

**WHOI- Multidisciplinary Instrumentation in Support of Oceanography (MISO)
Facility Equipment**

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Jan. 22, 2006

MISO Equipment information and an online user request form are available at:

http://www.whoi.edu/marops/support_services/list equip towed camera.html

<http://westward.whoi.edu/TowCamReq.nsf/TowCam%20Request?OpenForm>

These will be updated in the coming month to reflect the information and lease costs for additional equipment mentioned below:

1. Towed Camera Systems

Per Lowering Cost \$1,000. (NB- 5 tow minimum)

Insurance (per month) \$1,200.

Mobilization/Demobilization (Costs depend on shipping and logistics – they can be calculated based on ports and other factors)

TowCam engineer (Required if PIs have no near-bottom towing experience or need to have an engineer be responsible for TowCam maintenance, data acquisition and processing for the cruise. This is especially true if TowCam rock or water sampling is required. Approximate costs for 1 month including travel, SeaPay, salary, benefits and WHOI overhead are approximately \$15,000.)

2. Time-Lapse Camera Systems

Per Lowering Cost \$1,000. (Normally 1-2 lowerings per cruise/month – system currently provides adequate power for ~10 days of imaging at various rep rates up to ~160-170 images per day. Additional power and longevity on the seafloor are being worked on.)

Insurance (per month) \$ 600.

Mobilization/Demobilization (Costs depend on shipping and logistics – they can be calculated based on ports and other factors)

Time-Lapse Camera engineer (Normally this requires Fornari or a TowCam engineer to travel to the departure port to set up the system and train someone from the science party in maintaining, charging, and downloading images. Costs vary with travel and logistics but usually involve 3-4 days of time and travel expenses, approx. \$4-5,000.)

3. Down-looking deep-sea digital camera and strobes

Per Dive \$500. (Normally 1-2 lowerings per cruise/month – system currently provides adequate power for ~10 days of imaging at various rep rates up to ~160-170 images per day. Additional power and longevity on the seafloor are being worked on.)

Insurance (per month) \$ 600.

Mobilization/Demobilization (Costs depend on shipping and logistics – they can be calculated based on ports and other factors)

Down-Looking Camera engineer (Normally this requires Fornari or a TowCam engineer to travel to the departure port to set up the system and train someone from the science party in maintaining, charging, and downloading images. Costs vary with travel and logistics but usually involve 3-4 days of time and travel expenses, approx. \$4-5,000.)

4. Deep-Sea 24 VDC 42 amp/hr SeaBatteries

Depending on the use of other MISO systems, 6-8 deep-sea oil compensated batteries are available for lease. These are DeepSea Power & Light ‘Seabatteries’ and rated at 24VDC,

42 amp/hr. The batteries are supplied with a 'smart' charger that properly charges the batteries using 120VAC ship's power.

The batteries can be leased for \$100./month, with shipping and insurance provided based on the duration of use and port logistics.

5. High-temperature self-recording loggers for hydrothermal vent monitoring (152°C-417°C)

The MISO facility has assumed responsibility for supplying and servicing the high-temperature 'Sealogger' self-recording fluid temperature recorders manufactured by DSPL for the last ~10 years. DSPL no longer supports or produces these temperature loggers. Their technical drawings and outstand stock of parts and materials were donated to WHOI last year.

There are two styles of logger currently being serviced and produced by MISO. Both loggers are equipped with two (2) 32k Onset Computer memory chips, for 64k total memory. Each chip is connected to a RTD (resistance temperature device) that is capable of sensing temperatures between 152°C and 417°C, with $\pm 1^\circ\text{C}$ accuracy. Other temperature ranges may be available on special request. The chips are 'Stowaway' loggers manufactured by Onset and are downloaded via a serial cable to PC computers. Software provided with the Onset chips (Boxcar v4.3) allows programming of the chips to have delayed start, to set the recording interval, and whether to average the readings or not.

The main difference between the two types of loggers is one has a smaller, cylindrical housing **and no pressure barrier between it and the probe tip where the RTD is**. The other logger is a spherical housing **with a pressure barrier so that housing does not flood when the tip is broken** (as sometimes happen when the loggers are extracted from the sides of vent chimneys after being deployed for months to years). Both housings and probes are titanium and rated to 6000 meters operating depth and all have Alvin pressure certification.

Prices shown are current (2006) costs for MISO to produce these loggers, including calibration data and Alvin pressure certification.

- a) Cylindrical housing Hi-T logger \$1,800.
- b) Spherical housing Hi-T logger \$3,000.
- c) replacement tips for spherical housing \$ 800.
(Ti tubing, RTD, Swage compression fittings, and connector) for spherical housings.
- d) Repair of cylindrical housings \$1,200.
(new Ti tubing, Onset chips, RTD, welding, pressure testing).

6. Recoverable Acoustic Transponders (Benthos TR6001 model)

In March, 2006, MISO will have six (6) Benthos TR6001 acoustic recoverable transponders for use by the US academic community to supplement bottom-moored transponder needed for deep submergence or other field research.

These transponders will be provided at a monthly lease basis to interested users at \$400/month, including insurance. Shipping costs to/from the ship will be calculated upon receipt of logistics information. Operation and servicing of the transponders by trained shipboard personnel is required. Transponders are to be returned with a new burn-wire and deployment/use information to allow tracking of use history of each unit.

7. Deep-Sea Tide Gauge (SeaBird 26)

A SeaBird26 deep-sea tide gauge owned by the National Deep Submergence Facility at WHOI has been made available to several users for data recording in conjunction with seafloor time series measurements of seismicity and vent fluid temperature. A fiberglass base has been made by MISO that houses the instrument. Currently, the tide gauge is planned to be deployed at the EPR ISS until mid 2007.

8. Sonardyne 'Homer' Model 7835 Acoustic Beacon (ID code = 70)

MISO has purchased one Sonardyne 'Homer' acoustic beacon for use in relocating seafloor equipment or experiment sites. Technical information for these beacons is available at: <http://www.sonardyne.com/Products/MarkingRelocation/7832.html>

The current beacon will be used at the EPR ISS with the Tide Gauge until early/mid 2007. Additional beacons can be purchased for use and leased to the community. Purchase cost for this beacon, including Alvin pressure certification is ~\$5,000. Depth rating for this beacon is currently 4000 m for Jason2 use and certified to 3000 m for Alvin use. At present no lease rate has been determined for this equipment.

9. Expendable Acoustic Transponders (Benthos XT6001 model) and Seafloor Benchmarks

The MISO Facility has purchased or refurbished sufficient expendable Benthos XT6001 transponders to supply the EPR and MEF Ridge2000 Integrated Study Sites with 4 transponders each for deployment in 2006 to establish permanent transponder networks that can be maintained and re-battered on a ~3 year schedule. In addition, seafloor benchmarks are being designed to serve as fixed position points along the bull's eyes of the EPR and MEF ISSs.