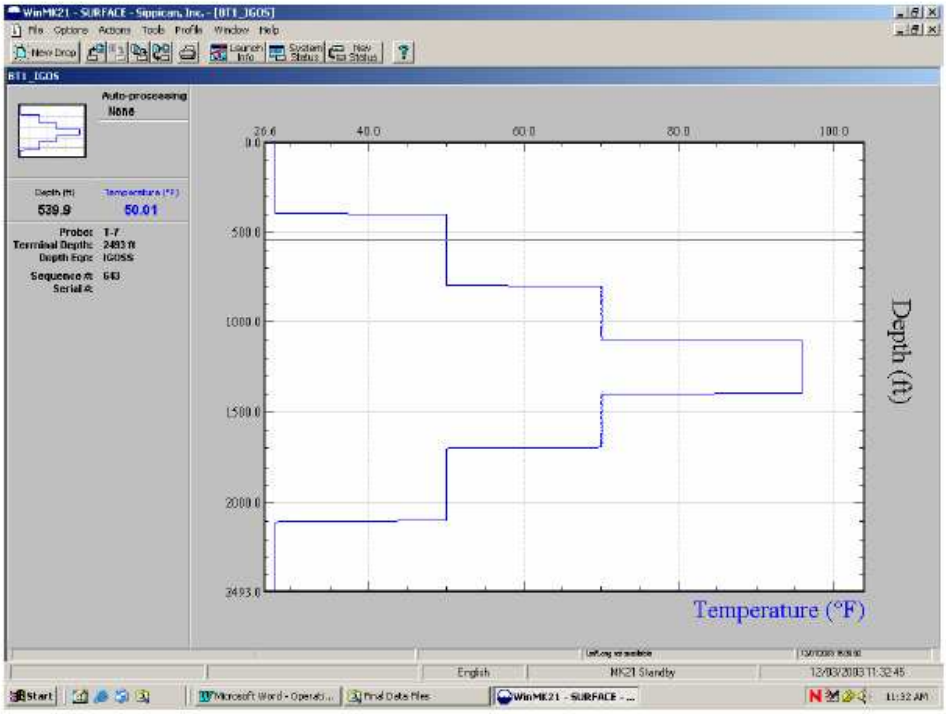

Figure 6: Sample BT1 Test

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3.3.2 BT2: Isometric Temperature Profile

Start MK21 software and select T-7. At "Load Probe" prompt, select BT2 on the dial press and hold the START button until the LED starts flashing (about 1 second) and load the device into the launcher and connect ground cable. 45 seconds later the device starts the drop. The display should be a single 50 deg F +/- 0.1 deg, maintained until the end of the drop (Figure 7).

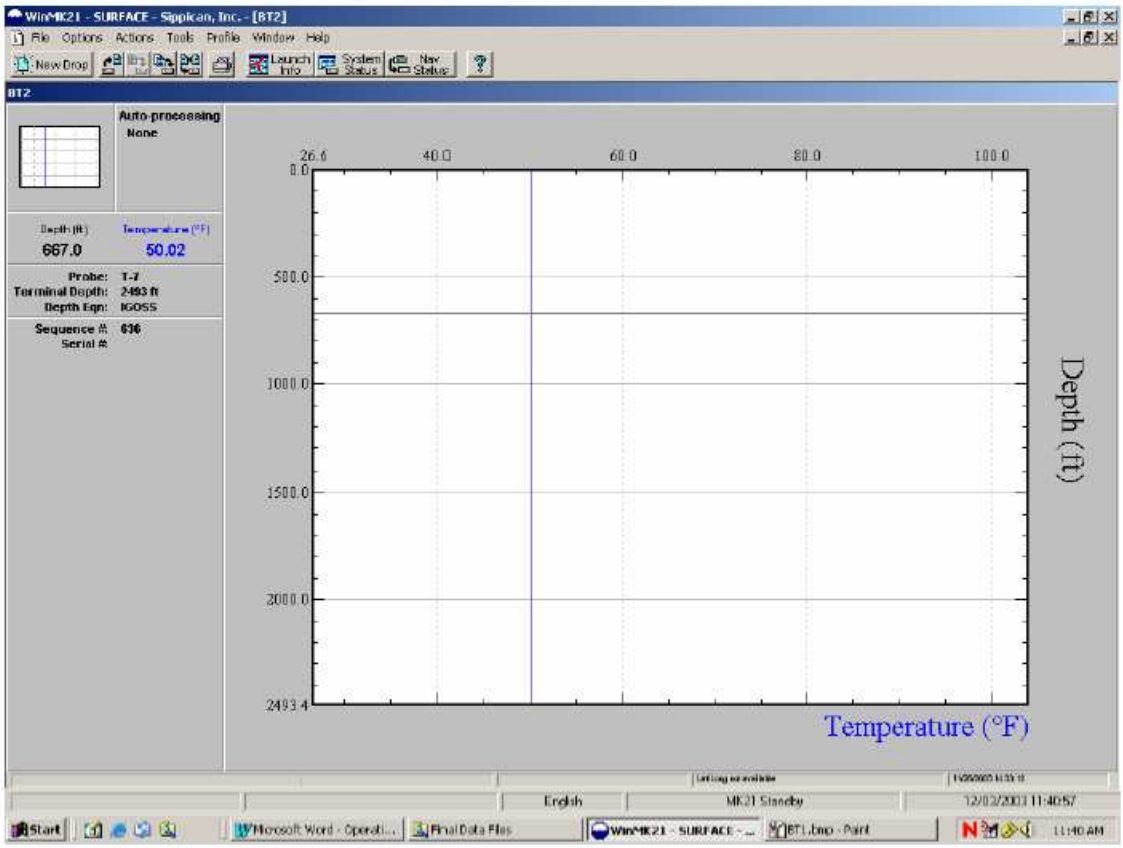

Figure 7: Sample BT2 Test

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3.3.3 BT3: Fine Temperature Profile

Start MK21 software and select T-7. At "Load Probe" prompt, select BT3 on the dial press and hold the START button until the LED starts flashing (about 1 second) and load the device into the hand launcher and connect ground cable. 45 seconds later the device starts the drop. BT3 drop is a smooth transition between 70.0 F and 50.0 deg F and should look similar to (Figure 8). The temperature accuracy at 70.0 deg and 50.0 deg is +/- 0.1 deg F.

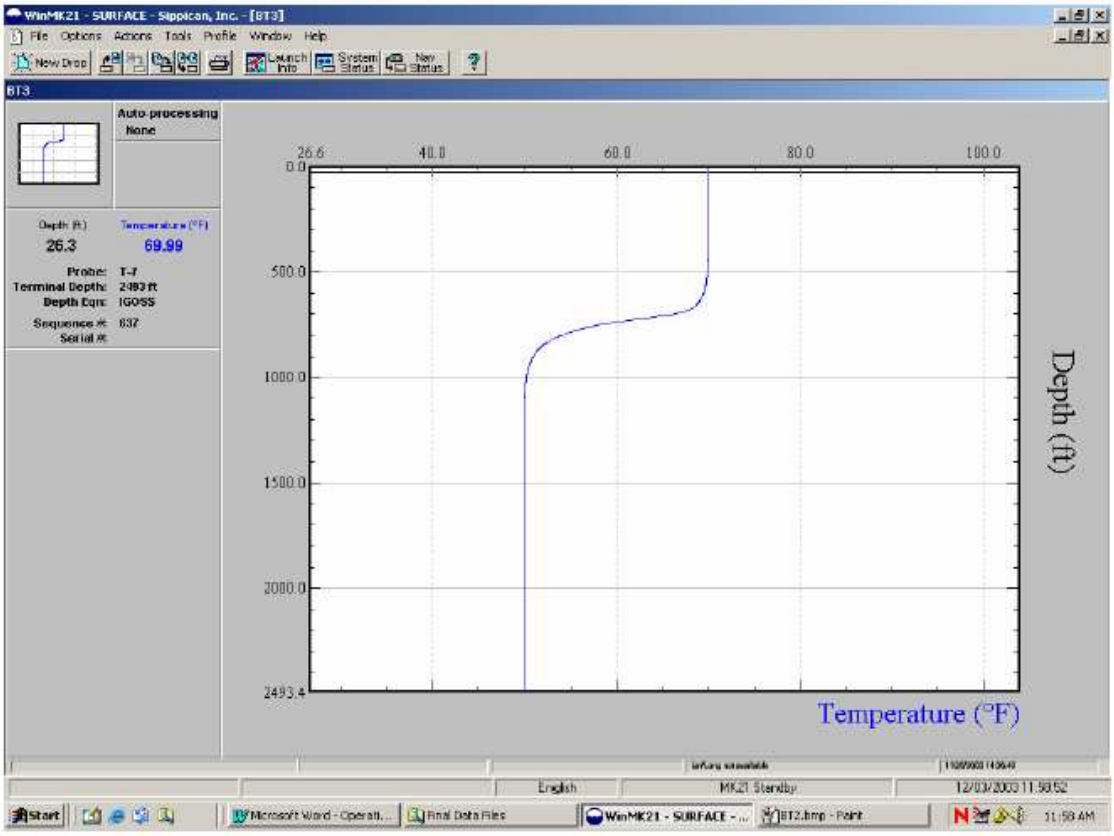

Figure 8: Sample BT3 Test

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3.4 Sound Velocity Tests

3.4.1 SV1: Sound Velocity Step Profile

Start MK21 software and select XSV-01. At "Load Probe" prompt, select SV1 on the dial press and hold the START button until the LED starts flashing (about 1 second) and load the device into the launcher. 45 seconds later the device starts the drop. The drop should appear similar to (Figure 9), compare to (Table 2).

Depth (ft)	Limit	Sound Velocity (ft/sec)	Limit
0	(+/- 8ft)	4600	(+/- 0.8 ft/sec)
40	(+/- 8ft)	4700	(+/- 0.8 ft/sec)
400	(+/- 8ft)	4850	(+/- 0.8 ft/sec)
800	(+/- 8ft)	5000	(+/- 0.8 ft/sec)
1100	(+/- 8ft)	5100	(+/- 0.8 ft/sec)
1400	(+/- 8ft)	5000	(+/- 0.8 ft/sec)
1700	(+/- 8ft)	4850	(+/- 0.8 ft/sec)
2100	(+/- 8ft)	4700	(+/- 0.8 ft/sec)
2500	(+/- 8ft)	4600	(+/- 0.8 ft/sec)

Table 2

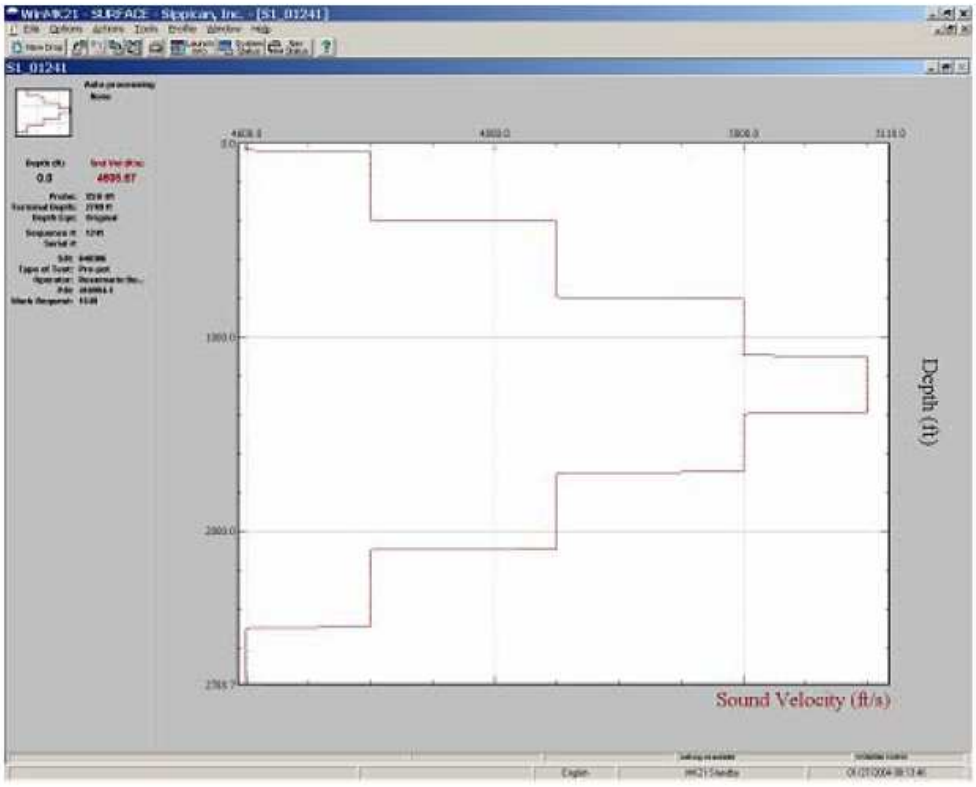

Figure 9: Sample SV1 Test

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3.4.2 SV2: Isometric Sound Velocity Profile.

Start MK21 software and select XSV-01. At "Load Probe" prompt, select SV2 on the dial press and hold the START button until the LED starts flashing (about 1 second) and load the device into the launcher. 45 seconds later device starts the drop. SV2 is a single 4850 ft/sec Sound Velocity maintained throughout the test. SV tolerance is +/- 0.8 ft/sec (Figure 10).

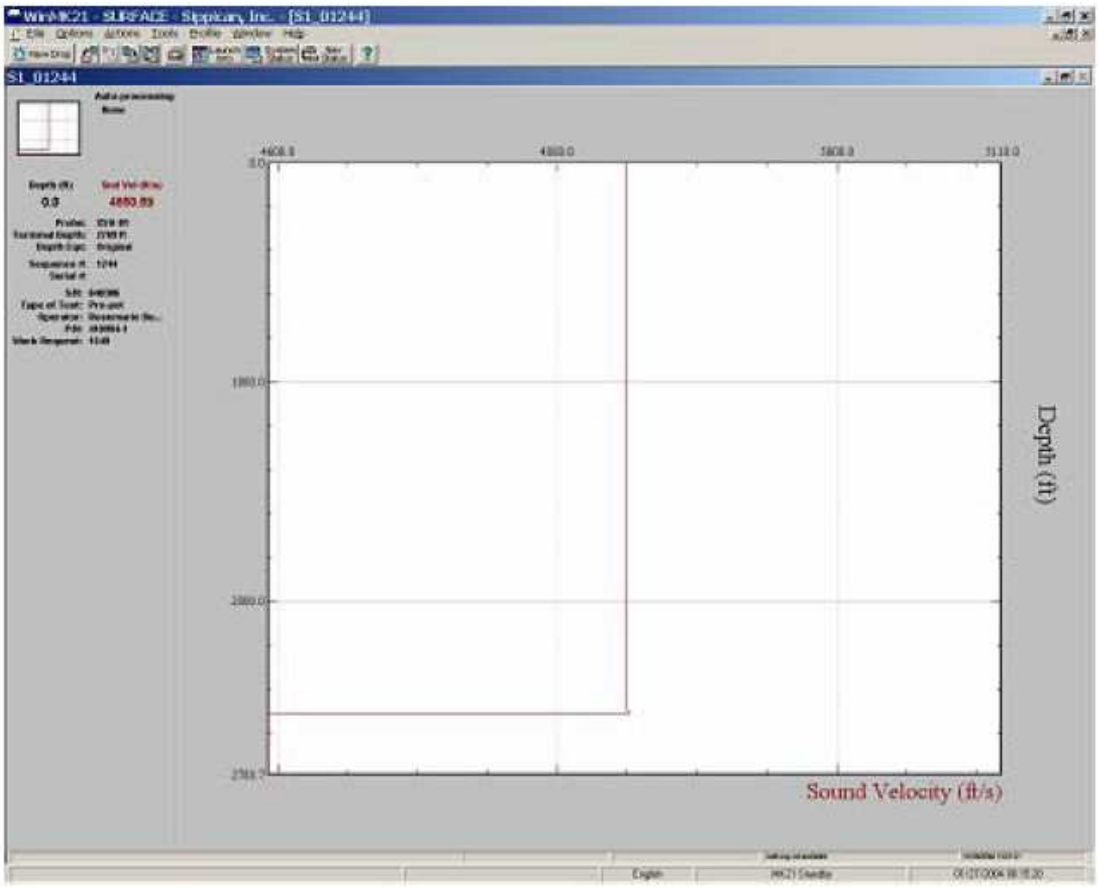

Figure 10: Sample SV2 Test

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3.4.3 SV3: Fine Sound Velocity Profile.

Start MK21 software and select XSV-01. At "Load Probe" prompt, select SV3 on the dial press and hold the START button until the LED starts flashing (about 1 second) and load the device into the launcher. 45 seconds later the device starts the drop. SV3 generates smooth linear step and transition step between 5035, 5000 4990 and about 4923 ft/sec. The pattern should look similar to Figure 11. Verify flat sections of drop according to the following:

1st Portion : 5035 ft/sec (from 0 to 220 ft)
2nd Portion : 5000ft/sec (from 560 to 980 ft)
3rd Portion : 4990 ft/sec (from 980 to 1480 ft) SV tolerance for "flat sections" (+/- 0.8 ft/sec)

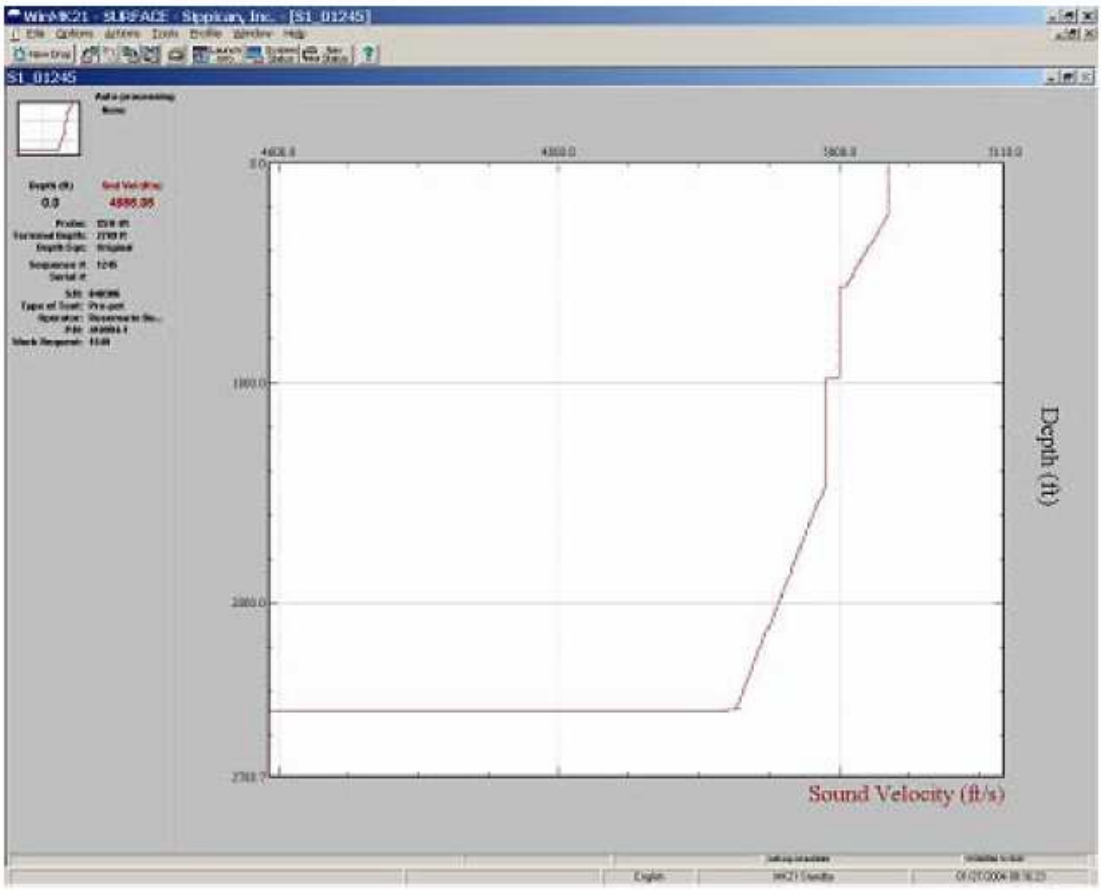

Figure 11: Sample SV3 Test

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3.5 CTD: Conductivity/Temperature Profile

Start MK21 software and select XCTD-1. At the "Load Probe" prompt select CTD on the rotary switch, depress the start button until the LED starts flashing. The LED should flash 5 times and then stop after which the unit is ready for testing. Load the device into the launcher. The MK21 software will then initiate a start and attempt to read the simulated EEPROM data from the device. When the test is started you should see the LED flash. If it stops suddenly, it means that the MK21 software has shut the device off and is making another attempt to read the simulated EEPROM data. After three failed attempts a "RETRY" option may come up. Attempt a retry. In some cases it may be necessary to cancel the drop and initiate a new drop. In this case, unload the device from the launcher. You should not have to touch anything on the test device. Verify that the drop generates two isometric (straight-line) profiles. Values are 50.38 deg F +/- 0.0 and 48.69 mS/cm +/- 0.0 (Figure 12).

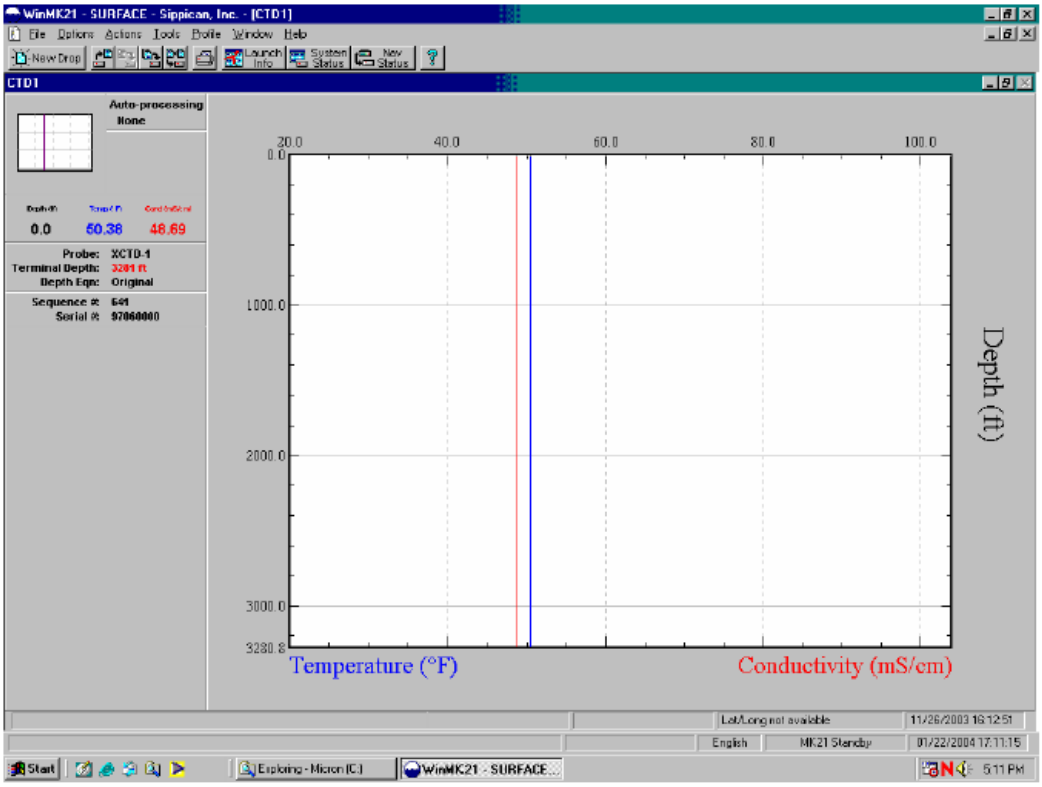

Figure 12: Sample CTD Test

4.0 Shutdown

Return rotary switch to the off position when testing is completed. This will prolong battery life.

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