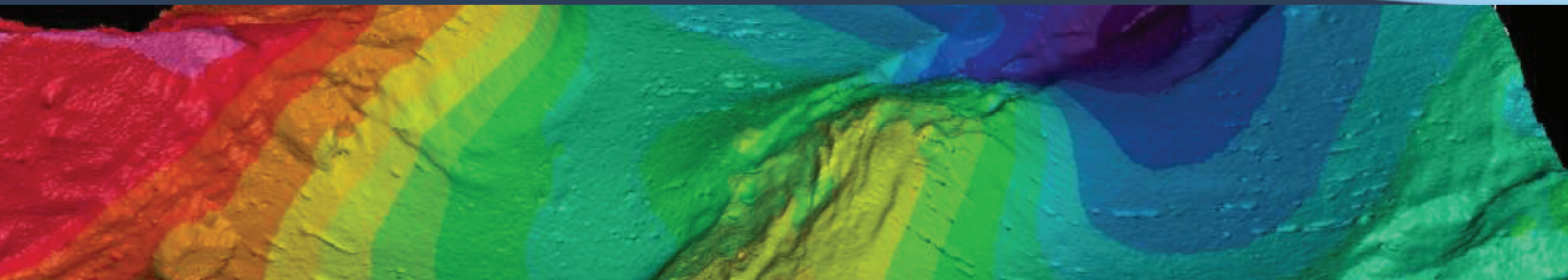


# GEOSCIENCES SERVICES



## GEOSCIENCES CAPABILITIES

The geosciences division consists of geophysicists, geologists, archaeologists, marine scientists, cartographers and data analysts who specialize in the interpretation, reporting and processing of high-resolution geophysical data.

### DESKTOP STUDIES

Preliminary studies are provided to engineers to aid in the design of the most feasible routing alternative prior to the field survey. These studies contain bathymetric information from public domain databases. Hydrographic charts, published papers, and USGS and MMS databases are other potential sources of information.

### PIPELINE ENGINEERING AND HAZARD REPORTS

The division provides engineering and hazard reports with alignment sheets for marine pipeline and flowline routing. Geophysical data from deepwater AUV or conventional shelf surveys are used in these studies. Installation contractors and project engineers use the reports to assess design criteria needed for bathymetric, environmental and geological conditions found along the proposed alignment.

### MARINE GEOHAZARD BLOCK SURVEY REPORTS

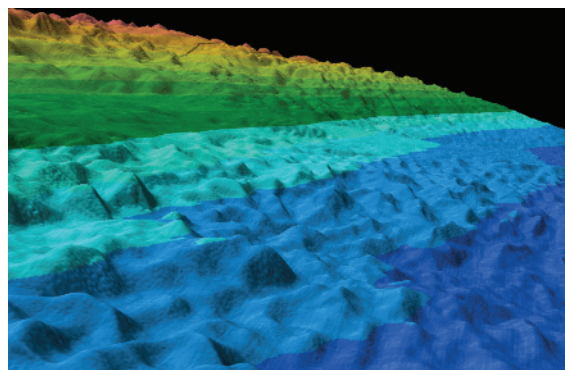
Conventional geohazard site survey reports for the oil and gas industry are required before drilling can commence in new leases. High-resolution seismic data with up to 96 channels can be processed in house using Promax software. These reports identify the conditions at proposed drill sites where hazardous subsurface features or engineering constraints may exist.

### DEEPWATER GEOHAZARD 3D BLOCK SURVEY REPORTS

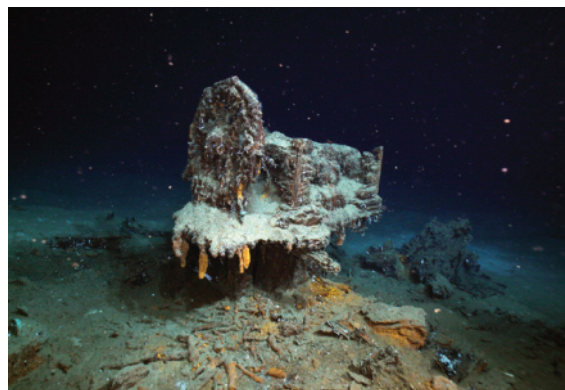
Deepwater prospects are usually assessed for geohazards using the operator's 3D exploration seismic for a lease. These reports and well site assessments conform to MMS guidelines and address seafloor and subsurface drilling hazards, shallow gas and shallow water flow potential. The 3D data is loaded and interpreted using SMT's Kingdom Suite software.

### ARCHAEOLOGICAL ASSESSMENTS

Marine archaeologists provide interpretation of geophysical data for shipwrecks and potential prehistoric habitation sites. Recommendations for avoidance or further investigation of archaeologically significant targets are made in compliance with the current MMS guidelines.



Deepwater Gulf of Mexico AUV data showing furrows fronting the Sigsbee Escarpment. Furrows are 3 to 10 feet in depth and 15 to 35 feet in width (data courtesy of BP).



Wheel and steering machinery of the 7,000 ft Wreck. Photograph by Rob Church using the Aquapix camera, courtesy of Lophelia II 2009: Deepwater Coral Expedition: Reefs, Rigs and Wrecks.

# GEOPHYSICAL SERVICES



## GEOPHYSICAL CAPABILITIES

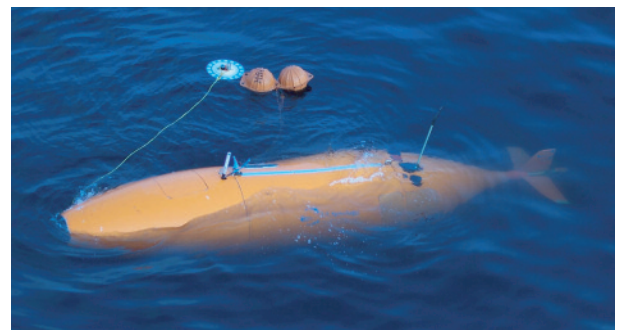
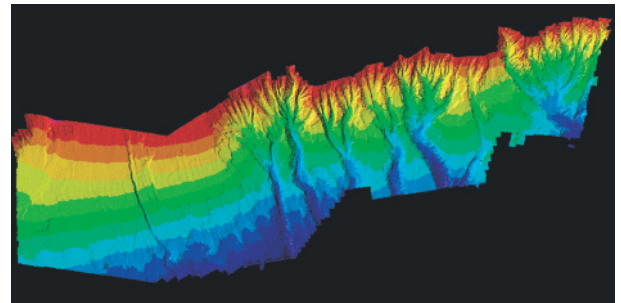
C & C Technologies Inc.'s fleet of hull-mounted and AUV-mounted Simrad multibeam systems provides near-real time precise seafloor charts from water's edge to full ocean depth with proprietary HydroMap software.

### GEOPHYSICAL SERVICES:

- 2-D high-resolution seismic survey
- Archaeological and hazard survey
- AUV survey
- Cable route survey services
- Damage assessments
- Exclusive Economic Zone survey
- Geohazard assessment studies
- MMS requirements
- Multibeam bathymetry survey
- Onboard data processing
- Pipeline/cable route preliminary survey
- Speculative survey

### GEOPHYSICAL VESSELS:

C & C has hull-mounted and AUV-mounted Simrad multibeam systems, as well as vessels working to meet the shallow and deepwater survey requirements of our clients. The vessels can be equipped with a variety of sonar, magnetometer and seismic systems, including a state-of-the-art Hydrosience Seismic Recording System to meet the multichannel seismic requirements of the current MMS Archaeological and Shallow Hazard NTLs.



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