



## ***ADCP INSTALLATION AND CURRENT STUDY, PELICAN ISLAND, GALVESTON, TX***

An engineering firm is investigating a potential liquefied natural gas berth location in the Galveston Bay area. Field data measurements on currents and total suspended solids are required for use in numerical models investigating ship maneuverability, hydrodynamics, and sedimentation at the site. Evans-Hamilton, Inc. (EHI), was contracted to conduct two intensive current surveys at spring tidal conditions and to install two bottom-mounted ADCPs at the site to measure currents for a year. EHI also will conduct water sampling, as required to determine total suspended solids concentrations at the site.



*Bottom mounted ADCP in trawler-resistant pod.*

### **SCOPE AND APPROACH**

A vessel-mounted, 600-kHz ADCP was used to conduct the intensive current surveys in November 2004 and February 2005. Differential Global Positioning System was integrated into the ADCP and was used to provide navigational information for the vessel. Current measurements were made along a series of transect lines over a complete tidal cycle.

To collect the long-term current measurements, two bottom-mounted ADCPs have been installed in trawler -

resistant pods. A diverless retrieval method is used for recovering the pods. In this method, acoustic releases on the pods are activated, allowing a buoy attached to the recovery line to float to the surface. The instruments collect a vertical profile of the water velocity magnitude and direction every 15 minutes. One of the ADCPs has been programmed to collect wave data at the site.

The data from the vessel-mounted current surveys and the bottom-mounted instruments are being processed using custom software to provide both visual representations of the data as well as digital data that could be fed directly into the numerical models. Data output formats have been customized to be consistent with the client's requirements.

### **RESULTS**

The study is ongoing, but preliminary data have been used to develop tentative berth locations and configurations. The data also have confirmed the presence of a current shear at the site, which must be taken into consideration in positioning the berth.

