

# Potential Fields Pool Equipment (PFPE)

James Kinsey – [jkinsey@whoi.edu](mailto:jkinsey@whoi.edu)

Randy Herr – [Randyherr@aol.com](mailto:Randyherr@aol.com)

Dan Fornari – [dfornari@whoi.edu](mailto:dfornari@whoi.edu)



# PFPE - Information

- Information on the pool gravimeters is located on the MISO website (Google 'PFPE WHOI')

<http://www.whoi.edu/page.do?pid=49995>

«WOODS HOLE OCEANOGRAPHIC INSTITUTION

## MISO Facility

Multidisciplinary Instrumentation in Support of Oceanography

Overview **MISO Instrumentation** Request an Instrument MISO Documentation

**MISO Instrumentation**

TowCam

**Marine BGM-3 Gravimeters**

Marine Magnetometer

Deep Sea Cameras and Strobes

Acoustic Transponders

High Temperature Loggers

Deep Sea Batteries & Switches


### Potential Fields Pool Equipment 'PFPE' - Ship BGM-3 Gravimeters

ShareThis Email Print PDF

#### Background


In late 2006, an opportunity arose to acquire used BGM-3 gravimeters and spare parts from a commercial survey company, Fugro-Robertson, Inc. It was envisioned that acquisition of these gravimeters would result in permanently installed meters on several UNOLS Class 1 vessels, and that several meters that could be staged and installed on other ships on an as-needed basis (e.g., "pool gravimeters"). In order to take advantage of this opportunity, a group of scientists at University of Alaska at Fairbanks (UAF), Scripps Institution of Oceanography (SIO), and Woods Hole Oceanographic Institution (WHOI) wrote an unsolicited NSF proposal with WHOI as the lead institution to acquire the Fugro gravimeters and spares. That proposal (NSF-OCE-0705964) was funded in 2007 and over the course of the next 2 years, 4 gravimeters were permanently installed on the USCGS Healy, R/V Knorr, and R/V Revelle. This increased the number of permanently deployed BGM-3 gravimeters from two (the systems on the R/V Melville and R/V Marcus Langseth) to six. Two additional gravimeters were designated as pool gravimeters and, since 2008, have been deployed on cruises to the Pacific, Red Sea, and the Arctic.

The acquisition of seven BGM-3 gravimeters in 2007 through the NSF grant significantly increased the number resolved the problem of providing gravimeters to the UNOLS fleet, however it did not provide for the long-term financial and technical support of this instrumentation. To address this need, WHOI initiated a discussion with the marine gravity community and UNOLS ship operators to establish a gravimeter pool to share equipment and technical expertise with the ultimate goal of ensuring that all of the deployed BGM-3 gravimeters are well maintained and supported so that they can obtain high-quality marine gravity data. The pooling of equipment was intended to facilitate the purchase spares and needed repairs to gravimeters throughout UNOLS, thereby reducing the financial costs and logistical burden to the



[Enlarge Image](#)

One of the PFPE BGM-3 gravimeters during initial testing and refurbishment carried out by Mr. Randy Herr.



ge.do?pid=49995

# PFPE – Resources

- UNOLS Pool BGM-3 gravimeters
- Land Gravimeters for ties
- Gravimeter spares and equipment
- A SeaSPY towed marine magnetometer available for community use





# Pool Gravimeters

- In addition to providing permanent gravimeters and technical support to 6 UNOLS vessels, there are 2 pool BGM-3 gravimeters.
- Pool gravimeters are not permanently installed on a ship and are available for use on any ship of opportunity
- Since 2007, these pool gravimeters have been used in the Red Sea, Guaymas Basin, Galapagos Spreading Center, Puget Sound, and the Arctic on both US and non-US ships (Canadian Coast Guard).



Left, 2008 Oceanus install for the Red Sea cruise. Right, 2010 install on the CCGS Louis S. St Laurent for Law of the Sea work in the Arctic.



# PFPE – Status and Goals

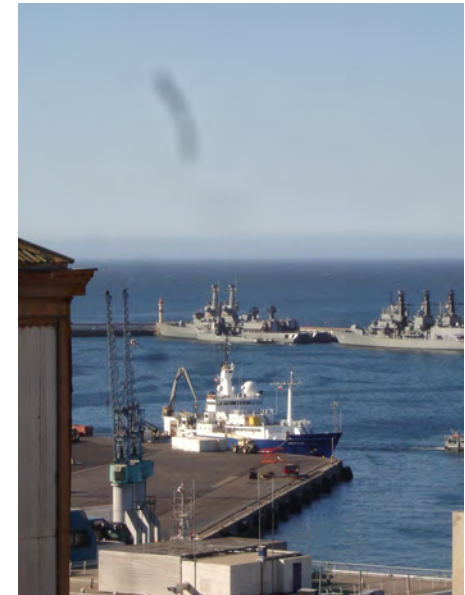
- PFPE 5-year facility grant funded in 2011 through NSF
  - Kinsey is lead PI, transitioning management of PFPE from Fornari to Kinsey well underway
- PFPE provides the UNOLS community with:
  - A supply of spares for maintaining the at-sea BGM-3s
    - Repair or refurbish sensors as necessary
  - Technical Support including on-shore support for the at-sea gravimeters and helping establish best practices.
  - Two pool gravimeters for use of ships of opportunity or as complete emergency spares for the at-sea systems.
- PFPE does **NOT** post-process or archive marine gravity data
  - Such efforts are better suited toward other researchers or community initiatives.

# PFPE – Technical Support - 2012

- 24/7 on-shore technical support from Kinsey and Herr and helping establish best practices and streamlining reporting functions from at-sea technical groups on the ship back to PFPE and for distribution to the community.
- Working with UNOLS vessel operators to schedule visits for maintenance, cruise preparation, and emergency repairs.



Left, emergency gravimeter shipment to the Langseth; Right, Melville in Valparaiso, Chile in February 2010.



# PFPE – 2012 Planned Efforts

- Working with the gyroscope manufacturer – US Dynamics to repair/refurbish gyros.
- Monitoring the old LDEO BGM-3 gravimeter at WHOI and planning to return the unit to the Langseth in 2012.
- T. Thompson now has a fully operational BGM-3 gravimeter.

(PFPE currently providing towed magnetometer and gravimeter technical support for the Tomaniga-Tivey cruise - Fall 2011)

## PFPE – 2012 Planned Efforts (cont'd.)

- Continue existing support services
- Work with the ship technicians to ensure gravimeters are calibrated and serviced as necessary
- In collaboration with the technicians and scientists:
  - Establish and document ‘Best Practices’
  - Work toward standardizing data formats and establishing at sea data quality control and reporting
  - Protocols for gravity ties and establishing database
- Coordinate these efforts with technicians, R2R, and researchers interested in developing tools for processing marine gravity
- Gaining access to NGA pool of BGM-3 spares & meters.



# PFPE “Best Practices” Documentation

- Best Practices
  - Checklists for daily, weekly, and annual maintenance
  - Standardized gravity ties
- Continued Discussions with technical groups and revision of current ‘Best Practices draft & plans for distribution.