



# **BOOM BOX**

## **Dynamite Controller**

### **User's Manual**



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### **Seismic Source Co.**

2391 E. Coleman Rd.  
Ponca City, OK 74604  
USA

Telephone: (580) 762-8233

Fax: (580) 762-1785

Email: [mail@seismicsource.com](mailto:mail@seismicsource.com)

[www.seismicsource.com](http://www.seismicsource.com)

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## 1.1 Safety

**Because this equipment is used with explosives, extreme caution must be observed. Make sure you know the safety regulations, and follow them.**

- Follow the correct procedures.
- Shooters and helpers must wear hard hats.
- Keep non-essential people well away from the shot point (both members of the public and crew personnel).
- Keep CAP lines shorted together at all times when it is not safe to Fire the shot.
- Only connect CAP lines to the Boom Box when it is safe to Fire the shot.
- Never press the ARM or Charge switch on the Boom Box unless it is safe to Fire the shot.
- Only shoot when ready and safe. Observe local safety regulations.
- Do not shoot in stormy weather.
- Do not fire shots close to power lines without ensuring that there is no possibility of cap wires coming into contact with the power lines.
- Do not shoot close to high-power radio transmitters.
- After the shot:
  - Make sure all the charges at a multiple/pattern shot have detonated.
  - Keep a record of any shots, which it was not possible to fire. They must be disposed of safely.

The Seismic Source Company does not represent that this manual is entirely comprehensive, accurate or covers each and every safety topic or risk which may be encountered by those using this manual and the Seismic Source Company disclaims all responsibility and liability for any such utilization of this information by the users thereof. By receipt of the Boom Box Manual, the recipient/user agrees to release, indemnify and defend the Seismic Source Company from and against any and all claims, demands and liabilities that may arise from the utilization of the Boom Box System by such recipients/users.

The end user uses the Boom Box System at his/her own risk.

The Seismic Source Company does not assume any responsibility for accidental firings or any accident occurring with the Boom Box System.

## 2.1 Boom Box System Description

The Boom Box system is used to synchronize and control dynamite operation on seismic recording crews. A typical system includes at least two Boom Boxes. One unit is set up as an Encoder and one unit is setup as a Decoder.

The Encoder unit interfaces the Seismic Recording System with a radio system, which communicates to the Decoder system. The Recording System sends a start command to the Encoder, which causes the Encoder to send a fire command to the Decoder. The Decoder receives the Fire command, and will fire the CAP if the Decoder unit is ARMED and Charged. At the same time that the Decoder unit fires the CAP, the Encoder issues a Time Break signal to the Recording System. After the shot is fired the Decoder records the signal from the Uphole Geophone and transmits this data along with other QC data to the Encoder.

### 2.1.1 Encoder System consists of the following:

- Boom Box Unit configured as Encoder
- Recording System Interface:
  - Remote Start – signal from Recording System, which starts Boom Box Encoder.
  - Time Break – T.B. – signal from Boom Box Unit when voltage is applied to High Voltage for Cap firing.
  - Aux 1 – Analog Uphole – Analog line where uphole geophone signal is reproduced at 1.5 seconds after Time Break. An analog pulse at 1.0 second is used to check timing accuracy of system and another analog pulse at 1.25 seconds confirms that current flowed to the CAP.
  - Aux 2 – Timing pulses at 1.0, 1.25, 1.5 seconds after Time Break.
  - COM 2 – Recording System Serial Interface plug. Connects to Recording System for data communication.
  - COM 0 – Computer System Serial Interface. Connects to a Windows 98, Windows 2000, or Windows XP computer running the BBView program. The BBView program allows:
    - Setting Encoder parameters
    - Viewing and storing Shot Status Report
    - Viewing and storing GPS position
    - Monitoring Recording Truck Serial Message
    - Viewing Decoder Ready Messages
    - Monitoring Start Time Errors
- Battery – 9-36 volt DC voltage
- Radio – Encoder - Unit connects to UHF or VHF radio to communicate with the radio connected to the Decoder.
- Boom Box Encoder Cable:

### **2.1.2 Decoder System consists of the following:**

- Boom Box Unit configured as Decoder
- Boom Box Decoder Cable
- Boom Box Decoder backpack. Designed to carry all components of the Decoder System.
- Uphole Geophone – Geophone sensor used to measure time from when shot is fired to when motion is received at surface.
- Battery – 9-36 VDC battery used to power Boom Box Decoder
- Radio – Decoder unit connects to UHF or VHF radio to communicate with the radio connected to the Encoder Unit.
- CAP line – CAP line to fire dynamite is connected to High Voltage post on Decoder Unit.
- GPS receiver – optional –External GPS receiver can be connected to Decoder Unit. GPS position can be acquired prior to shot. Position is sent back to Encoder Unit as part of the Ready Message and Shot Status Report. The Ready Message consists of the GPS position, Unit ID #, CAP resistance, and Geophone resistance.

### 3.1 Front Panel Description

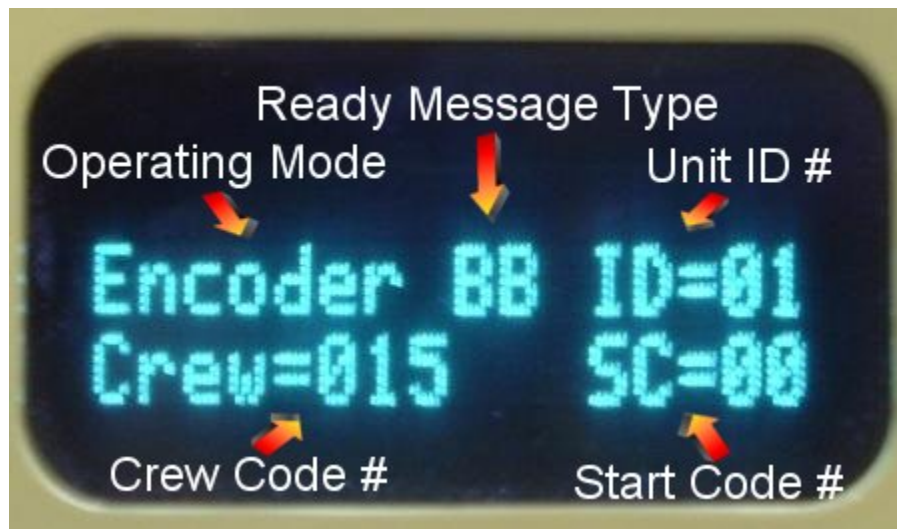


Boom Box Front Panel contains:

- 2 High Voltage terminals – connect to CAP wire for firing dynamite.
- Red Power/Status LED
  - Encoder Mode – flashes evenly ON and OFF.
  - Decoder Mode – flashes ON in short bursts.
  - Decoder Mode Charging – Flashes Fast when charged
- ARM toggle switch
  - Power up Boom Box – single press powers the box “on”
  - Arm the dynamite CAP line – must hold switch to “ARM” high voltage terminals
  - The ARM switch in the normal position shorts the high-voltage line
- Charge toggle switch
  - Press Charge to charge the High Voltage Capacitor
- Test Push Button
  - Press Test button to test the Geophone
  - Press Test and ARM button to test the dynamite CAP
  - Test LED shows result of test
- GPS Push Button
  - Press GPS button to store the GPS position for the next shot
  - GPS LED shows status of GPS position



### 3.1.1 Display



The Boom Box starting with Version 2 hardware has a two-line display. The display is used to show the setup of the box at power on, the CAP and Geophone resistance, the ready message, the uphole information, and the shot status message. The display shows the following messages:

- **Operating Mode** – Choices are Encoder, Decoder, Master, Slave, AirGun, Impulse
- **Ready Message Type** – BB = Boom Box, A2 = Advance 2, VP = Vib Pro
- **Unit ID #** - Unit ID of the Boom Box
- **Crew Code #** - The Crew # of the Encoder must match the Crew Code of the Decoder
- **Start Code #** - The Start Code # of the Encoder must match the Start Code of the Decoder
- At Power ON it displays Mode, Start Code #, Crew Code #, and Unit ID #.
- Decoder will display Geophone and Cap resistance when the Test button is pressed.
- Encoder will display information from the Boom Box ready message, it will display Unit ID # that is ready to fire, Geophone resistance, and CAP resistance.
- Both Encoder and Decoder will display the Fire message after the shot– Uphole time, CTB, Unit ID #, etc.

The display automatically goes off after approximately 30 seconds. To redisplay the last shot message on the decoder or the encoder press both the “Charge” and “GPS” buttons.

## 4.1 Encoder Operation

Any Boom Box unit can operate in different modes. To change operation modes an external Computer or a Pocket PC can be used. To change operation, first set the correct operating mode in the parameter entry of the computer program then send the parameters to the Boom Box Unit. See chapters 11.1 and 12.1 for more information on the computer interface.

The COM 2 of the Boom Box Unit is either selected to communicate with the Infrared port or the external cable. For the serial Recording Truck communication to operate the selection must be set to external.

Jumper JMP2 selects COM 2 operation

- Hardware with serial number 100 and above the Infrared port is selected by keeping pins 33 and 34 open on the 37-pin connector. The external serial connection is selected by jumping pins 33 and 34 on the 37-pin connector (required to communicate with recording systems).
- Hardware with serial number less than 100, JMP2 (2-3) – Infrared port selected – Select this jumper to communicate via infrared port to Pocket PC unit
- Hardware with serial number less than 100, JMP2 (1-2) (jumper close to the Hitachi processor) – External serial connection selected. Required for ARAM, Ascend Geo, Sercel SN388/408UL, I/O, and other recording system communication. Select this jumper to communicate serially to recording system.

#### **4.1.1 Fire Sequence – Encoder – Following sequence occurs.**

- To start the fire sequences either a hardware pulse (start iso) from an external source or a Manual start (press Test Button and Arm switch at the same time) (Test LED and GPS LED both red) will start Fire Sequence.
- The Encoder then sends the Radio transmission of the Start Codes (determined in time by Encoder Start Delay and Encoder Radio Start Delay Time).
- The Encoder then issues Time Break at the end of the Start Delay Time. The time break signal should occur at the same time that the Shot is being fired by the Decoder Unit.
- After the Shot is fired the Encoder receives the Shot Status Report message from the Decoder. The time when the message is received determines when the timing pulses will occur.
- The GPS LED is green when the report message has been received. GPS LED is red if no report is received.
- The Test LED is green if the Radio Correction start time accuracy is computed to be better than 100 microseconds. The Test LED is RED if accuracy is computed to be greater than 100 microseconds.
- The display will show Uphole time, CTB value, and Battery voltage from the decoder.
- The Encoder generates reference pulses at 1, 1.25, and 1.5 seconds. These pulses should align with the timing pulses generated from the Decoder's Shot Status Report.
- The Encoder outputs the following timing pulses. These pulses are based on when the Shot Status Message is received.
  - Data reception pulse – Pulse that is generated if Shot Status Message is received. This pulse should be at 1 second plus one-way radio delay.
  - Confirmation Time Break – This pulse will be generated if current to CAP exceeded threshold. This pulse is generated 0.25 seconds after Data Reception Pulse.
  - Uphole Data – The analog uphole data is reproduced exactly 0.5 seconds after the Data Reception Pulse.
- BBview program is used to view the following
  - The Shot Status message from the Decoder
  - Retransmit of Shot Status Message
  - GPS information before or after shot
  - View Resistance measurements before or after shot



#### 4.1.2 Start Code

Three parameters must match for a valid start code to be recognized.

- **Start Code** – (0-3) – All Boom Box units must be set to the same number
- **Crew number** – (0-250) – All Boom Box units must be set to the same number.
- **Units to Fire** – Decoder unit ID number must be included in the list of units to fire.
  - Sequence Message from the ARAM, Sercel HCI, or I-O recorder recorder will select the decoder unit ID number to fire.
  - The BBView SPY feature can be used to monitor this activity.

## 5.1 Recorder Interface

The Seismic Recording System connects to the Boom Box Encoder through the Serial Port (Com2). The serial messaging provides for the following data transfer.

- The Recording System commands which Unit ID will fire, and the units to fire entry in the Encoder is changed.
- The Shot Status message from the Encoder is transmitted to the Recording system. The data from this message is stored on the recording system.

The BBview spy program is very useful in setting up and viewing the serial data that is transferred from the Boom Box Encoder to the Recording system.

Go to the Help- Status menu of the BBview program. Enable both the display serial messages and display recorder messages to view the RTI data being transmitted.

### 5.1.1 Recorder Interface – Sercel

- Version 1 hardware jumper JMP2 needs to be 1 and 2 connected (jumper close to the Hitachi processor). On Version 2 hardware pins 33 and 34 on the 37-pin connector must be connected together to enable the RTI serial data to the recorder. This will disable the infrared port.
- COM2 connects to Sercel HCI and XDEV on SN388. Connects to HCI and Blaster plug on 408UL.
- Uses 9600 baud
- Selection – Sercel Serial.

### 5.1.2 Recorder Interface – ARAM

- Version 1 hardware jumper JMP2 needs to be 1 and 2 connected (jumper close to the Hitachi processor). On Version 2 hardware pins 33 and 34 on the 37-pin connector must be connected together to enable the RTI serial data to the recorder.
- COM2 connects to the ARAM port that does the RTI protocol at 9600 BAUD.
- When in Encoder mode the Infrared Port does not work with Pocket PC because the 19.2K-baud rate is not compatible with the Pocket PC software. This will disable the infrared port.
- Selection - Generic 9600 for newer ARAM recorders. This selection sends Boom Box ready messages to the ARAM recorder along with the standard RTI messages.
- Selection – Generic 19200 sends the standard RTI messages to the ARAM recorder.

### 5.1.3 Recorder Interface – Input Output

- Version 1 hardware jumper JMP2 needs to be 1 and 2 connected (jumper close to the Hitachi processor). On Version 2 hardware pins 33 and 34 on the 37-pin connector must be connected together to enable the RTI serial data to the recorder. This will disable the infrared port.
- COM2 connects to the Input Output port that does the RTI protocol at 19.2K BAUD.
- When in Encoder mode the Infrared Port does not work with Pocket PC because the 19.2K-baud rate is not compatible with the Pocket PC software.
- Selection – Generic Serial.

#### **5.1.4 Recorder Interface – Input Output RSR**

- Version 1 hardware jumper JMP2 needs to be 1 and 2 connected (jumper close to the Hitachi processor). On Version 2 hardware pins 33 and 34 on the 37-pin connector must be connected together to enable the RTI serial data to the recorder. This will disable the infrared port.
- COM2 connects to the Input Output RSR port that does the RTI protocol at 19.2k BAUD.
- When in Encoder mode the Infrared Port does not work with Pocket PC.
- Selection – I/O RSR.

#### **5.1.5 Recorder Interface – Recording Systems**

- Version 1 hardware jumper JMP2 needs to be 1 and 2 connected (jumper close to the Hitachi processor). On Version 2 hardware pins 33 and 34 on the 37-pin connector must be connected together to enable the RTI serial data to the recorder. This will disable the infrared port.
- COM2 connects to the Recording System port that does the RTI protocol at 19.2K BAUD.
- When in Encoder mode the Infrared Port does not work with Pocket PC because the 19.2K-baud rate is not compatible with the Pocket PC software.
- Selection – Generic Serial.

## 6.1 Master Encoder and Repeater Operation

### 6.1.1 Master Encoder Operation

The Boom Box system can be used in a Master/Repeater Mode. This Mode is used when the radio reception from the Encoder to the Decoder requires a radio repeater. This is typically a problem in very mountainous areas. Also, this mode may also be used to start a Slave Recorder.

In this mode, one Boom Box is selected to be in Master Mode. The operation mode is as follows

- The BBview computer program, connected to the Master Boom Box unit, selects the ID # of the Repeater Unit
- When Master Boom Box is started, it sends a master code to the selected Boom Box with the ID number selected.
- When the selected Boom Box receives the Master code, the selected unit automatically switches to a Repeater Mode.
- The Repeater Unit automatically transmits a standard start code to start the selected Decoder. The parameters of this start code were included in the Master Code
- The Decoder receives the standard start code and operates in standard Decoder Mode.
- The Master Unit, the Repeater unit, and the Decoder should all issue a Time Break signal when the CAP is fired
- The Decoder transmits the standard Shot Status Report
- The Repeater receives the Shot Status Report and retransmits it to the Encoder.
- The Master can receive the Shot Status Report from either the Decoder or the Repeater.

To enable Master Mode the operating mode in the parameter entry must be changed to Master on the computer and sent to the Boom Box Unit.

The Repeater ID in the parameter entry must be set to the unit ID of the Boom Box that is to be used as the repeater.

The Crew Number must match between the Master and the Repeater units for the Repeater to send a decoder start code over the radio.



### **6.1.2 Fire Sequence – Master Encoder – Following sequence occurs.**

- To start the fire sequences either a hardware pulse (start iso) from an external source or a Manual start (press Test Button and Arm switch at the same time) (Test LED and GPS LED both red).
- Master Encoder transmits the Master Start Codes to start the Repeater Unit. (Timing of transmission is determined by Encoder Start Delay and Encoder Radio Start Delay Time)
- Master Encoder issues a Recorder Pre-Start pulse 500 msec before Time Break.
- Master Encoder issues Time Break at the end of the Start Delay Time.
- Receives the Shot Status Report message from the Decoder (if in radio range) and the Repeater Unit. The GPS LED is green when the report message has been received. GPS LED is red if no report is received.
- Generate reference pulses (1, 1.25, 1.5, 2.5, 2.75, and 3 seconds).
- Produce timing pulses back from the Decoder and reproduce the Uphole wavelet (if in radio range). (Time 1, 1.25, and 1.5)
- Produce timing pulses back from the Repeater and reproduce the Uphole wavelet (time 2.5, 2.75, and 3).

### **6.1.3 Repeater Operation**

A Boom Box in Encoder, Master Encoder, or Decoder operating mode can be used as a Repeater.

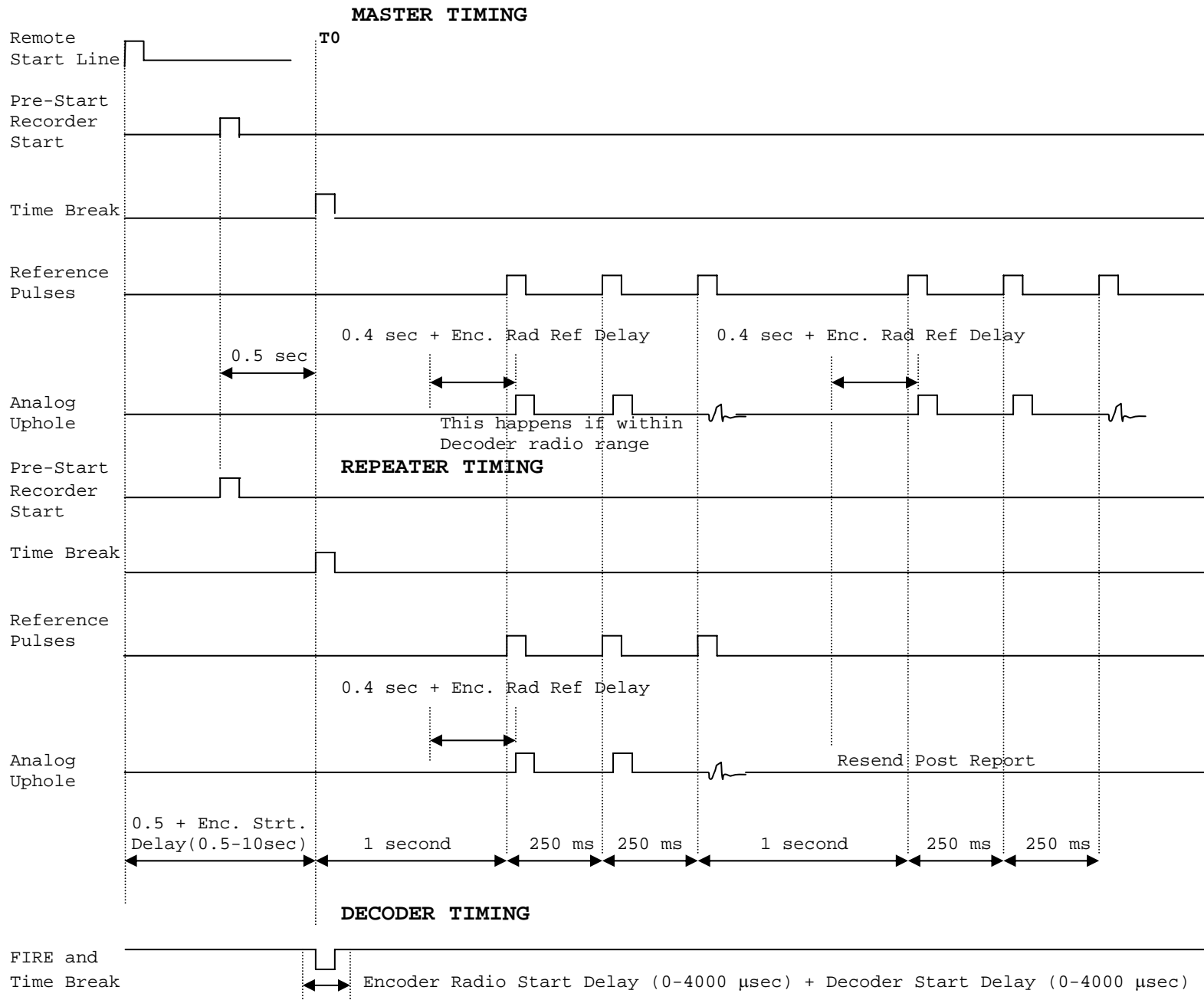
A Boom Box unit becomes a Repeater whenever a master start code commands the unit's ID# to be a repeater. The Crew Number and ID # must both match between the Master Start Code and Repeater unit before the Repeater will send the decoder start code over the radio.

If the same Unit ID is shared among more than one box, the Repeater mode will not operate properly.

### **6.1.4 Fire Sequence – Repeater – Following sequence occurs.**

- The Repeater Boom Box unit is powered on and connected to a radio. No switches or buttons need to be pressed.
- When valid Master Start Code is received from the Master Encoder unit, the Repeater generates the Decoder Start Code from the Master Start Code.
- Issues a Recorder Pre-Start pulse 500 msec before Time Break.(Recorder Start Line)
- Issues Time Break at the end of the Start Delay Time.
- Receives the Shot Status Report message from the Decoder. The GPS LED is green when the report message has been received. GPS LED is red if no report is received.
- Generate reference pulses (1, 1.25, and 1.5 seconds).
- Produce timing pulses back from the Decoder and reproduce the Uphole wavelet.
- The received Shot Status Report is re-transmitted over the radio to the Master Encoder.

## 6.1.5 Boom Box Master/Repeater Timing



### 6.1.5 Master Start Code

Four parameters must match for a valid master start code to be recognized.

- **Start Code** – (0-3) – Master Encoder, Repeater, and Decoder must be set to the same number.
- **Crew number** – (0-250) – Master Encoder, Repeater, and Decoder must be set to the same number.
- **Units to Fire** – Decoder unit ID number must be included in the list of units to fire.
  - Message from the ARAM, Sercel HCI, or Input Output will select the decoder unit ID number to fire. The message from the Sercel or ARAM does not change the internal Encoder settings.
  - The BBView SPY feature can be used to monitor this activity.
- **Repeater ID** – The Repeater ID in the Master Encoder parameter selects the Boom Box Unit, which will be used as a repeater.

## **7.1 Slave Operation**

### **7.1.1 Slave Operation**

Slave Mode operation allows a Boom Box to be used to start a slave recorder. In this mode the Slave Boom Box receives the standard start code. A recorder prestart signal and a time break signal are both issued. The Boom Box unit that is used for the “Master” is not set to Master mode but can be left in normal “Encoder” mode.

The operating mode in the parameter entry must be changed to Slave on the computer and sent to the “Slave” Boom Box Unit.

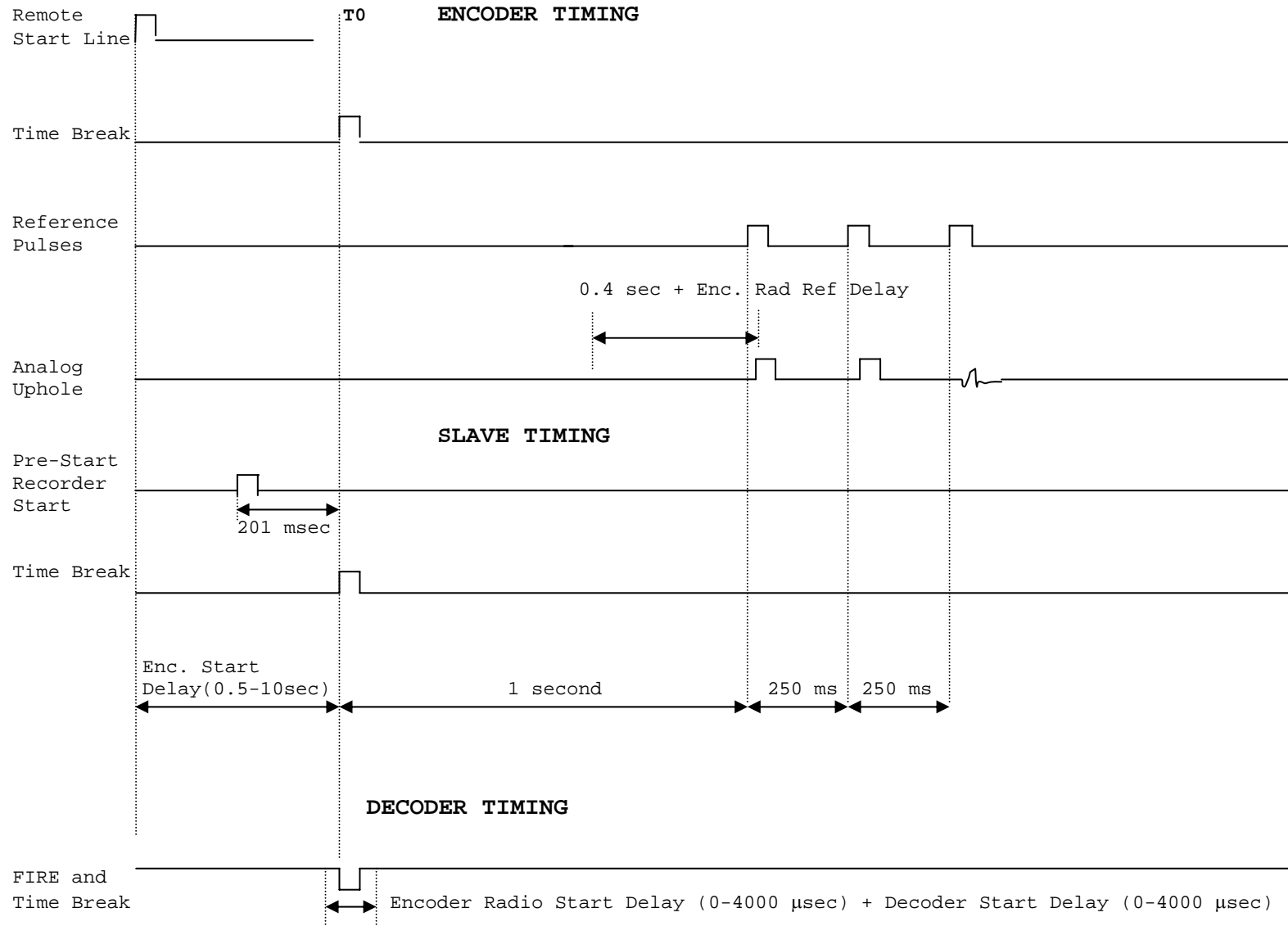
The timing for the Slave unit is similar to that shown in Appendix 1

### **7.1.2 Fire Sequence – Slave – Following sequence occurs.**

- When valid Decoder Start Code is received from the Encoder unit, the shot sequence is started.
- A Pre-Start pulse is issued 201 milliseconds before Time Break. The Prestart pulse is on the Recorder Start signals (pin 17 & 18 isolated, and pins 36 in non isolated). Only when receiving a Seismic Source Start Code.
- A 4-millisecond pulse is output on the Time Break signals



### 7.1.3 Boom Box Slave Timing



## 8.1 Decoder Operation

### 8.1.1 Decoder Operation

The Decoder Mode of operation is used to detonate a blasting cap for seismic dynamite operation. Extreme caution needs to be exercised when working around dynamite and detonation equipment. Review and follow all safety guidelines.

The Decoder unit is connected to a detonation Cap, an uphole geophone, a radio, and a battery. Whenever the Decoder is connected to the CAP or whenever a radio is used, the CAP can fire at any time. The unit has been designed to only fire the CAP when both the ARM and the Charge button are held and a valid start code from the Encoder is received. However, potentially there is a chance that the CAP can accidentally fire from either RF noise or a hardware failure. With this in mind the following is the normal operation procedure:

- The Shooter receives a valid GPS position for the new shot point.
- The Shooter verifies that there is no danger in accidental firing of hole and that all personnel and livestock are clear of the shot hole.
- The “Shooter” connects the unit to the uphole geophone, and Cap at the new shot hole.
- The Shooter normally checks the resistance of both the geophone and the Cap.
- After all tests are satisfactory, the shooter either calls in that he is ready or uses the automatic ready signal to notify the recorder that he is ready to shoot.
- The Shooter then presses the “Arm” and “Charge” switches to get the box ready to fire.
- The Boom Box will automatically send back a “Ready Message” if enabled.
- The Encoder then sends a start code and the Decoder fires the Shot.
- The shooter then releases the “Arm” and “Charge” switch and disconnects from the hole.
- The Decoder unit automatically sends the Shot Status Message to the Encoder.
- The Shooter can check the status of the Box immediately after the Shot is fired.
  - Test LED = Green when Confirmation Time Break is valid.
  - GPS LED = Green when Uphole time is valid
  - The display will show the Uphole time, CTB value, and battery voltage.
- Shooter can check uphole time by pressing the Charge and GPS switch and looking at the information on the display.
- Using the BBview program connected to the Encoder unit the Uphole time and current status of the Decoder unit can be retransmitted to the Encoder. Go to the Records – Request by Radio menu in the BBview program.



## **8.2 Detailed Decoder Operation**

### **8.2.1 Uphole Geophone Resistance Test**

- Press Test button on Front Panel to test Uphole Geophone
- Boom Box Compares reading with internal limits
- Flashes Test LED green 4 times if result is within entered limit
- Flashes Test LED red 4 times if result is outside entered limits
- Geophone resistance will be shown on the display.

### **8.2.2 CAP Resistance Test**

- Press Test button and ARM switch on Front Panel to test CAP resistance
- Boom Box Compares reading with internal limits
- Flashes Test LED green 2 times if result is within entered limit
- Flashes Test LED red 2 times if result is outside entered limits
- CAP resistance will be shown on the display.

### **8.2.3 GPS**

- Press GPS button to acquire new GPS position – 10 seconds.
- GPS LED is RED for the first 4 seconds to show the GPS button was pressed.
- Solid green GPS LED with a differential position.
- Flashing green GPS LED with a non-differential position.
- Solid red GPS LED when a bad position was received.
- No GPS LED when no GPS information is received within 10 seconds of pressing the GPS button.
- The GPS LED's will stay this way until pressing the GPS button again or taking the next shot.

### **8.2.4 Fire Sequence - Decoder**

- Press both the Arm and Charge switch to Arm Boom Box and charge internal capacitor.
- If the Ready Message is enabled the Ready Message will be automatically sent when the high voltage capacitor is fully charged and box is ready to fire.
- When valid Start Code is received from the Encoder unit, the shot sequence is started and the High Voltage is applied to the Cap line the Shot is fired.
- Test LED will flash green for 4 seconds after shot if Confirmed Time Break is OK
- Test LED will flash RED after shot if Confirmed Time Break is not detected
- GPS LED will flash green after shot if first break is detected on Uphole geophone
- GPS LED will flash red after shot if first break is not detected
- The display will show Uphole time, CTB value, and Battery voltage.

### 8.2.5 Display of the Uphole Time through the Test and GPS LED's

- After the shot, hold the Charge switch and press the GPS button at the same time for approximately one second. Then release the Charge switch and GPS button.
- The middle status LED will illuminate red and the TEST and GPS button LED's will illuminate solid Green for a second.
- Then the following occurs on the TEST and GPS button LED's:
  - If the Uphole Time is not found, both the TEST and GPS button LED's are RED.
  - If the Uphole Time is zero, both the TEST and GPS button LED's are off during this period.
  - If there is an Uphole Time, first the TEST LED flashes the amount of tens.
  - After the TEST LED is done flashing, the GPS LED will flash the amount of ones.

**Example:**

The Uphole Time is 15ms.

The TEST LED will flash 1 time, then the GPS LED will flash 5 times.

## 8.3 OSEIS Decoder Operation

### 8.3.1 OSEIS Decoder Operation

The OSEIS Decoder Mode of operation is used to detonate an OSEIS blasting cap for seismic dynamite operation. Extreme caution needs to be exercised when working around dynamite and detonation equipment. Review and follow all safety guidelines. The OSEIS mode requires the Boom Box OSEIS unit. The Boom Box OSEIS unit requires the switch behind the front panel to be in OSEIS position to fire OSEIS blasting caps or on some units to connect the OSEIS blasting cap to the binding posts on the side of the unit. The Boom Box OSEIS unit firmware needs to be placed into OSEIS mode. This can be done either by the Universal Encoder by a radio command or pressing the ‘\*’ button on the front panel. When the unit is in OSEIS mode the middle led will be green with the normal red flashes, when in standard mode the middle led will only flash red.

The Decoder unit is connected to a detonation Cap, an uphole geophone, a radio, and a battery. Whenever the Decoder is connected to the CAP or whenever a radio is used, the CAP can fire at any time. The unit has been designed to only fire the CAP when both the ARM and the Charge button are held and a valid start code from the Encoder is received. However, potentially there is a chance that the CAP can accidentally fire from either RF noise or a hardware failure. With this in mind the following is the normal operation procedure:

- The Shooter receives a valid GPS position for the new shot point.
- The Shooter verifies that there is no danger in accidental firing of hole and that all personnel and livestock are clear of the shot hole.
- The “Shooter” connects the unit to the uphole geophone, and Cap at the new shot hole.
- The Shooter normally checks the resistance of the geophone and the serial number of the OSEIS Cap.
- After all tests are satisfactory, the shooter either calls in that he is ready or uses the automatic ready signal to notify the recorder that he is ready to shoot.
- The Shooter then presses the “Arm” and “Charge” switches to get the box ready to fire.
- The Boom Box will automatically send back a “Ready Message” if enabled.
- The Encoder then sends a start code and the Decoder fires the Shot.
- The shooter then releases the “Arm” and “Charge” switch and disconnects from the hole.
- The Decoder unit automatically sends the Shot Status Message to the Encoder.
- The Shooter can check the status of the Box immediately after the Shot is fired.
  - Test LED = Green when Confirmation Time Break is valid.
  - GPS LED = Green when Uphole time is valid
  - The display will show the Uphole time, CTB value, and battery voltage.
- Shooter can check uphole time by pressing the Charge and GPS switch and looking at the information on the display.
- Using the BBview program connected to the Encoder unit the Uphole time and current status of the Decoder unit can be retransmitted to the Encoder. Go to the Records – Request by Radio menu in the BBview program.

## **8.4 Detailed OSEIS Decoder Operation**

### **8.4.1 Uphole Geophone Resistance Test**

- Press Test button on Front Panel to test Uphole Geophone
- Boom Box Compares reading with internal limits
- Flashes Test LED green 4 times if result is within entered limit
- Flashes Test LED red 4 times if result is outside entered limits
- Geophone resistance will be shown on the display.

### **8.4.2 OSEIS CAP Test**

- Press Test button and ARM switch on Front Panel to test CAP
- Flashes Test LED green 2 times if result is within entered limit
- Flashes Test LED red 2 times if result is outside entered limits
- CAP results will be shown on the display.

### **8.4.3 GPS**

- Press GPS button to acquire new GPS position – 10 seconds.
- GPS LED is RED for the first 4 seconds to show the GPS button was pressed.
- Solid green GPS LED with a differential position.
- Flashing green GPS LED with a non-differential position.
- Solid red GPS LED when a bad position was received.
- No GPS LED when no GPS information is received within 10 seconds of pressing the GPS button.
- The GPS LED's will stay this way until pressing the GPS button again or taking the next shot.

### **8.4.4 Fire Sequence – OSEIS Decoder**

- Press both the Arm and Charge switch to Arm the Boom Box and the OSEIS blasting cap. Arming the OSEIS blasting cap takes between 4 to 6 seconds.
- If the Ready Message is enabled the Ready Message will be automatically sent when the high voltage capacitor is fully charged and box is ready to fire.
- When valid Start Code is received from the Encoder unit, the shot sequence is started and the fire message is sent to the Cap line and the Shot is fired.
- Test LED will flash green for 4 seconds after shot for Confirmed Time Break is OK
- GPS LED will flash green after shot if first break is detected on Uphole geophone
- GPS LED will flash red after shot if first break is not detected
- The display will show Uphole time, CTB value, and Battery voltage.

## 9.1 Weight Drop Controller Mode System Description

### Weight Drop Controller Mode

One Boom Box unit is connected to the Weight Drop unit and one unit is connected to the Recording system. A radio system is connected to both units for communication.

The Boom Boxes connected to the Weight Drop unit and to the Recording system both need to be in the Weight Drop Mode.

When the operator activates the switch on the Weight Drop unit to ON or MOMENTARY, this will trigger the Boom Box that the fire process has started. The Boom Box will send a Ready Message over the radio at 100 milliseconds plus the Start Delay after the switch closure. The Boom Box at the recorder will receive the Ready Message and will issue a pre-start pulse on the Recorder Start line. The Boom Box at the recorder will also send a serial message containing the ID and GPS position information of the Boom Box at the Weight Drop unit. This information can be used for identification of the hit that is about to happen.

The Boom Box at the Weight Drop unit will turn the radio transmitter off according to the PTT Delay entry before transmitting the 2500 Hz warning tone. The 2500 Hz tone will continue until the HIT signal is detected on the ISO START input to the Boom Box. Once the HIT signal is detected, the Boom Box will transmit the HIT message to the Boom Box at the recorder. In response to the received HIT message, the Boom Box at the recorder will issue a TIME BREAK pulse to the recording system. The TIME BREAK PULSE will be issued at 13.6 milliseconds after the detection of the HIT signal at the Weight Drop unit.

### Weight Drop Mode – Automatic:

If the HIT signal was detected, the Boom Box at the Weight Drop unit will send the HIT message to the Boom Box at the Recorder. Then the Boom Box at the Weight Drop unit will wait the entered cycle time and then will automatically restart the process again.

If the Boom Box at the Weight Drop unit does not detect the HIT signal, the 2500 Hz tone is stopped after the amount of time in the Time Out entry has elapsed. The Boom Box will then wait until it detects another trigger signal from the Weight Drop unit ON or MOMENTARY switch to start the process over.

### Weight Drop Mode – Manual:

If the HIT signal was detected, the Boom Box at the Weight Drop unit will send the HIT message to the Boom Box at the Recorder. The Boom Box unit will then wait until it detects another trigger signal from the Weight Drop unit ON or MOMENTARY switch to start the process over.

**See Pocket PC Weight Drop Mode for setting up the Boom Box for the Weight Drop mode. Below are the connections to the Weight Drop unit and the Recording system. The Weight Drop timing diagram follows the connection diagrams.**

## 10.1 Air Gun Operation

### Air Gun Decoder Settings –

The Boom Box unit connected to the Air Gun Controller needs to be set in **Air Gun Mode**. The Air Gun Decoder setting is in the BBview program under the Decoder tab. The Navigation System for the air gun controller sends a pulse to the Boom Box when the boat is in position. The air gun controller pulse is connected to an Isolated input (Spare In) on the Boom Box Air Gun unit, pins 12 (active) and 13 (return). The Polarity of this input is Software selectable under Option Input in the Decoder tab.

When Spare In is toggled on the Boom Box by the Navigation System, the Boom Box in air gun mode will send a ready message to the Encoder Boom Box or the Universal Encoder.

When a Boom Box in Air Gun mode receives a Radio Start Code the unit will issue an isolated pre-start closure on pins 17 (active) and 18 (return) at 201 milliseconds prior to time break. This line the Recorder Start line can be used to start the air gun controller. The Recorder Start line can be set to active open (High) or closed (Low) by the Recorder Start Active selection in the BBview program under the Decoder tab. The Time Break line can be used to start the air gun controller with an isolated output on pins 14(active) and 15(return). The Time Break line can be set to active open (High) or closed (Low) by the Time Break Active selection in the BBview program under the Decoder tab with Boom Box firmware 01010171b or newer.

The Boom Box Geophone Lines will be connected to the Hydrophone and this signal will be sent back in the post report. Only 60 milliseconds of data will be sent back in the post report. The 60 millisecond window can be shifted with the window shift delay in the BBview program under the Decoder tab. The ARM and CHARGE switches do not have to be pressed for the Boom Box to issue time break.

The Air Gun Controller can be adjusted so the actual fire occurs within 60 milliseconds after time break.

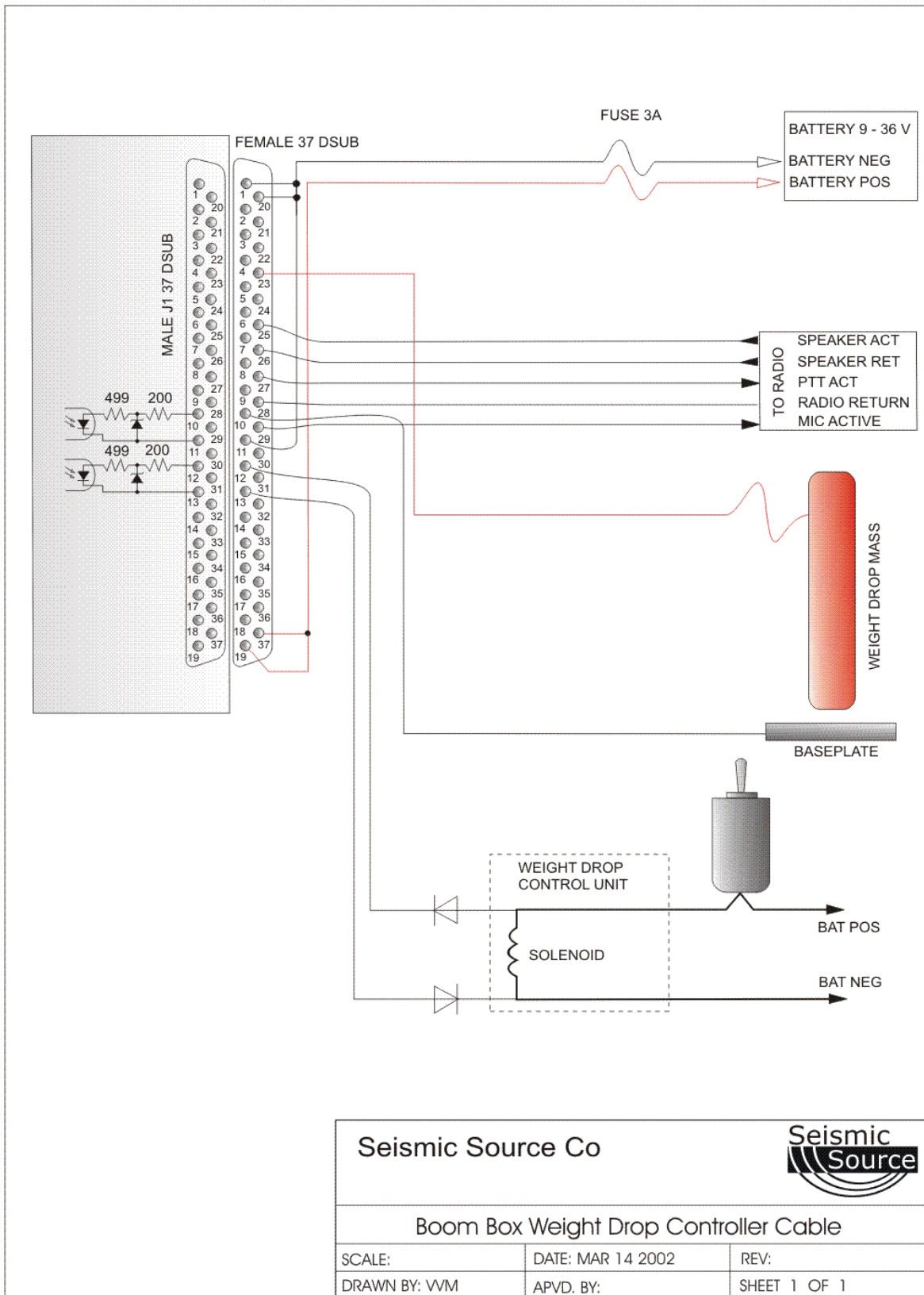
### Encoder Settings -

The Boom Box connected to the Recording System needs to be in **Dynamite Encoder Mode**, this selection is available in the BBview program under the Encoder tab. The **Ready Message Type** has to be set in Boom Box mode to be able to issue a pre-start pulse (pin 36 active and pin 1 ground) or closure (pins 17 active and 18 return) when a ready message is received. The polarity of the pre-start signal is determined by the Recorder Start Active entry in the Encoder tab of BBview. When Recorder Start Active entry is set to Low pin 36 will go low in the active state and pin 17 and 18 will close, when the entry is set to High pin 36 will go high in the active state and pin 17 and 18 will open.

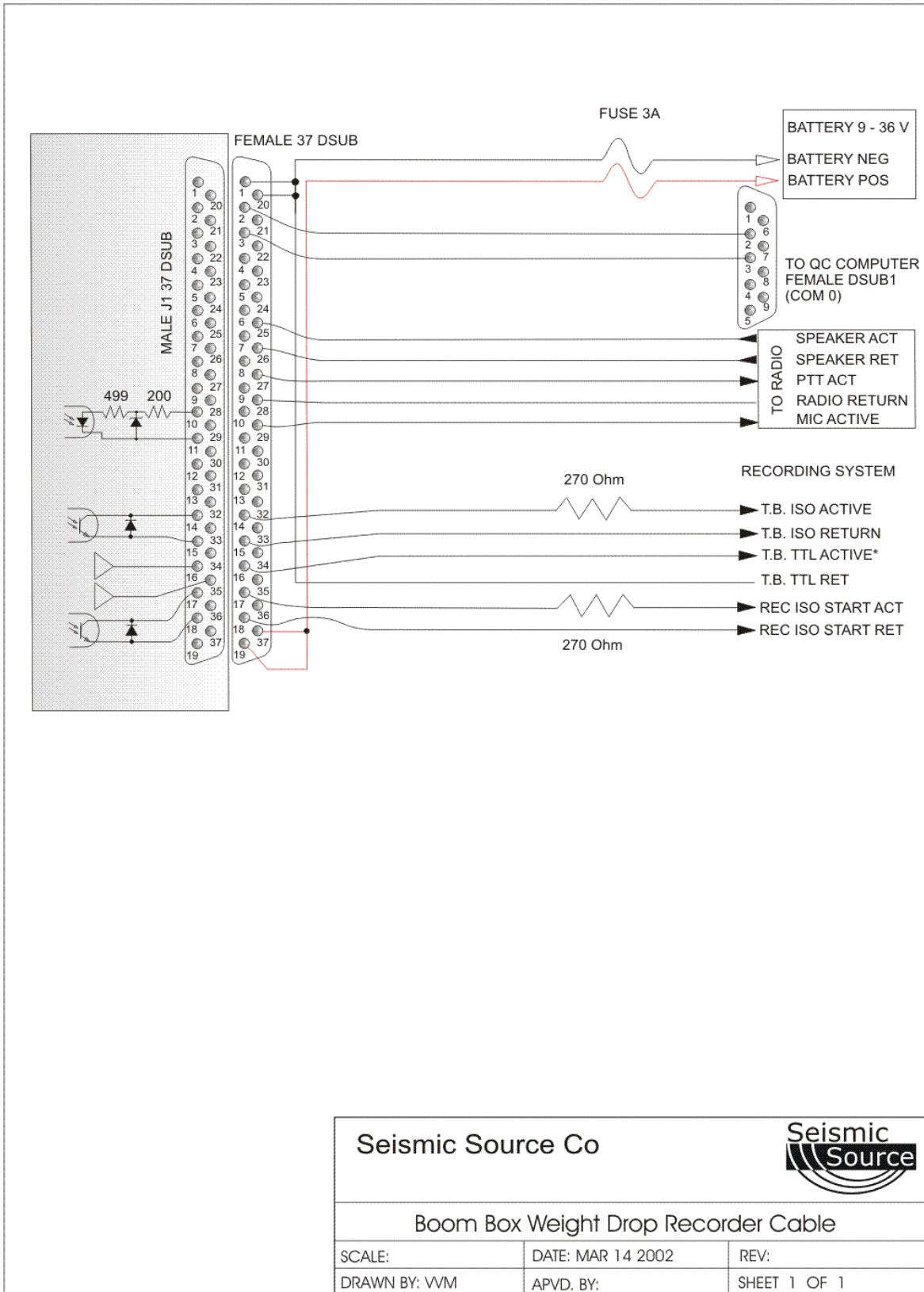
The Universal Encoder connected to the Recording System needs to be in the Source Type of Boom Box in the selected sequence. The Recorder Start entry in Encoder Parameters needs to be set to Low or High to issue a pre-start closure (pins 4 active and 17 return) from the Air Gun ready message. When Recorder Start entry is set to Low, pins 4 and 17 are closed in the active state, if the entry is high; pins 4 and 17 are open in the active state.

The Recording System start the Boom Box Encoder or Universal Encoder by toggling the remote start line or the Boom Box Encoder or Universal Encoder can start itself by wiring the Recorder Start (Pre-Start) output to the remote start input. After the Boom Box Encoder or Universal Encoder has the remote start line toggled the radio start command is issued.

The post report is a normal dynamite post report, but the Uphole wavelet comes from the Hydrophone that is connected to the Boom Box in Air Gun mode. The CTB value has been forced to 5 micro-seconds in Boom Box firmware 01010171b.





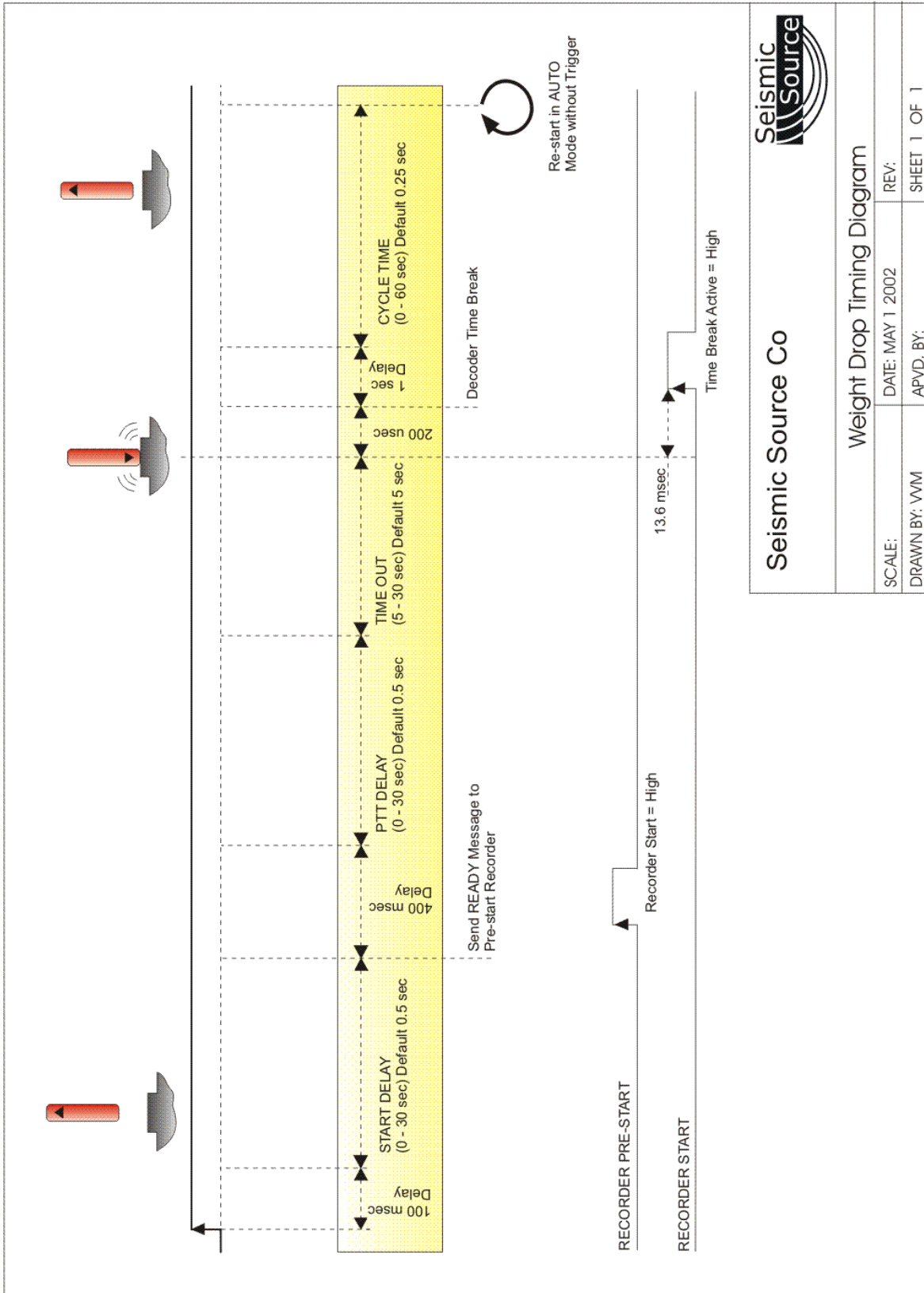


Seismic Source Co



### Boom Box Weight Drop Recorder Cable

SCALE:	DATE: MAR 14 2002	REV:
DRAWN BY: VWM	APVD. BY:	SHEET 1 OF 1



## 11.1 Boom Box Parameters

The Boom Box Unit uses internally stored parameters to determine the operation of the unit. All of the parameters are stored in nonvolatile memory and only need to be changed when an operational parameter changes. The internal parameters can only be modified using an external computer. Two different programs and methods are available for changing the operational parameters.

- Pocket PC interface –Windows CE computer- see section 12 of the manual
- Windows 98, Windows 2000, or Windows XP Computer – see section 13 of the manual

### 11.1.1 Boom Box Parameters

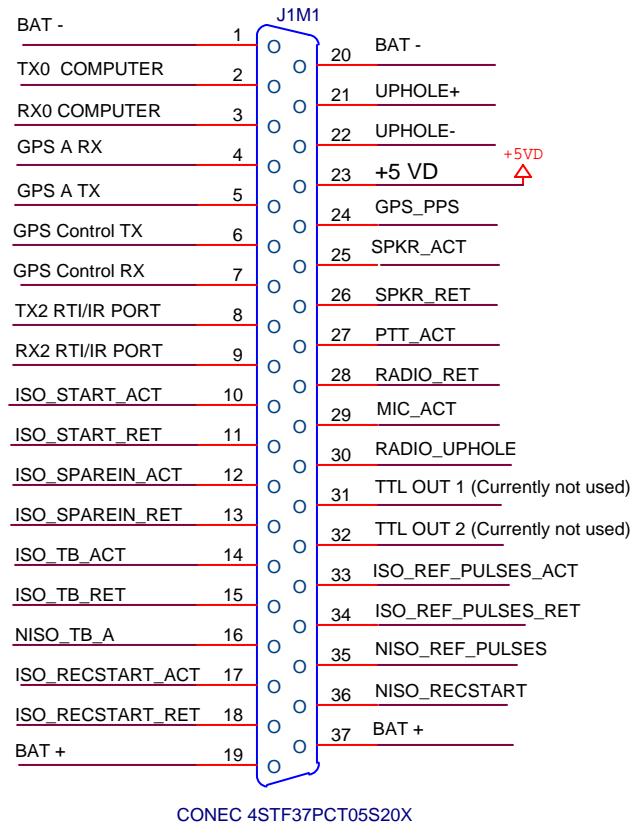
- **Unit ID (1-32)** – Used to set Box ID – ID # is used to identify records.
  - Requested Unit ID in Fire Command from Encoder must match Decoder Unit ID to Fire shot.
  - Other Brand Compatible Mode – When the other brand Encoder has Box ID number 15 in the start code that is sent to the Boom Box, the Boom Box decoder will allow any decoder box ID to always fire.
- **Crew ID (0-250)** – Used to set Crew ID.
  - Requested Crew ID in Fire Command from Encoder must match Decoder Unit ID to Fire shot.
  - Other Brand Compatible Mode – Crew ID 15 in Decoder will allow box to fire.
- **Start Code (0-3)** – Used to set Start Code.
  - Requested Start Code in Fire Command from Encoder must match Decoder Unit ID to Fire shot.
- **Shooter's Name (16 characters)** – Not currently used in Boom Box unit.
  - Only used in Pocket PC Boom Box program or BBView on Windows 98 or Windows 2000 computers. Used to identify data records.
- **Flag Number** – 8 digit number – 00000000 – 99999999
  - Data can be entered by shooter and is returned to recorder in the Shot Status Report.
- **Password (8 digit)** – Allows Pocket PC program to hide the Advanced entries from user.
  - 555 – Always allows the user to enter the Advanced entries.
- **Units to Fire** – Used by Boom Box in Encoder Mode.
  - Selects Decoder Unit ID to fire in next fire command.
  - All units are enabled at Boom Box on reset.
  - Command from ARAM, I-O, and Sercel overrides this entry and controls which box will fire.
- **Repeater ID (1-32)** – Used to designate which unit will be the repeater in Automatic Repeater Mode.
- **Encoder Start Delay** – (500msec – 10,000msec) Time between start from recorder and time break from Encoder. (500msec typical entry). See Appendix A.
- **Encoder Radio Start Delay** – (0 – 4,000 microseconds) used by Encoder Boom Box.
  - Delays when Decoder starts. Used to adjust timing between Encoder and Decoder.
  - 520 microseconds – typical value for direct connect with speaker reverse and microphone normal.
  - 1073 microseconds – typical value for Motorola GM300 radio with speaker reverse and microphone normal.

- Radio polarity will shift time by 156 microseconds.
- **Decoder Start Delay** – (0 – 4,000 microseconds) used by Decoder Boom Box.
  - Currently reset to zero on power up or reset.
  - Allow individual Decoders to be delayed.
  - Normally set to zero.
- **Encoder Radio Ref Delay** – (0 – 4,000 microseconds) used by Encoder Boom Box.
  - Delays Analog Uphole signal (AUX1) to recorder.
  - Use this entry to align the Analog Uphole pulses to the Reference pulses on AUX2.
    - 1 sec – 4 msec pulse to show reception of shot status report.
    - 1.25 sec – 4 msec pulse if CTB is received.
    - 1.5 sec – Start of the Uphole signal. 60 msec window of the Uphole data.
  - 520 microseconds – typical value for direct connect with speaker reverse and microphone normal.
  - 1073 microseconds – typical value for Motorola GM300 radio with speaker reverse and microphone normal.
  - Radio polarity will shift time by 156 microseconds in Boom Box Mode.
- **Uphole Blank Time** – 0 – 99 msec, in 1 msec increments.
  - Sets the Uphole data to zero for the selected amount of time.
  - Typically set = 0 msec.
- **Uphole Window Delay** – 0 – 127 msec.
  - Delays when the 60 msec Uphole window is recorded. Entry allows recording data up to 127+60=187 msec.
  - Entry of 255 allows automatic Uphole Window Delay. The first pick is placed in the middle of the 60 msec window sent back to the Encoder.
  - Typically set = 0msec.
- **Operating Mode**
  - Encoder
  - Decoder
  - Master
  - Slave
  - Impulse
  - AirGun
- **Recorder Type**
  - SERCEL - Boom Box Encoder will respond to the Sercel recording system messages.
  - Generic 19200 – Boom Box Encoder will respond to the ARAM, Ascend Geo, I-O, and other recording system protocol messages.
  - Generic 9600 – Boom Box Encoder will respond to the ARAM recording system protocol messages and send the proprietary Seismic Source ready message to the ARAM system.
  - RSR – Boom Box Encoder will send messages specially formatted for the I-O RSR recorder.
- **Ready Message**
  - None
  - Boom Box Ready Message
  - Advance II – Transmits Pelton Co. Shot Pro, Advance II type ready message
  - VibPro – Capable of transmitting Pelton Co. VibPro type ready message and start from a VibPro Encoder start code or Universal Encoder in ShotPro VP mode.

- **Report Type** – Not currently operational. Boom Box Decoder always sends shot status report.
  - **VCO DAC Value** – Not currently used by the Boom Box.
  - **Auto Shut Down** – (0-255 minutes)
    - Decoder unit will automatically power down after this time to conserve battery power.
    - Any switch movement will reset the time to shut down.
    - Normally set to 10 minutes.
    - 0 is always ON.
  - **First Break Threshold**
    - Selects the algorithm for finding the first break of the Uphole geophone data.
    - 0 – Computed threshold from the Uphole data with back up to nearest zero crossing. Typical Selection- Use with large uphole signals – Large charges and shallow holes – typically good for all uphole data
    - 1 – Average of background noise x 2 with back up to nearest zero crossing. Use with small charges and deep holes
    - 2 – Average of background noise x 3 with back up to nearest zero crossing. Use when trying to detect very small uphole signals with large background noise.
    - 3 – Peak of background noise x 2 with back up to nearest zero crossing.
    - 4 – Computed threshold from the Uphole data.
    - 5 – Average of background noise x 2.
    - 6 – Average of background noise x 3.
    - 7 – Peak of background noise x 2.
    - Normally set to 0 – Computed threshold from the Uphole data with back up to nearest zero crossing.
- 0 – Data Peak / 2 with Backup  
 1 – Data Peak / 5 with Backup  
 2 – Noise Average \* 3 with Backup  
 3 – Noise Peak \* 2 with Backup  
 4 – Data Peak / 2  
 5 – Data Peak / 5 with Backup  
 6 – Noise Average \* 3  
 7 – Noise Peak \* 2
- **Interface Function:**
    - GPS PPS Active – High/Low – not currently used.
    - Recorder Start Active – not currently used. High – low to high transition will start external recorder.
    - Time Break Active – Encoder Only.
      - High – low to high transition at time 0 when shot is fired.
      - Low – high to low transition at time 0 when shot is fired.
      - Decoder always-active LOW.
    - Remote Start Active – signal to Boom Box Recorder, which starts the Fire Command sequence.
      - High – low to high starts fire command sequence.
      - Low – high to low starts fire command sequence.

- Speaker Polarity – selects speaker polarity for the radio reception. Typically the Boom Box will receive data better on one polarity than the other. A distance test should be performed to determine optimum performance.
  - Direct connect – speaker reversed worked best.
  - Motorola GM300 – speaker reversed worked best.
- Microphone Polarity – Sometimes it is better to switch microphone polarity than speaker polarity.
  - Normally set to Normal.
- **Geophone Limit Min** (0 – 870) ohm. Sets minimum limit in ohms for the uphole geophone resistance measurement. Determines if the Boom Box Decoder test the uphole geophone as good or bad. Flashes Test LED 4 times green for good or flashes 4 times red for bad.
  - Typical = 50 ohm – depends on uphole geophone.
- **Geophone Limit Max** (0 – 870) ohm. Sets maximum limit in ohms for the uphole geophone resistance measurement. Determines if the Boom Box Decoder test the uphole geophone as good or bad. Flashes Test LED 4 times green for good or flashes 4 times red for bad.
  - Typical = 500 ohm – depends on uphole geophone.
- **Cap Limit Min** (0 – 100) ohm. Sets minimum limit in ohms for the blasting cap resistance measurement. Determines if the Boom Box Decoder test the blasting cap as good or bad. Flashes Test LED 2 times green in good or flashes 2 times red for bad.
  - Typical = 2 ohm
- **Cap Limit Max** (0 – 100) ohm. Sets maximum limit in ohms for the blasting cap resistance measurement. Determines if the Boom Box Decoder test the blasting cap as good or bad. Flashes Test LED 2 times green for good or flashes 2 times red for bad.
  - Typical = 30 ohm

## 12.1 Installation



### BOOM BOX 37-PIN CONNECTOR

PIN	FUNCTION
1	<b>BAT -</b> - Battery Ground.
2	<b>TX0 COMPUTER</b> – RS-232 serial output. Data from Boom Box to Computer. Connect to COM port of computer running the BBview program. 19200 BAUD.
3	<b>RX0 COMPUTER</b> – RS-232 serial input. Data to Boom Box from Computer. Connect to COM port of computer running the BBview program. 19200 BAUD.
4	<b>See GPS connections at end of this chapter.</b>
8	<b>TX2 RTI/IR PORT</b> – RS-232 output. Data from Boom Box to Recording System. Recording system selected by software menu.
9	<b>RX2 RTI/IR PORT</b> – RS-232 input. Data to Boom Box from Recording System. Recording system selected by software menu. For this pin to be active JMP2 has to be shorted on pins 1 and 2.
10	<b>ISO_START_ACT</b> – Isolated input. Isolated Start Active. Recorder remotely starts the Boom Box in Encoder mode. Isolated with 6N137 optocoupler. Polarity selected by software menu.
11	<b>ISO_START_RET</b> - Isolated Start Return.

- 12 **ISO\_SPARE\_IN\_ACT** – Isolated input. Isolated Spare IN Active. Used in Weight Drop Mode to start the Weight Drop process. Connected to the start switch. Isolated with 6N137 optocoupler. Polarity selected by software menu.
- 13 **ISO\_SPARE\_IN\_RET** – Isolated Spare IN Return.
- 14 **ISO\_TB\_ACT** – Isolated output. Isolated Time Break Active. Used in Encoder and Decoder modes. Isolated with 4N32 optocoupler. Polarity selected by software menu in Encoder Mode. Polarity is always active low in Decoder mode.
- 15 **ISO\_TB\_RET** – Isolated Time Break Return.
- 16 **NISO\_TB\_A** – Non-isolated Time Break. Used in Encoder and Decoder modes. Polarity selected by software menu in Encoder Mode. Polarity is always active low in Decoder mode. +3.3 volts to 0 volts.
- 17 **ISO\_RECSTART\_ACT** – Isolated output. Isolated Recorder Start Active. Pre-Start pulse in Encoder, Master, Repeater, and Slave modes. Isolated with 4N32 optocoupler. Polarity selected by software menu.
- 18 **ISO\_RECSTART\_RET** – Isolated Recorder Start Return.
- 19 **BAT +** - Not connected on Version 2 cards - Jumper J12 on board if needed.
- 20 **BAT -** - Battery Ground.
- 21 **UPHOLE +** - Input. Uphole Geophone connection. -1.566 volts to +1.526 volts.
- 22 **UPHOLE -** - Input. Uphole Geophone connection.
- 23 **+5VD** – Output. +5 volts digital.
- 25 **SPKR\_ACT** – Input. Speaker Active to Boom Box from external radio speaker output. -3.12 volts to +3.04 volts.
- 26 **SPKR\_RET** – Speaker return. Speaker return from external radio speaker return.
- 27 **PTT\_ACT** – Output. Push To Talk Active from Boom Box to external radio.
- 28 **RADIO\_RET** – Radio return. Radio return from external radio ground
- 29 **MIC\_ACT** – Output. Microphone Active from Boom Box to external radio microphone input. - 2.43 volts to + 2.43 volts.
- 30 **RADIO\_UPHOLE** – AUX 1 output. Encoder, Master, and Repeater produce the Uphole signal after the decoder fires the shot and returns the post report. - 1.65 volts to +1.65 volts.
- 31 **TTL\_OUT 1** – Not currently used.
- 32 **TTL\_OUT 2** - Not currently used.
- 33 **ISO\_REF\_PULSES\_ACT** – AUX 2 isolated output. Reference pulses Active. Occurs in Encoder, Master, and Repeater modes at 1, 1.25, and 1.5 seconds after the Fire sequence. Uses a 4N32 optocoupler.
- 34 **ISO\_REF-PULSES\_RET** – Reference pulses Return. Pins 33 and 34 are used to enable or disable the infrared port. Pins 33 and 34 shorted and the infrared port is disabled and the data can go the recording system. Pins 33 and 34 open and the infrared port are enabled.
- 35 **NISO\_REF\_PULSES** – AUX 2 non-isolated output. Reference pulses. Occurs in Encoder, Master, and Repeater modes after the Fire sequence. 0 to +3.3 volts.
- 36 **NISO\_RECSTART** – Non-isolated output. Recorder Start Active. Pre-Start pulse in Encoder, Master, Repeater, and Slave modes. Polarity selected by software menu. +3.3 volts to 0 volts.
- 37 **Not connected on Version 2 boxes -BAT +** - - Battery positive – DC power input on Boom Box (10-37 volts DC). Jumper J11 on board if needed.



### **GPS Connections:**

#### **External GPS with external corrections.**

4	<b>GPS A RX</b> – Not used.
5	<b>GPS A TX</b> – RS-232 serial input, 9600 BAUD. GPS data from external GPS Receiver to Boom Box, GGA, GSA, GGK.
6	<b>GPS Control TX</b> – Not used.
7	<b>GPS Control RX</b> – Not used.
24	<b>GPS_PPS</b> – Input. PPS pulse from external GPS receiver.

**External GPS with internal corrections.** Not currently available.

### **BOOM BOX 10-PIN CONNECTOR**

<b>PIN</b>	<b>FUNCTION</b>
A	<b>RADIO_RET</b> – Radio return. Radio return from external radio ground
B	<b>BAT + - -</b> Battery positive – DC power input on Boom Box (10-37 volts DC).
C	<b>MIC_ACT</b> – Output. Microphone Active from Boom Box to external radio microphone input. - 2.43 volts to + 2.43 volts.
D	<b>UPHOLE - -</b> Input. Uphole Geophone connection.
E	<b>GPS A TX</b> – RS-232 serial input, 9600 BAUD. GPS data from external GPS Receiver to Boom Box, GGA, GSA, GGK.
F	<b>UPHOLE + -</b> Input. Uphole Geophone connection. -1.566 volts to +1.526 volts.
G	<b>SPKR_ACT</b> – Input. Speaker Active to Boom Box from external radio speaker output. -3.12 volts to +3.04 volts.
H	<b>BAT - -</b> Battery Ground.
J	<b>PTT_ACT</b> – Output. Push To Talk Active from Boom Box to external radio.
K	<b>SPKR_RET</b> – Speaker return. Speaker return from external radio speaker return.

## 13.1 Pocket PC

The Boom Box program on the Pocket PC machine is used to:

- Load operating parameters
- View uphole data
- View current status of resistance test
- Load and store all uphole information from Boom Box

### 13.1.1 Software Setup

The BOOMBOX.EXE program must be placed in the /MOBILE DEVICE/MyPocketPC/WINDOWS/StartMenu/ subdirectory of the Pocket PC computer to be accessible from the Start Menu. To get access to the Pocket PC directories, please install Microsoft Active Sync on your Windows 98/2000 PC and setup "Partnership" with the Pocket PC computer (iPAQ).

The Active Sync allows you to backup/restore your iPAQ data, access to files on iPAQ and share uphole data records, collected by the iPAQ, with the BBView program, residing on the Windows 98/2000 computer.

### 13.1.2 Infrared Operations

- With the Infrared port selected JMP2 (2-3) on the Boom Box, the Pocket PC computer communicates through the Infrared port.
- Start Boom Box program
- Select Bbox Menu
- Point infrared port on Pocket PC computer to the infrared on the Boom Box
- Wait until the Pocket PC computer discovers the Unit ID number and Crew number of the Boom Box.
- The Boom Box will now communicate with the Pocket PC computer.

### 13.1.3 Pocket PC Operation

**On Pocket PC:** Press Start then BoomBox to execute BoomBox program.



**BBox Menu** – Used to load, compare and transmit setup parameters

- First point Infrared port on Pocket PC computer at Boom Box Infrared port. Pocket PC computer must discover Box ID for proper operation.
- Send Setup – Transmits all parameters from iPAQ to Boom Box except Unit ID and Crew number.
- Compare – Compares parameters from iPAQ to Boom Box
- Req. Setup – iPAQ receives parameters from Boom Box
- Send New Id & Crew – iPAQ transmits new Unit ID#, and new Crew Number
- Get All Records – iPAQ requests all records out of the Boom Box. Takes about 2 minutes.

This menu can be used to verify communication to the Boom Box unit.

**Shot menu** Point iPAQ's infrared at Boom Box's window. The latest shot information will be downloaded. Use the scroll buttons to look at previous records.

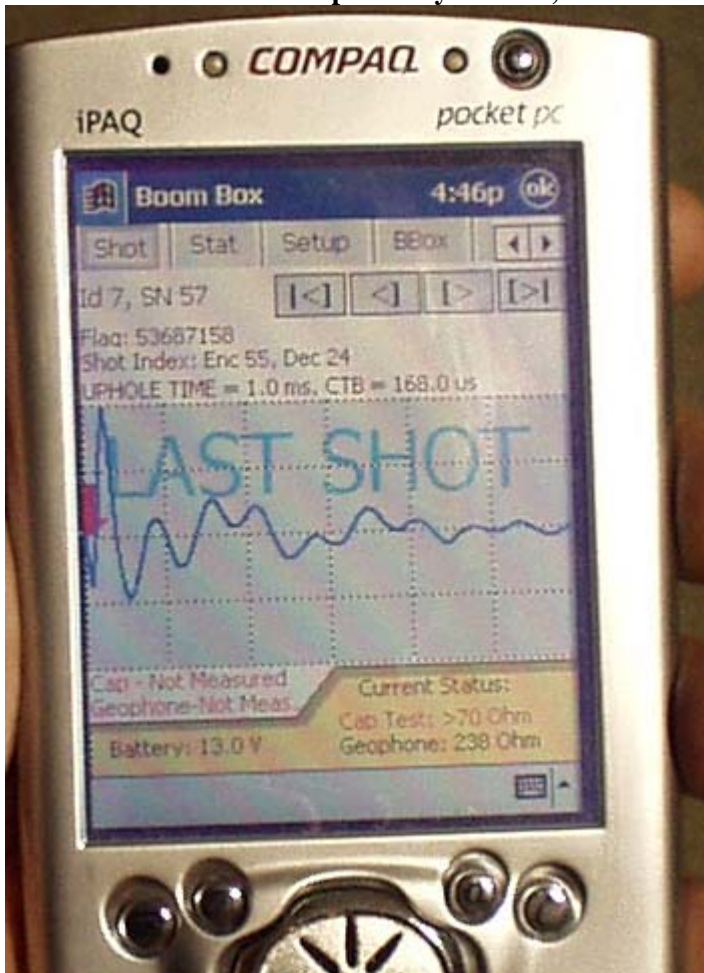
The **current Geophone** and **Cap resistance** are also shown in this menu.

Also the previous data from the last shot is shown.

This is the menu that is normally used by the shooter.

When in the Shot Menu, pointing the infrared device of the pocket PC at the Boom Box's infrared port will automatically update the screen.

**The user does not need to press any buttons, or make any selections.**



Last Shot information is shown along with uphole graph.

Current Status is shown at bottom of screen

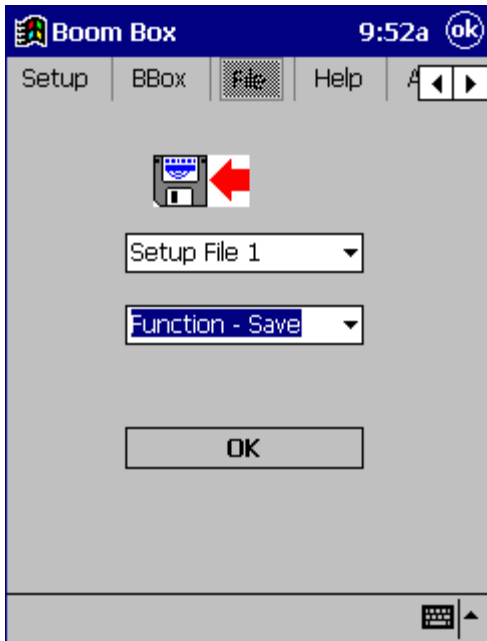
- Cap Resistance
- Geophone Resistance
- Battery voltage

**Setup Menu** – Used to setup operational parameters, see Boom Box parameters.

The small keyboard on the pocket PC can be enabled or disabled by pressing the small arrow at the bottom right of the screen.

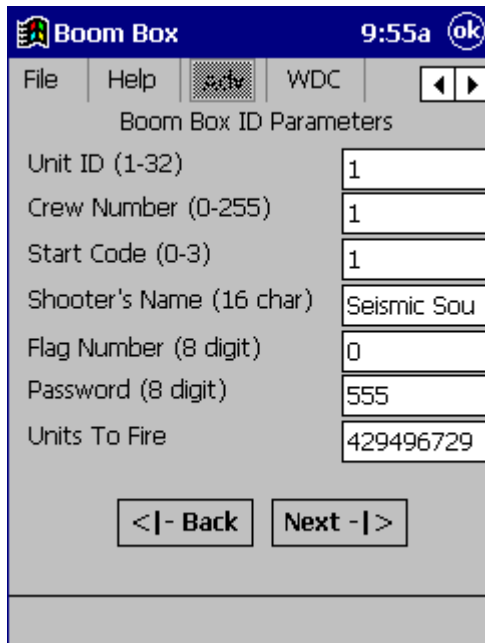
**File Menu** – Used to save and reload setup from Disk

- 3 files are used to Recall (Load) or Save Data
- Select File to use
- Select Function
- Press OK



**ADV Menu** – Advance Menu – Used to setup operational parameters, see Boom Box parameters. The Advance Menu allows entry of all of the Boom Box parameters.

- Password of 555 allows entry to Advance Menu.



The screenshot shows a graphical user interface for the 'Boom Box' system. At the top, there is a title bar with the 'Boom Box' logo, the time '9:55a', and an 'ok' button. Below the title bar is a menu bar with 'File', 'Help', 'ADV' (highlighted), and 'WDC'. To the right of the menu bar are left and right arrow buttons. The main area is titled 'Boom Box ID Parameters' and contains several input fields: 'Unit ID (1-32)' with value '1', 'Crew Number (0-255)' with value '1', 'Start Code (0-3)' with value '1', 'Shooter's Name (16 char)' with value 'Seismic Sou', 'Flag Number (8 digit)' with value '0', 'Password (8 digit)' with value '555', and 'Units To Fire' with value '429496729'. At the bottom of the form are two buttons: '<|- Back' and 'Next -|>'. The entire interface is enclosed in a grey border.

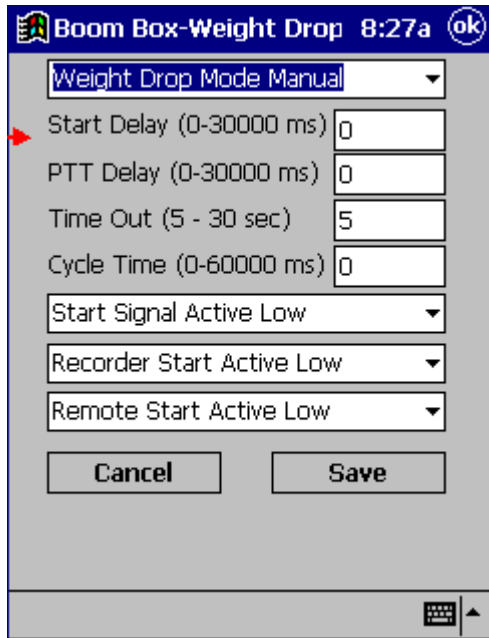
Boom Box ID Parameters	
Unit ID (1-32)	1
Crew Number (0-255)	1
Start Code (0-3)	1
Shooter's Name (16 char)	Seismic Sou
Flag Number (8 digit)	0
Password (8 digit)	555
Units To Fire	429496729

**Weight Drop Menu** – Allows entry of the parameters used in the Weight Drop mode.

This mode can be used with any source, which has a switch closure for an output. It can be used when using Weight drop sources or Hammer switches.

The Weight Drop menu sets up the entries used in this mode.

See the timing diagram on the next page

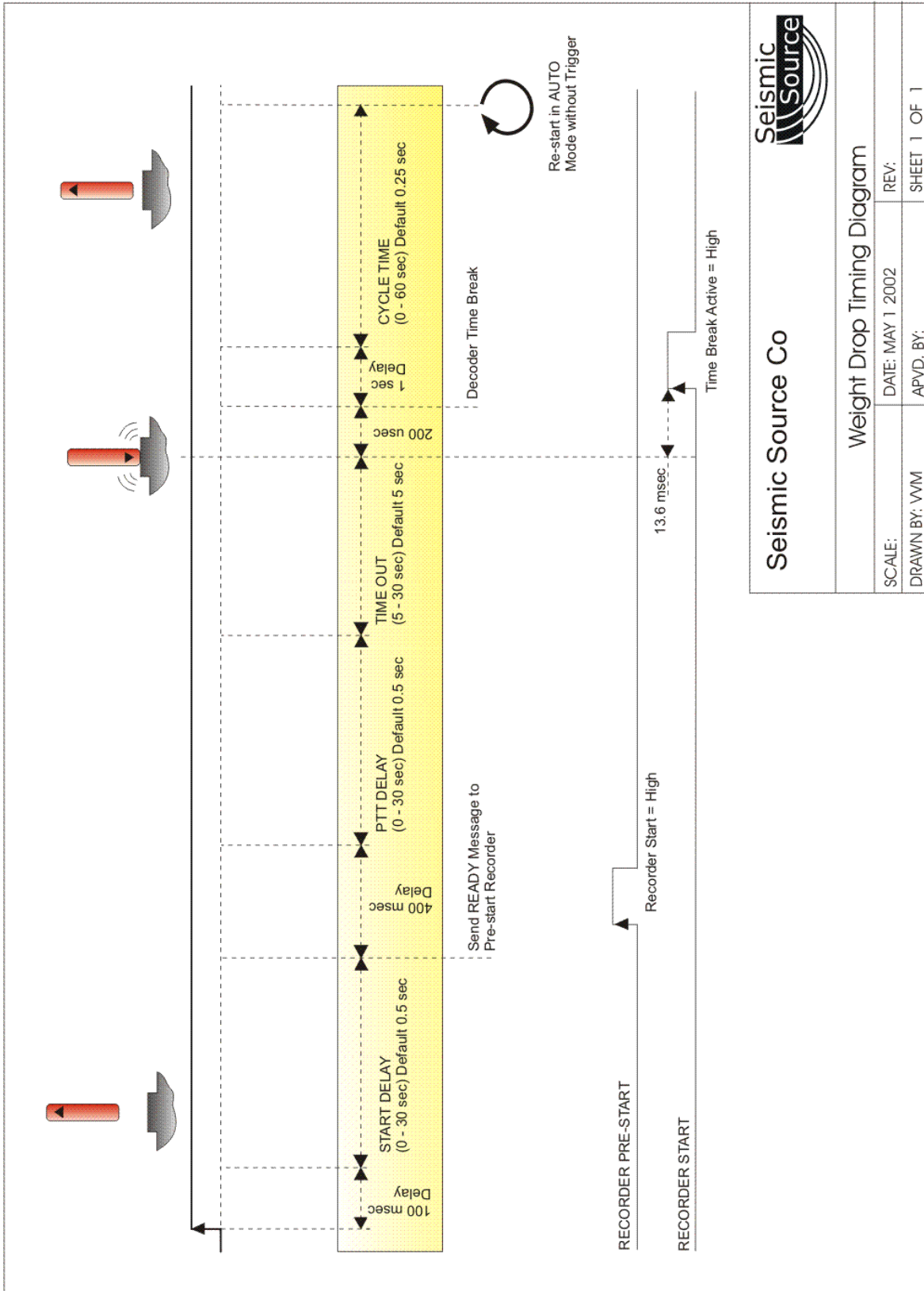


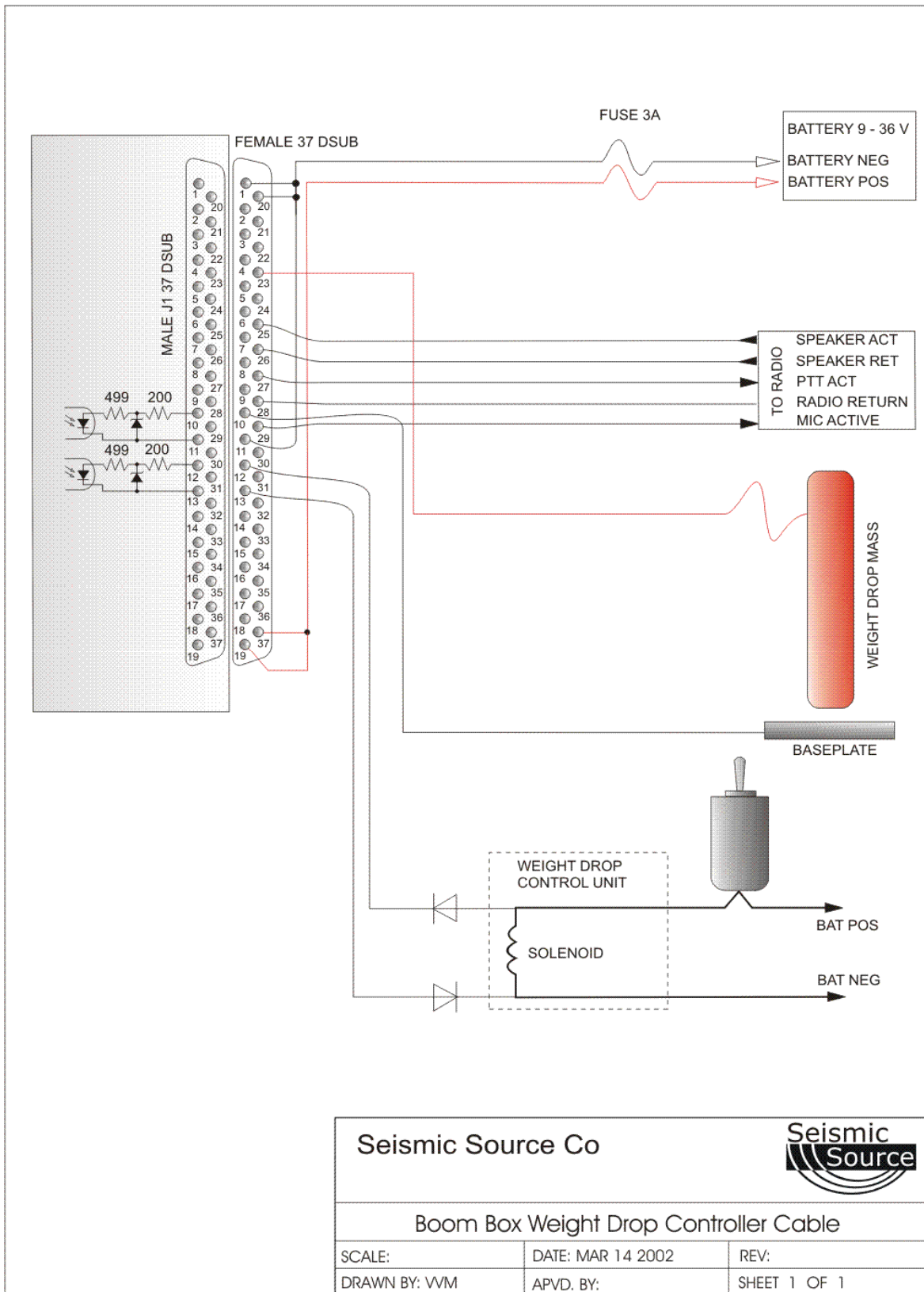
The screenshot shows a software window titled "Boom Box-Weight Drop 8:27a" with an "ok" button in the top right corner. The window contains several configuration options, each with a label and a corresponding input field or dropdown menu. A red arrow points to the "Start Delay" field. The options are:

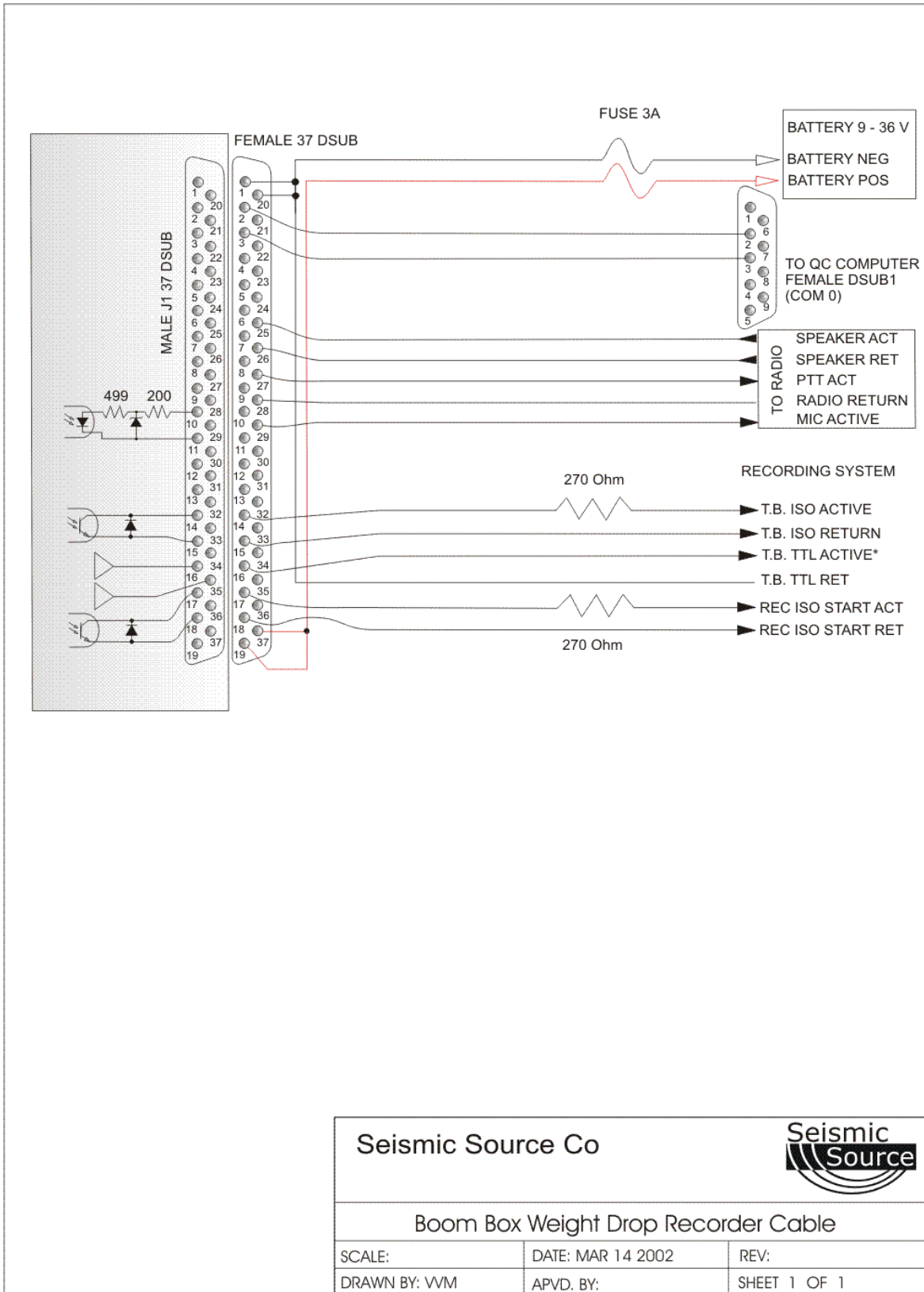
- Weight Drop Mode Manual (dropdown menu)
- Start Delay (0-30000 ms) (text input field with value 0)
- PTT Delay (0-30000 ms) (text input field with value 0)
- Time Out (5 - 30 sec) (text input field with value 5)
- Cycle Time (0-60000 ms) (text input field with value 0)
- Start Signal Active Low (dropdown menu)
- Recorder Start Active Low (dropdown menu)
- Remote Start Active Low (dropdown menu)

At the bottom of the window are two buttons: "Cancel" and "Save". A status bar at the very bottom shows a small icon and a right-pointing arrow.









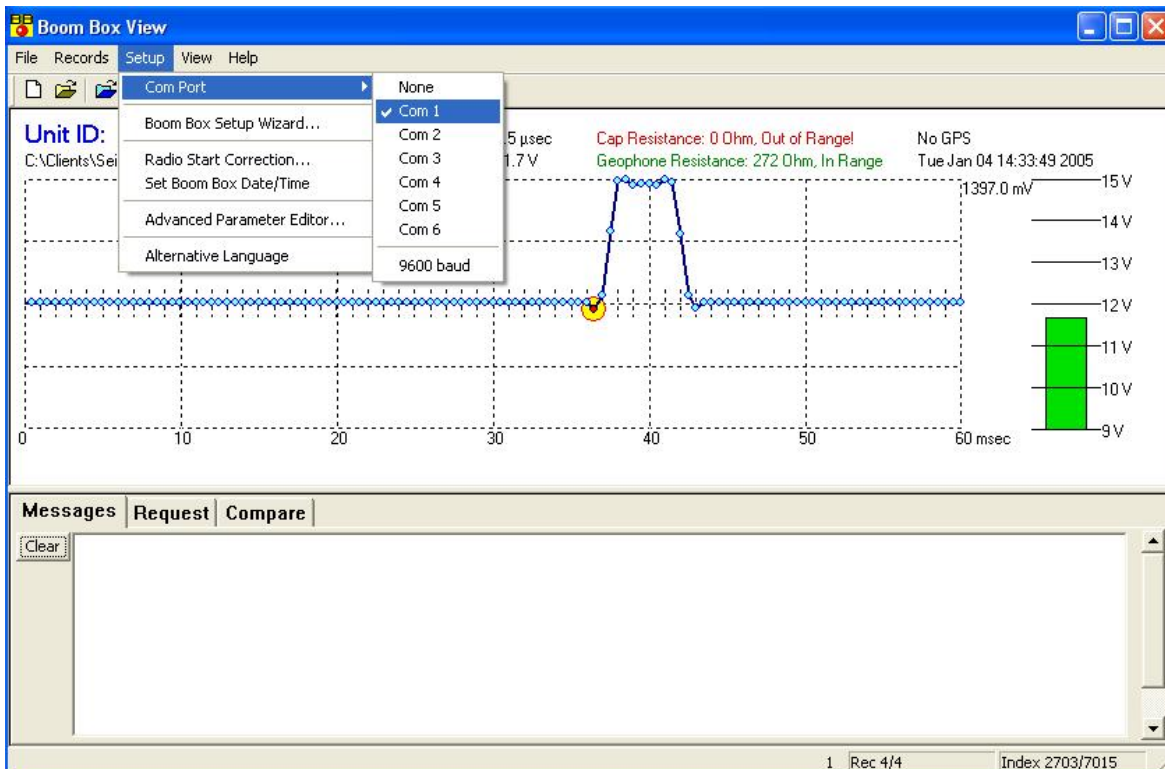
## 14.1 Computer Software

### Version 2.57 Operation

The BBview program allows the user to access all of the features of the Boom Box system. Many of the advanced features can only be accessed using the BBview program

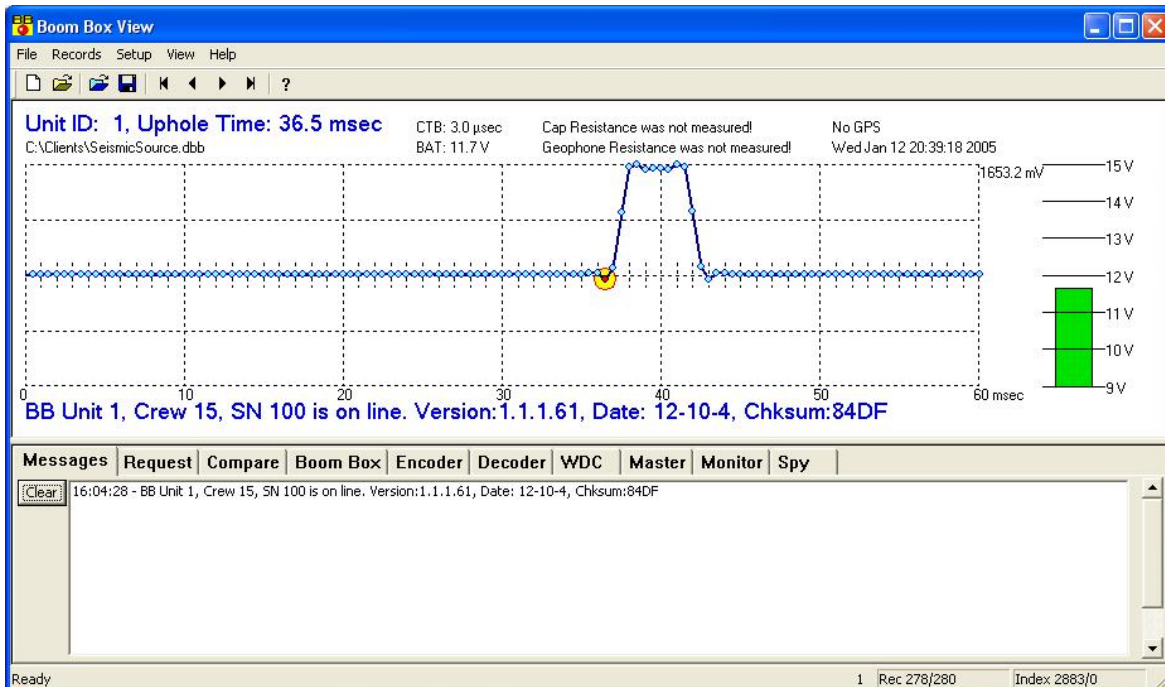
**BBView:** operates on a Windows NT, 2000 and XP computer.

- The serial port of the computer is connected to COM 0 of the Encoder.
- Start the BBView program on the computer.
- Select correct COM port on the computer
  - Setup
    - Main Port
      - Select COM port used



### 14.1.1 Uphole Data Screen

The main screen of the BBview program shows the data received from the Boom Box Decoder



- The Uphole data from the Decoder unit is displayed graphically. The wavelet is auto scaled so the maximum is shown at full scale on the graph. The actual amplitude of the pulse is shown in the top right corner. (1397.8 mV is shown in the above example)
- The Geophone Resistance
- The Cap Resistance
- GPS information
- Battery information
- Uphole Time
- Confirmation Time Break (CTB)
- Unit ID #, Crew #, Serial # of the Decoder Unit
- Record (Rec) Shows how many records are stored in the file and which # is currently being shown

### 14.1.1 File menu



- **New File** – used to open new record file for uphole data. All uphole data received is automatically saved to the database.
- **Open File** – Opens Saved File
- **Open PDA File** – allows to open/view data saved on Pocket PC and add to the database.
- **Export Records** – Exports uphole data to column separated ASCII file.
- **Open Parameters** – opens stored parameter file.
- **Save Parameters** – saves current parameters to a file.
- **Export Parameters** – Saves current parameters in a text file

### 14.1.2 Records Menu

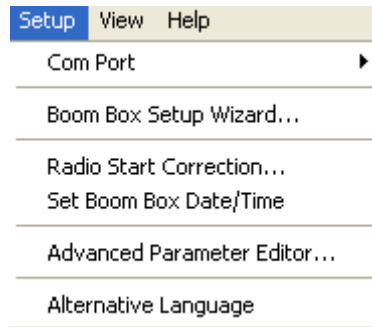
Selection is used to view the stored Boom Box records in memory



- **To Beginning** – moves plot to beginning of file
- **Previous** – moves to previous record
- **Next** – moves to next record
- **To End** – moves to the last record
- **Re-sorting** – allows the data base to be sorted by the encoder index number and the decoders index number

### 14.1.3 Setup Menu

#### Adjusts Boom Box Parameters



- **Com Port** - The serial port of the computer is connected to COM 0 of the Encoder
- **Setup Wizard** – Allows to easily changing modes and setting of Boom Box system.
- **Radio Start Correction** – The Boom Box system automatically monitors the two-way radio start delay and verifies that it is within the desired limits.
- **Set Boom Box Date/Time** - When the Boom Box is connected to a GPS receiver the GPS time is automatically used to update the internal clock of the Boom Box system. When not using a GPS receiver the time in the Boom Box unit must be set. This selection is used to send the computer date and time to the Boom Box unit.
- **Advanced Parameter Editor** – Shows all operation parameters
- **Alternative Language** – BBview is capable of displaying different languages for Key Menus. Edit the **BBview.txt** file with the Language of your choice



#### 14.1.4 Boom Box Setup Wizard

The wizard helps the user setup the Boom Box unit for the desired operation. Many of the entries in the unit are only used in specific modes of operation and may not be important for the desired use. The Wizard only shows the parameters, which are important for the operating mode selected.

It should be noted that all of the parameters entered in the computer would be loaded into the Boom Box unit. So it is important that all of the computer entries are checked before storing them to the Boom Box unit.



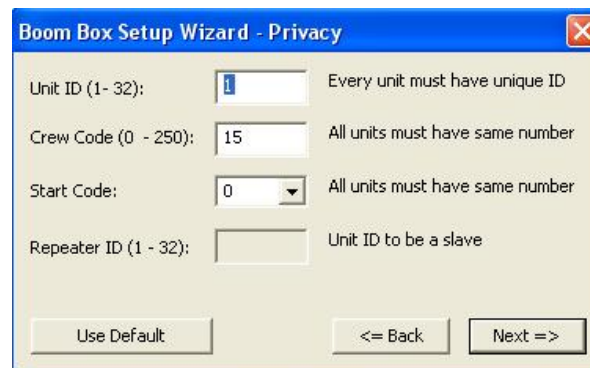
- **Download last shot** – Retrieves last shot taken in the Boom Box
- **Change Boom Box Parameters** – Adjusts Boom Box parameters
- **Change Repeater ID** – Select which Boom Box to use as a repeater



- **Edit parameters from a computer file** - This function allows the user to open and modify a parameter file stored on the computer
- **Edit parameters from a Boom Box** – This function loads the parameters from the boom box to the computers memory
- **Use parameters stored in the program** – Allows user to modify the parameters already in memory
- **Use default Parameters** – Loads default parameters into the program buffer



- **Dynamite Encoder** – Sets the Boom Box to work in the Recording Truck
- **Dynamite Decoder** – Sets the Boom Box to fire a shot
- **Dynamite Master** – Sets the Boom Box in Master Encoder Mode, used for Repeater Mode
- **Dynamite Monitor** – Boom Box receives start codes and issues pre-start pulse
- **Weight Drop Controller** – Boom Box works with Weight Drop Machines



- **Unit ID** – Select the Unit ID of the Encoder Box
- **Crew Code** – The Crew Code of the Encoder must match the Crew Code of the Decoder
- **Start Code** – The Start Code of the Encoder must match the Start Code of the Decoder





**Recorder Type** – Set Recorder type according to Recorder connected. Sercel for Sercel Recorders. Generic 19200 for ARAM,I/O, and other Recorders. Generic 9600 for ARAM Recorders



**GPS PPS Active** – Not Used

**Recorder Start Active** – Output, High = Opto Active Open, Low = Opto active closed

**Time Break Active** – Output, High = Opto Active Open, Low = Opto active closed

**Remote Start Active** – Input active state of Opto to start Boom Box Encoder

**Speaker Polarity** – Select same speaker polarity on all Boom Boxes

**Microphone polarity** – Select same microphone polarity on all Boom Boxes



**Conclusion** – Verifies Parameter Setup

**Boom Box Setup Wizard - Weight Drop Controller**

Weight Drop Controller Cycle Mode: Automatic

Start Delay (0-30000 msec): 0

PTT Delay (0-30000 msec): 251

Time Out (5-30 sec): 5

Cycle Time (0-60000 msec): 0

<= Back    Next =>

**Weight Drop Controller Cycle Mode** – Automatic or Manual  
**Start Delay** – Time from starting pulse till ready message sent to Encoder for pre-start  
**PTT Delay** – Time from ready message before starting 2500 Hz signal  
**Time Out** – Length of time to wait for hit signal before stopping the cycle  
**Cycle Time** – Length of time to wait after the hit signal before re-starting the cycle in automatic mode

**Boom Box Setup Wizard - Hardware**

Start Signal Active: High

Recorder Start Active: High

Weight Hit Active: High

<= Back    Next =>

**Start Signal Active** – Input active state of Opto to start Weight Drop Cycle  
**Recorder Start Active** – Output, High = Opto Active open Low = Opto Active Closed  
**Weight Hit Active** – Input Active State of Opto when Weight Drop hits

**Boom Box Setup Wizard - Conclusion**

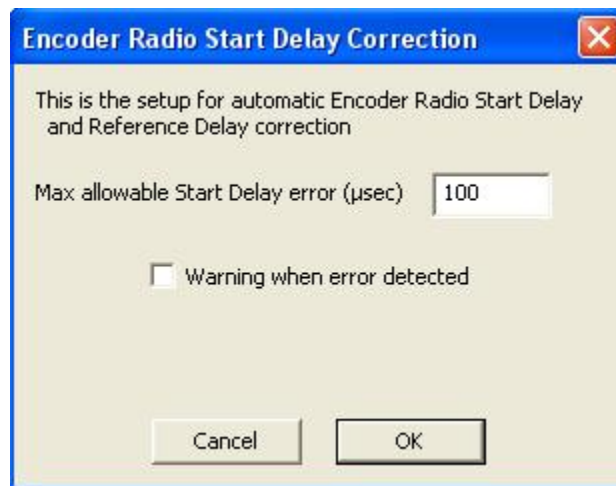
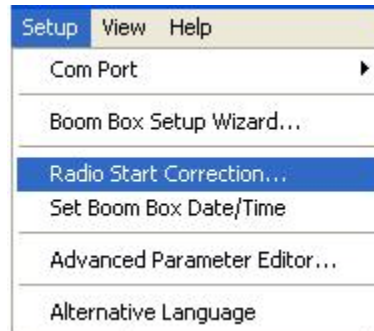
Parameter	Value	Unit
Op. Mode	WDC-AUTO	
Unit ID	1	
Start Delay	0	msec
PTT Delay	0	msec
Time Out	0	sec
Cycle Time	0	msec
Hardware Interface Chksum	124	

Cancel    <= Back    Save

**Conclusion** - Verifies Parameter Setup

## Setup – Radio Start Correction

The Boom Box system automatically monitors the two-way radio start delay and verifies that it is within the desired limits. The Boom Box unit itself looks for 100- $\mu$ sec errors. If the error is less than 100- $\mu$ sec then it is considered good and the Green LED is lit. The BBview computer program's error limit can be set and can automatically correct the Encoder's time delay to compensate for large errors.



When the program is started the error is set to 100  $\mu$ sec. If the calculated error exceeds the entered value, then a start delay error correction message automatically appears. The parameters in the Computer will be loaded into the Boom Box Encoder if the operator selects to correct for the start time error. All parameters will be loaded not just the start delay entries.

## Setup – Set Boom Box Date/Time

**Bbview Stores current Computer time and Date into the Boom Box**

**Advanced Parameter Editor** – Shows all operation parameters. Allows entry and editing of all Boom Box operation parameters. This is for advanced users to change

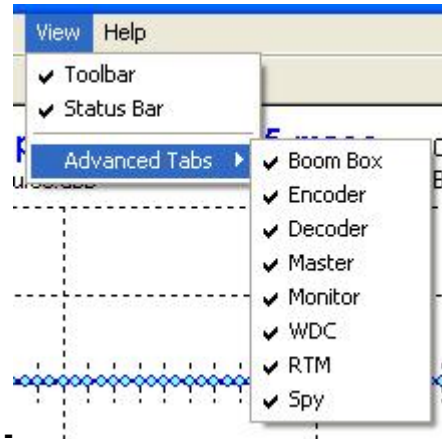
**Advance Parameter Editing**

Parameter	Dec Value	Hex Value	Bytes	Unit
1. Unit ID	1	01	1	N/A
2. Crew	15	0F	1	N/A
3. Start Code	0	00	1	N/A
4. Repeater ID	10	0A	1	N/A
5. Flag Number	25075	000061F3	4	N/A
6. Password	0	00000000	4	N/A
7. Units To Fire	N/A	FFFFFFFF	4	Bitmap
8. Encoder Start Delay	500	01F4	2	msec
9. Encoder Radio Start Delay	500	01F4	2	µsec
10. Decoder Start Delay	0	0000	2	µsec
11. Encoder Radio Ref. Delay	500	01F4	2	µsec
12. Uphole Blank Delay	0	0000	2	msec
13. Uphole Window Delay	0	0000	2	msec
14. Weight Drop Start Delay	0	0000	2	msec
15. Weight Drop PTT Delay	251	00FB	2	µsec
16. Operating Mode	0	00	1	N/A
17. Recording System	0	00	1	N/A
18. Ready Message Type	1	01	1	N/A
19. Report Type	1	01	1	N/A
20. VCO DAC Value	127	7F	1	N/A
21. Spare	0	00	1	N/A
22. Weight Drop Time Out	5	05	1	sec
23. Auto Shut Down	0	00	1	min
24. First Break Threshold Method	0	0000	2	N/A
25. Weight Drop Cycle Time	0	0000	2	msec
26. Interface Functions	62	003E	2	N/A
27. Geophone Limit Min	100	0064	2	Ohm
28. Geophone Limit Max	400	0190	2	Ohm
29. Cap Limit Min	0	0000	2	Ohm
30. Cap Limit Max	100	0064	2	Ohm
31. Spare	00	00	1	N/A

Edit Hexadecimal Value:

### 14.1.5 View Menu

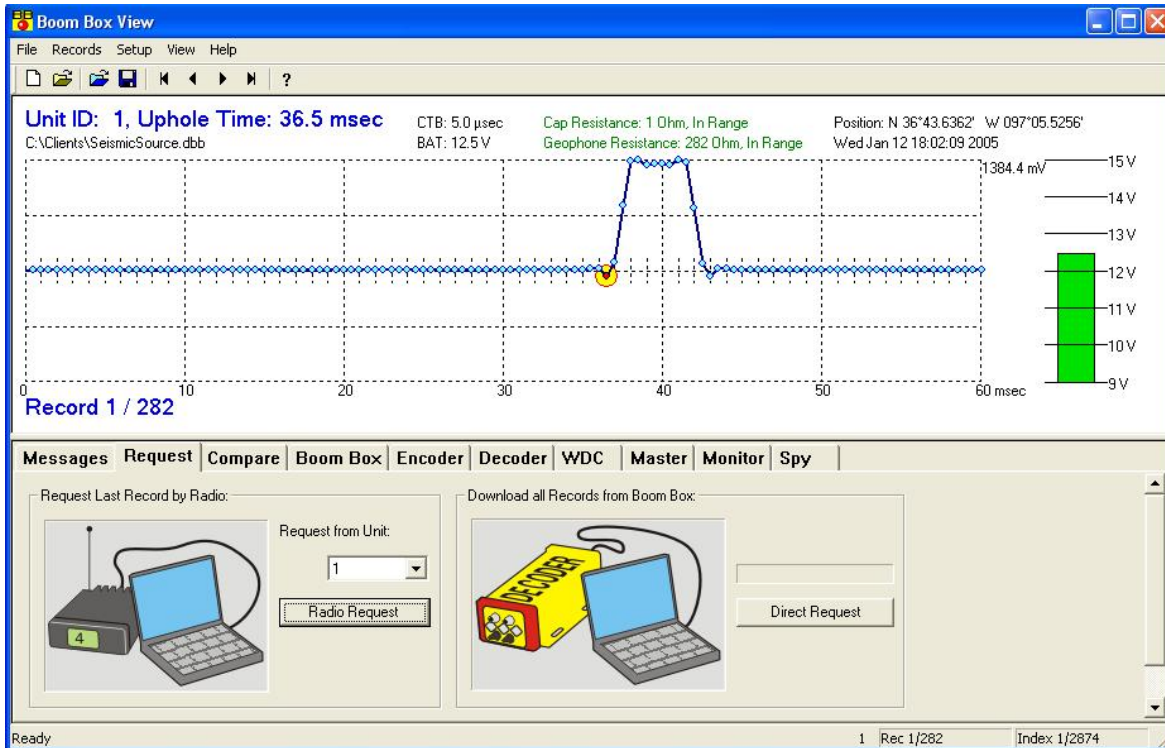
- **Advanced Tabs** – New feature in BBview Ver. 2.49 and up. Add or remove check marks to display Tabs in the Uphole Data Screen. Re – start BBview for changes to take effect



- **Messages** – Displays the Boom Box messages from the Serial Port



## Request



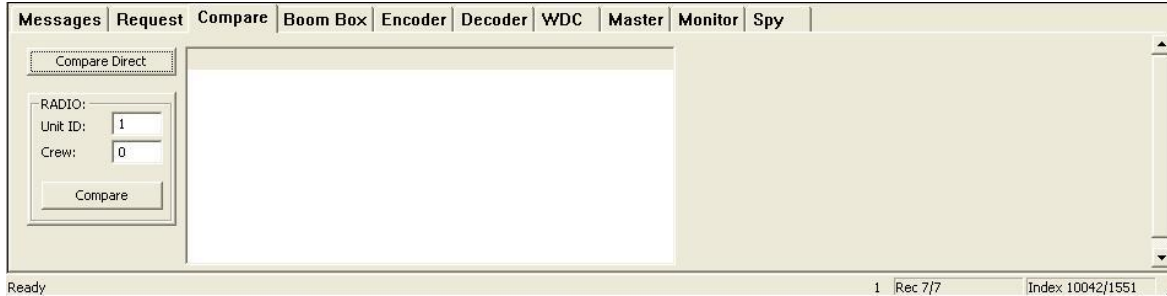
- **Request Last Record by Radios** – The last record taken from a Boom Box Decoder can be requested through the Encoder. Select which Decoder to receive the last shot
- **Download All Records from Boom Box** – Connect to Boom Box Decoder and Download the Entire Shot History

## Compare -



**Compare Direct** – This compares the parameters in the Boom Box to the parameters in the BBview computer program.

**Radio** - This compares the parameters in the Boom Box Decoder to the parameters in the BBview computer program over the radio.



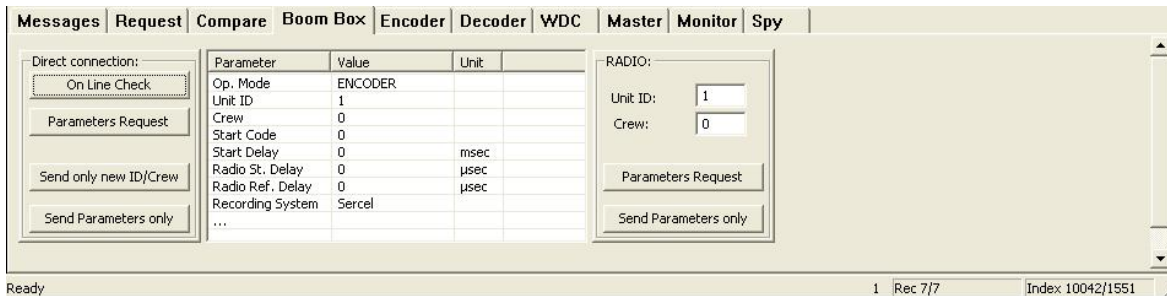
## Boom Box -

### Direct Connection:

- **Online Check** – Verifies Boom Box is Online, Displays, Unit ID, Crew ID, Serial number, and Firmware version
- **Parameters Request** – Receives parameters from Boom Box into the Computer
- **Send only new ID and Crew Number** – Sends the Unit ID and Crew ID to Boom Box
- **Send Parameters Only** – Sends the Parameters to the Boom Box

### Radio:

- **Parameter Request** - Receives parameters from Boom Box into the Computer over Radio
- **Send Parameter Only** - Sends the Parameters to the Boom Box over Radio



## 14.1.6 Encoder

## Privacy Settings

- **Unit ID** – Select the Unit ID of the Encoder Box
- **Crew Code** – The Crew Code of the Encoder must match the Crew Code of the Decoder
- **Start Code** – The Start Code of the Encoder must match the Start Code of the Decoder
- **Units to Fire** – Select which Boom Boxes are to fire

## Mode

- **Dynamite Encoder**- Select this mode for Dynamite
- **Hammer Encoder**-Select this Mode for Weight Drop Control (RTM). The Boom Box will be able to receive the time break signal from the RTM unit connected to a weight drop or being used as a hammer switch extender.

## Timing Settings

- **Start Delay** – Time from recorder sending start to Boom Box remote start line till time break occurs.
- **Radio Start Delay** – The delay of the radio start code to adjust the time break (fire) in the decoder Boom Box to match the time break in the encoder Boom Box. The Boom Box system automatically monitors the two-way radio start delay and verifies that it is within the desired limits
- **Radio Reference Delay** – The delay in sending the analog uphole data out to match it with the reference pulses. The Boom Box system automatically monitors the two-way radio start delay and verifies that it is within the desired limits

## Interface

- **Recorder System** – Set Recorder type according to Recorder connected. Sercel for Sercel Recorders. Generic 19200 for ARAM,Ascend Geo,I/O, and other Recorders. Generic 9600 for ARAM Recorders

## Hardware Interface Settings

- **GPS PPS Active** – Not Used
- **Recorder Start Active** – Output, High = Opto Active Open, Low = Opto active closed
- **Time Break Active** – Output High = Opto Active Open, Low = Opto active closed
- **Remote Start Active** – Input active state of Opto to start Boom Box Encoder
- **Speaker Polarity** – Select same speaker polarity on all Boom Boxes
- **Microphone polarity** – Select same microphone polarity on all Boom Boxes

The screenshot shows the 'Encoder' tab of a configuration software. The interface is divided into three main sections: Privacy Settings, Timing Settings, and Hardware Interface Settings. Privacy Settings includes fields for Unit ID (1), Crew (15), Start Code (0), and Units to Fire (All). Timing Settings includes Start Delay (500), Radio Start Delay (500), and Radio Ref. Delay (500). Hardware Interface Settings includes dropdowns for GPS PPS Active, Recorder Start Active, Time Break Active, Remote Start Active, Speaker Polarity, and Microphone Polarity, all set to High or Normal. An 'Interface' section at the bottom shows the Mode set to 'BB Dynamite Encoder' and the Recording system set to 'Sercel'. 'Save' and 'Save and Send' buttons are at the bottom left.

Messages	Request	Compare	Boom Box	Encoder	Decoder	WDC	Master	Monitor	Spy
<b>Privacy Settings:</b>									
Unit ID(1-32): 1									
Crew (0-250): 15									
Start Code: 0									
Units to Fire: All									
<b>Timing Settings:</b>									
Start Delay (500-10000 msec): 500									
Radio Start Delay (0-4000 µsec): 500									
Radio Ref. Delay (0-4000 µsec): 500									
<b>Hardware Interface Settings:</b>									
GPS PPS Active: High									
Recorder Start Active: High									
Time Break Active: High									
Remote Start Active: High									
Speaker Polarity: Normal									
Microphone Polarity: Normal									
<b>Interface:</b>									
Mode: BB Dynamite Encoder									
Recording system: Sercel									
Save Save and Send									

## 14.1.7 Decoder

### Privacy Settings

- **Unit ID** – Select the Unit ID of the Encoder Box
- **Crew Code** – The Crew Code of the Encoder must match the Crew Code of the Decoder
- **Start Code** – The Start Code of the Encoder must match the Start Code of the Decoder
- **Units to Fire** – Select which Boom Boxes are to fire

### Miscellaneous –

- **Start Delay** – The delay added after receiving the radio start command before issuing the time break (fire command). This is usually left at zero.
- **Uphole Blank Time** – Amount of data to clear prior to calculating first pick
- **Uphole Window** – Only 60ms of Uphole wavelet are sent back in post report. This selection allows the user to decide which portion of the Waveform to send back. (Default 0)
- **Auto Shutdown** – The Boom Box is capable of shutting itself off. Zero leaves the Boom Box on
- **Ready Message Type** –
  - **Boom Box** - Sends Boom Box Ready Message
  - **Advance 2** – Sends Advance 2 Ready Message
  - **VibPro** –Sends Vibpro(Advance 3)ready message and accepts VibPro start codes. When in this mode the Boom Box can not receive start codes from an encoder in Boom Box mode.
- **Geophone Resistance** - Geophone Resistance limits for Boom Box to Display Green (Good) or Red (Bad) LEDs after taking Geophone Ohmmeter tests
- **Cap Resistance** – Cap limits for Boom Box to Display Green (Good) or Red (Bad) LEDs after taking Cap tests

### Hardware Interface Settings

- **GPS PPS Active** – Not Used
- **Recorder Start Active** – Output, High = Opto Active Open, Low = Opto active closed
- **Time Break Active** – Output High = Opto Active Open, Low = Opto active closed
- **Remote Start Active** – Input active state of Opto to start Boom Box Encoder
- **Speaker Polarity** – Select same speaker polarity on all Boom Boxes
- **Microphone polarity** – Select same microphone polarity on all Boom Boxes
- **Option Input** – The Polarity of this signal is selectable with Option Low/High

Messages	Request	Compare	Boom Box	Encoder	Decoder	WDC	Master	Monitor	Spy
<div>Privacy Settings:</div> <div>Unit ID(1-32) <input type="text" value="1"/></div> <div>Crew (0-250) <input type="text" value="0"/></div> <div>Start Code <input type="text" value="0"/></div> <div>Mode: <input type="text" value="Dynamite Decoder"/></div> <div>Save Save and Send</div>									
<div>Miscellaneous:</div> <div>Start Delay (0-4000 <math>\mu</math>sec) <input type="text" value="0"/></div> <div>Uphole Blank Time (0-128 msec) <input type="text" value="0"/></div> <div>Uphole Window Delay (0-128 msec) <input type="text" value="0"/></div> <div>Auto Shut Down (0-255 minutes) <input type="text" value="0"/></div> <div>Ready Message Type <input type="text" value="None"/></div> <div>Geophone Resistance, Min <input type="text" value="0"/> Max <input type="text" value="0"/></div> <div>Cap Resistance, Min <input type="text" value="0"/> Max <input type="text" value="0"/></div>									
<div>Hardware Interface Settings:</div> <div>GPS PPS Active <input type="text" value="Low"/></div> <div>Recorder Start Active <input type="text" value="Low"/></div> <div>Time Break Active <input type="text" value="Low"/></div> <div>Remote Start Active <input type="text" value="Low"/></div> <div>Speaker Polarity <input type="text" value="Normal"/></div> <div>Microphone Polarity <input type="text" value="Normal"/></div> <div>Option Input: <input type="text" value="Low"/></div>									
Ready 1 Rec 7/7 Index 10042/1551									

## 14.1.8 WDC

### Weight Drop Controller Cycle Mode

- Automatic or Manual

### Timing Setup

- **Start Delay** – Time from starting pulse till ready message sent to Encoder for pre-start
- **PTT Delay** – Time from ready message before starting 2500 Hz signal
- **Time Out** – Length of time to wait for hit signal before stopping the cycle
- **Cycle Time** – Length of time to wait after the hit signal before re-starting the cycle in automatic mode

### Interface Setup

- **Start Signal Active** – Input active state of Opto to start Weight Drop Cycle
- **Recorder Start Active** – Output, High = Opto Active open Low = Opto Active Closed
- **Weight Hit Active** – Input Active State of Opto when Weight Drop hits

Messages	Request	Compare	Boom Box	Encoder	Decoder	WDC	Master	Monitor	Spy
<div>Weight Drop Controller Cycle Mode</div> <div><input type="text" value="Manual"/></div> <div>Save Save and Send</div>									
<div>Timing Setup:</div> <div>Start Delay (0-30000 msec) <input type="text" value="0"/></div> <div>PTT Delay (0-30000 msec) <input type="text" value="251"/></div> <div>Time Out (5-30 sec) <input type="text" value="5"/></div> <div>Cycle Time (0-60000 msec) <input type="text" value="0"/></div>									
<div>Interface Setup:</div> <div>Start Signal Active <input type="text" value="Low"/></div> <div>Recorder Start Active <input type="text" value="High"/></div> <div>Weight Hit Active <input type="text" value="High"/></div>									
Ready 1 Rec 280/280 Index 2918/1807									

### 14.1.9 Master

Master Encoder sends Master Start Codes to Repeater Unit. The Repeater sends decoder Start Codes to Fire the Decoder Boom Box. The Repeater also repeats the post report

#### Privacy Settings

- **Unit ID** – Select the Unit ID of the Encoder Box
- **Crew Code** – The Crew Code of the Encoder must match the Crew Code of the Decoder
- **Start Code** – The Start Code of the Encoder must match the Start Code of the Decoder
- **Units to Fire** – Select which Boom Boxes are to fire
- **Repeater ID** – Select which Boom Box to use as the Repeater

#### Timing Settings

- **Start Delay** – Time from starting pulse till ready message sent to Encoder for pre-start
- **Radio Start Delay** - The Boom Box system automatically monitors the two-way radio start delay and verifies that it is within the desired limits
- **Radio Reference Delay** - The Boom Box system automatically monitors the two-way radio start delay and verifies that it is within the desired limits

#### Hardware Interface Settings

- **GPS PPS Active** – Not Used
- **Recorder Start Active** – Output, High = Opto Active Open, Low = Opto active closed
- **Time Break Active** – Output, High = Opto Active Open, Low = Opto active closed
- **Remote Start Active** – Input active state of Opto to start Boom Box Encoder
- **Speaker Polarity** – Select same speaker polarity on all Boom Boxes
- **Microphone polarity** – Select same microphone polarity on all Boom Boxes

Messages Request Compare Boom Box Encoder Decoder WDC Master Monitor Spy

Privacy Settings:

Unit ID(1-32) 1

Crew (0-250) 15

Start Code 0

Units to Fire All

Repeater ID 10

Save Save and Send

Timing Settings:

Start Delay (500-10000 msec) 500

Radio Start Delay (0-4000 µsec) 500

Radio Ref. Delay (0-4000 µsec) 500

Interface:

Recording system: SerCEL

Hardware Interface Settings:

GPS PPS Active High

Recorder Start Active High

Time Break Active High

Remote Start Active High

Speaker Polarity Reversed

Microphone Polarity Normal

Ready 1 Rec 280/280 Index 2918/1807

### 14.1.10 Monitor

Receives Decoder Start Codes and Issues Pre-start and Time Break Pulses

#### Privacy Settings

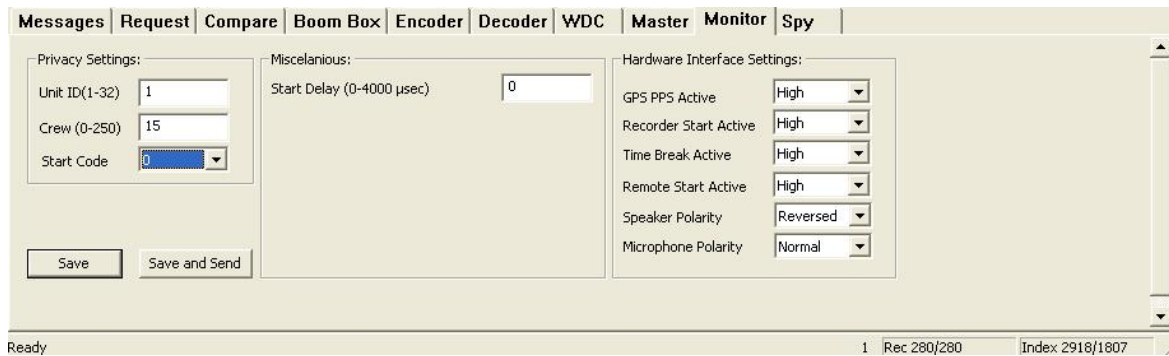
- **Unit ID** – Select the Unit ID of the Encoder Box
- **Crew Code** – The Crew Code of the Encoder must match the Crew Code of the Decoder
- **Start Code** – The Start Code of the Encoder must match the Start Code of the Decoder

#### Miscellaneous

- **Start Delay** – Delay Time Break by this Entry

#### Hardware Interface Settings

- **GPS PPS Active** – Not Used
- **Recorder Start Active** – Output, High = Opto Active Open, Low = Opto active closed
- **Time Break Active** – Output High = Opto Active Open, Low = Opto active closed
- **Remote Start Active** – Input active state of Opto to start Boom Box Encoder
- **Speaker Polarity** – Select same speaker polarity on all Boom Boxes
- **Microphone polarity** – Select same microphone polarity on all Boom Boxes



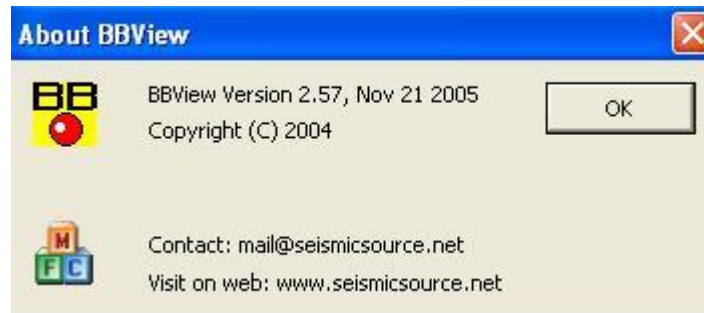
### 14.1.11 Spy Window

**The Spy Window shows the serial messages from the Encoder:**

- Ready Message from Encoder unit # 1
- Start Code Sent Unit #1, Crew #15, Start Code #0 etc. – This is very useful in checking that the correct start code has been sent
- Report Message is the Shot Status report received from unit #1 Index 2918/1807
- Offset message shows offset = 488. This is a 4-µsec error in start time.
- RTI is the Recording truck message for either I-O or Geo-X recorder. The first message is the data from the Shot Status Report. The second RTI message is the GPS position.



### 14.1.12 Help Screen



- Shows Version of BBview
- Contact Info



## 15.1 Boom Box Encoder Cable

All wires are 10 feet long and use twisted shielded pr wire

BB37 pin 33 jumper to pin 34 enables RTI port

BB-37 to DSUB1 –9 pin female

2 White	2
3 Black	3
1 Shield	5

BB-37 to DSUB2 –9 pin female

8 White	2
9 Black	3
1 Shield	5

BB-37 to Analog

30 White	Analog Uphole
35 Black	Ref Pulse
20 Shield	GND

BB-37 to Recorder

14 White	TB ISO active
15 Black	TB ISO return
16 Red	TB Active TTL
20 Black	GND
10 Green	Remote Start ISO active
11 Black	Remote Start ISO return

## 16.1 Boom Box Decoder Cable

### 10 pin Decoder Cable

4 feet long

B Red	Battery plus
H BLK	Battery minus

F Red	Uphole +
D BLK	Uphole –

C Red	Mic Act
A BLK	Radio Return

J White	PTT Active
BLK	no connect

G Green	Speaker Pos
K BLK	Speaker Return

### 5 pin Radio Cable Wiring

Mic Active –	A
Radio Return -	C

Speaker Act-	B
Speaker Ret-	E

PTT	D
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## 17.1 Boom Box Encoder Cable – Sercel 408

All wires are 15 feet long and use twisted shielded pr wire

BB37 pin 33 jumper to pin 34 enables RTI port

BB-37 to DSUB1 –9 pin female

2 White	2
3 Black	3
1 Shield	5

BB-37 to DSUB2 –25 pin Male – Serial port A on HCI

n.c. White	n.c.
9 Black	2
1 Shield	7

BB-37 to Analog -FDU

30 White	Analog Uphole
5 Black	Ref Pulse
20 Shield	GND

### BB-37 to Recorder – Blaster Connector (851-06EC14-19S50)

16 Red	TB Active TTL	K
20 Black	GND	L
10 Green	Remote Start ISO active	T
1 & 11 Black	Remote Start ISO return (GND)	R

## 18.1 DECODER CABLE with GPS

### 10 pin Decoder Cable

4 feet long

B Red	Battery plus
H BLK	Battery minus

F Red	Uphole +
D BLK	Uphole –

### GPS input

B White	Battery plus – (optional 9 pin Female) pin 9
H Shield	GND ( Battery minus) - (optional 9 pin Female) pin 5
E BLK	GPS input to Boom Box - (optional 9 pin Female) pin 2

### RADIO

C Red	Mic Act
A BLK	Radio Return

J White	PTT Active
BLK	no connect

G Green	Speaker Pos
K BLK	Speaker Return

### (Optional) 5 pin Radio Cable Wiring

Mic Active –	A
Radio Return -	C

Speaker Act-	B
Speaker Ret-	E

PTT	D
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