MMRI has recently completed the MMRI, Poe No.1, stratigraphic test well near Troy, Mississippi (Pontotoc County). The well was cored to a total depth of 400 feet and a set of down-hole geophysical logs obtained for stratigraphic evaluation. The core will be used in the on-going geological mapping of the Troy Southeast, Mississippi, topographic quadrangle.

The well was located on an outcrop of the Cretaceous Ripley Formation (in the upper section of the Troy beds) and reached total depth well into the chalks of the Demopolis Formation. The core will be logged in detail and correlated with the geophysical logs. The logs, stratigraphic assignments and drilling characteristics will be summarized in an open-file report.

The Mississippi Office of Geology provided the drill rig and crew and obtained the geophysical logs for completion of the well. Without interagency cooperation such as this, fulfilling the MMRI mission would be much more difficult. The MMRI wishes to thank Mr. Mike Bograd and Mr. John Marble, both of the Mississippi Office of Geology, for their support and Mr. Mike and Mr. Larry Poe, of Poe Brothers Trucking (8171, Pontotoc, MS, 38863) for permission to drill on their property and for on-site support.

Geological maps represent the distribution of geological units at the earth's surface plus any other geological features, such as faults, that may be identified. These maps serve a number of uses varying from economic and engineering uses to natural hazards identification and characterization. Geological maps provide information on natural resource distribution so may influence economic decisions. If, for example, a highway project requires gravel, a geological map can be used to locate potential gravel sources nearby. Proximity to a construction site can determine whether or not development of a resource will be economical. Similarly, if an operator wishes to expand operations, then a geological map is used to determine where to direct efforts (and resources) to explore for new reserves.

The units defined on a geological map represent a unique set of geological materials. The Porters Creek Formation
which outcrops across large portions of northeast Mississippi, for example, is a thick set of beds containing expansive clay, which expands and contracts according to moisture content. This often nonuniform movement can literally break structures or make roadways nearly impassable. Predicting the presence of expansive clays, thereby alerting the engineer or property owner of this potential problem, is possible using geological maps.

Geological maps can be used to identify hazards such as flood plains. Flood plains are formed by seasonal flood waters overflowing a stream's banks. Since they are formed by floods, they can be used as a guide to flood mitigation. Geological maps include faults, another natural hazard, when they are evident at the surface. Faults are the origin of earthquakes and geologic maps can serve to identify their locations, offsets and perhaps the most recent fault movement.

The MMRI's on-going mapping program is currently focused on the revision of the Oxford South geological map (Lafayette County), as well as new mapping of two additional quadrangles, both largely in Chickasaw County: Troy Southeast and Houston East. The Oxford South map is being updated to reflect the area's geology more accurately. Newly discovered outcrop, drilling and exposures associated with new construction have provided sufficient information to justify revising the original map that was completed in 2003. The revision is expected to be finalized early in the new calendar year.

The mapping of the Troy Southeast and Houston East quadrangles is part of the effort to construct geological maps of Chickasaw County, a county that has never been mapped at the 1:24,000 relative fraction scale. The Troy Southeast and Houston East quadrangles are both adjacent to the recently completed geologic map of the Troy quadrangle. These areas include parts of Pontotoc, Lee, and Chickasaw Counties as well as portions of the Tombigbee National Forest. The geological units present within the mapped areas include Recent flood plains, the Cretaceous Demopolis, Ripley, Owl Creek/ Prairie Bluff Formations, and the Tertiary Clayton Formation. The Demopolis Formation consists of chalks, marls and minor limestones whereas the Ripley (within the map areas) consists largely of fine-grained clastic material. The Owl Creek/Prairie Bluff interval consists of fine-grained clastics and localized marls and argillaceous chalks. Field work is complete and construction of the geological map is in progress for the Troy Southeast quadrangle with field work still
on-going for the Houston East quadrangle. An open-file report will summarize the geology and mineral resource potential for both maps. The final reports and geological maps are scheduled for completion in 2010.

**CMRET CRUISE UPDATES**

The National Institute for Underwater Science and Technology (NIUST) Eagle Ray and Mola Mola AUVs were taken aboard NOAA Ship Henry G. Bigelow cruise to map portions of Hudson's Canyon. Participants from The Center for Marine Research and Environmental Technology (CMRET) and The Seabed Technology Research Center (STRC) included Andy Gossett and Matt Lowe (launch and recovery team) and Leonardo Macelloni and Antonello Simonetti (multibeam/side-scan sonar data processing and interpretation team). Three successful dives of the Eagle Ray resulted in the recovery of excellent new data. Mola Mola software and programming challenges prevented its being launched except in test mode but productive work was accomplished in preparation for the October NOAA Ship Nancy Foster cruise in which it is to play a major role.

CMRET was forced to bid farewell to Visiting Scholar, Antonello Simonetti. However, following a brief sojourn in Italy during which he will defend his thesis, Antonello plans to return to the U.S. to pursue a Ph.D. in seismic data processing and interpretation at the University of South Carolina where he will continue to work with Consortium members on various forms of seismic data from MC118, site of the Seafloor Observatory. Seismic data analysis is nearly complete on the TGS industry-standard deep data and the shallow-source-deep-receiver data from MC118 but the Consortium is negotiating the acquisition of an additional, deeper set from Western Geophysical Company. Antonello will work on this data set as well as on multibeam data and even some core data in order to build a more detailed picture of the geology at the site. Supporting microbial studies showing remarkable correlation of microbial activity with proximity to surface faults and vents will also be integrated into the MC118 studies.

**FIRST J.R. WOOLSEY MEMORIAL SCHOLARSHIP AWARDED**

The MMRI/CMRET met with their Advisory Board August 18 at The Carriage House on the campus of the University of Mississippi. In addition to updates on Institute/Center
activities, the formal presentation of the first 
James Robert Woolsey Memorial Scholarship 
in Geology and Geological Engineering was 
made to Melanie Graupner. Melanie is a 
senior undergraduate student majoring in 
Geology and plans to use her scholarship to 
attend field camp in the summer of 2010.

MMRI WELCOMES VISITING SCHOLAR, MARIANGELA LODI

The MMRI and CMRET welcomed their 
newest team member, Mariangela Lodi, a 
marine scientist from the University of 
Rome, “La Sapienza.” Even before her arrival 
in Oxford in August, the experienced marine 
data processor had worked with several 
datasets from the Gulf of Mexico. Working 
with the Gulf of Mexico Hydrates Research 
Consortium data processing team at the 
University of South Carolina, under the 
leadership of University of Mississippi 
Research Assistant Professor, Leonardo 
Macelloni, Mariangela was becoming 
familiar with the bathymetry and subsurface 
structure at the site of the Seafloor 
Observatory at Mississippi Canyon 118. 
Mariangela’s project while in the U.S. will 
involve mapping and interpreting the 
morpho-bathymetric features at MC 118 and 
integration of several multibeam surveys to 
determine the possible evolution of MC118. 
Welcome, Mariangela!