

Seismic Hardware Setup

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This guide will cover setting up the equipment inside the Underway Geophysics Lab that will be used during a seismic survey. See the Seismic Acquisition Test guide for an exercise in testing this equipment with a simulated streamer signal.

Filters

Filters are used to control the frequency of sound delivered to the EPC Recorders (analog 1 & 2) and to the Sun acquisition system. Each filter unit has a High Pass and Low Pass setting. The High Pass (Low Cut) setting cuts out all frequencies below it while the Low Pass (High Cut) setting cuts out all frequencies above it.

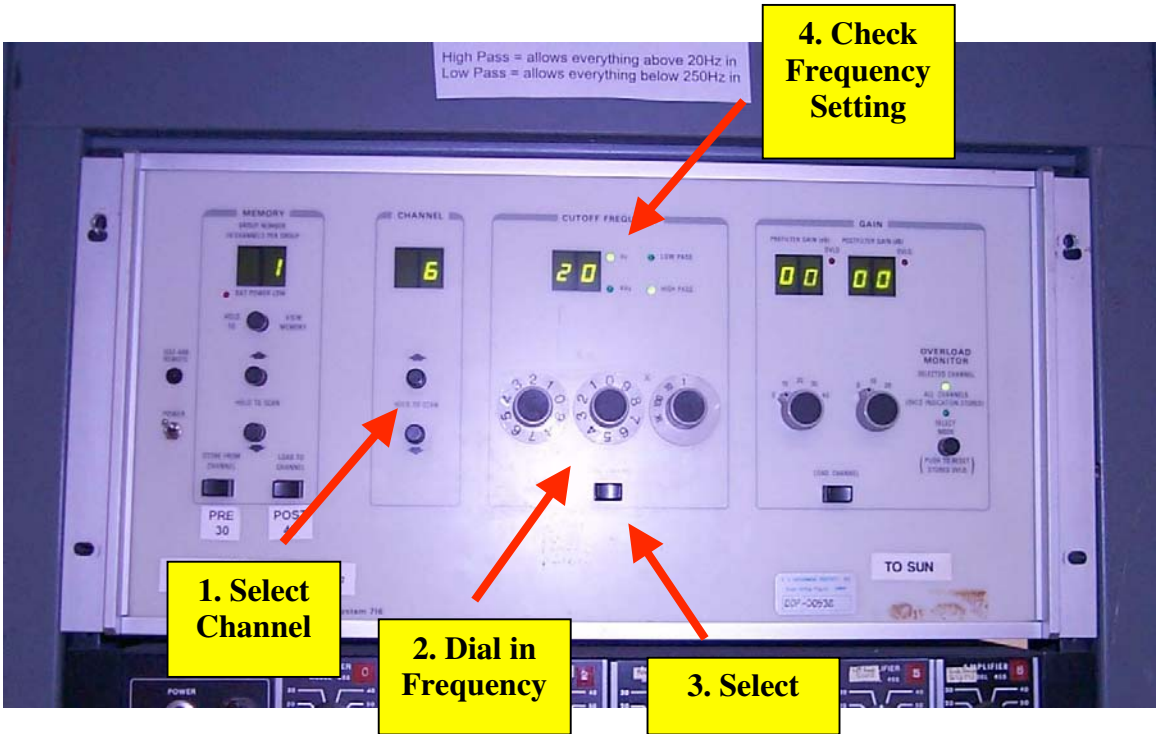
Krohn-Hite (EPC Recorder filters)

Typical Settings are High Pass = 30 Hz, Low Pass = 130 Hz. The scientists may ask for different settings but use these if they have no preference.



Wavetek (Sun acquisition filter)

Typical Settings High Pass (Channel 6) = 20 Hz, Low Pass (Channel 2) = 250 Hz (0.25 kHz). The scientists may ask for different setting but use these if they have no preference. To change the settings, select the appropriate channel, dial in the desired frequency, push the set button, and check the frequency setting.



Amplifier

The amplifier controls the strength of the signal prior to going through the filters then to the EPC recorders and Sun. You will have to adjust the dB levels to get the appropriate output for what you are doing. The signal going to the EPC Recorders should be no more than 15 volts peak to peak. The signal going to the Sun should be no more than 5 volts peak to peak. To check the signal voltage, connect a cable from the post filter amp to the oscilloscope. Turn the dials on the amplifier to change the signal strength. See the Oscilloscope Guide on how to use the Oscilloscope.

Note: Unplug the output to the Sun on the back of the amplifier until the output is less than 5 V.



Out to
Oscilloscope

In from
Amplifier

EPC Recorders

The EPC Recorders Analog 1 & 2 receive the seismic signal from the amplifier. The Lab View U/W Watch application and the dials on the recorders are used to control how the signal prints on the recorder. There are four primary parameters to set on the U/W Watch application, the Time Marks, Delay, Scan and Repeat Lines. Set the automatic time annotation, probably five minutes, making sure the annotation does not print over the data. On the recorder screens, set the following parameters,

Delay – Time in seconds that the recorder waits before starting to print. Since it takes a few seconds (depending on the depth) before the sound waves reach the seafloor there is no need to start printing until the just before the seismic record begins.

Scan – Time in seconds to print data.

Repeat Lines – Number of times to print each shot. This is used to create an expanded record, almost like zooming in. It is usually used when the scan time is smaller.

Example

An example of setting used on Leg 203 are as follows,

Analog 1

Delay – 2 s

Scan – 4 s

R. Lines – 1

Analog 2

Delay – 4 s

Scan – 2 s

R. Lines – 9

On the EPC Recorder set the Print Polarity to “+” and the Delay to “0”. Start with the Threshold at “0” but you may need to turn it up to take out background noise. The Gain can be adjusted to control the darkness of the printed signal. See the EPC Recorder Operators Manual for details on setting these and other controls.